Direction de la vérification, de l'évaluation et du contrôle

Audit, Evaluation and Control Branch

CONSUMER PRODUCTS COMPLIANCE EVALUATION

BACKGROUND STUDIES



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Consommation et Corporations Canada

Bureau de la coordination des politiques

Consumer and Corporate Affairs Canada

Bureau of Policy Coordination

# CONSUMER PRODUCTS COMPLIANCE EVALUATION

BACKGROUND STUDIES





Program Evaluation Division Audit, Evaluation and Control Bureau of Policy Coordination Consumer and Corporate Affairs Canada

1986



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# CONSUMER PRODUCTS COMPLIANCE ACTIVITIES -OBJECTIVES AND INDICATORS STUDY

# FINAL REPORT

NOVEMBER 1985



# CONSUMER AND CORPORATE AFFAIRS

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CONSUMER PRODUCTS COMPLIANCE ACTIVITIES -OBJECTIVES AND INDICATORS STUDY DRAFT REPORT ON RATIONALE FOR ACTIVITIES

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#### EXECUTIVE SUMMARY

This report presents the findings of the Compliance Objectives and Indicators Study of the Consumer Products Sub-activity. The objectives of this study, which is one of several being conducted in parallel, were to:

- . examine the rationale for current compliance activities;
- assess the merits and limitations of current compliance objectives and indicators; and
- identify improvements to indicators.

Information was collected through the review of literature and program documents, and through interviews with personnel at national headquarters, regional offices and district offices.

Major findings concerning each area of the study were:

#### Rationale

. There is a clear rationale for current program work elements. The rationale and program model are well understood by program staff.

# Compliance Objectives

- . The first strategic objective, to protect consumers against product misrepresentation through detection control and prevention, is clearly articulated, well understood and realistic. More precision could be given to this objective, however, by indicating that consumers are the group being protected.
- . The second strategic objective of the program, to enhance the ability of the consumer to differentiate among product choices, is not well understood. This objective requires clarification.
- Although the program focusses on consumer protection and service, concerns of business and industry are also addressed. This is not currently reflected in the program objectives.

#### Compliance Indicators

- . Current compliance rates are subject to potential biases in measurement and may not reflect the true level of compliance in the marketplace.
- The dollars at risk measure utilizes potentially biased compliance rates, and seriousness weightings which show little variation and do not appear to reflect the seriousness for consumers of infractions.

Sudden changes in the measured consumption level of products due to inflation and the interval of several years between Statistics Canada surveys may result in increases in dollars at risk in spite of greatly improved compliance.

With respect to objectives, we recommend that:

- the first objective be reworded to refer specifically to consumers;
- the second objective be reworded as "to assist consumers in making effective product choices through ensuring the provision of factual product information"; and
- a third objective be defined, which would be "to promote and ensure equity and fair competition in the marketplace through the detection, control and prevention of product misrepresentation."

Several approaches may be taken to improve the accuracy of compliance rate data. More consistent and/or improved monitoring of the inspection process, increased training, and the identification of areas where compliance cannot be accurately measured may assist in improving the accuracy of compliance rates. A more fundamental issue is the need to either adjust for or modify the directed selection method currently used to identify establishments and products for inspection if compliance rate data is to be representative. These modifications to the inspection plan must ensure the maximization of impacts of inspection activities while permitting the unbiased measurement of compliance.

The dollars at risk measure may be improved by using more accurate compliance rates, more timely dollars consumption data and improved seriousness weightings in its calculations. Two new indicators may assist in applying dollars at risk at the regional level to target activities. These new indicators are industry concentration by region and volume of imports by region.

In order to more adequately measure program effectiveness, a modification of the dollars at risk indicator may be useful. This is the weighted average compliance rate. This indicator uses the proportion of consumption dollars at risk as opposed to absolute dollars at risk, and so is not subject to sudden increases due to inflation or time delays between Statistics Canada surveys. Thus this indicator more adequately reflects compliance obtained and effectiveness of targeting of activities.

In conclusion, a variety of approaches to improving the compliance indicators and developing new indicators are possible. Practical suggestions, many of which can be implemented with little cost were identified in the study. ļ

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#### INTRODUCTION

#### 1.1 FOCUS AND SCOPE

This report presents the findings of the Compliance Objectives and Indicators Study of the Consumer Products Sub-activity. The objectives of this study were to:

. examine the rationale for current compliance activities;

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- assess the merits and limitations of current compliance objectives and indicators; and
- . identify improvements to indicators.

This study is one of several parallel studies (e.g., an Evaluation of Inspections, 1985) which Consumer and Corporate Affairs Canada (CCAC) has initiated to evaluate the Consumer Products Sub-Activty. The focus of this study is on describing the rationale for compliance activities and assessing the objectives and compliance indicators. The study is not intended to examine the achievement of the objectives, determine program effectiveness or identify alternative compliance activities. These issues are to be examined in other studies and are therefore outside the scope of the present study. Parallel studies have examined the potential for cost reduction in the Sub-Activity (i.e. Evaluation of Inspections, CCAC, Sept. 1985) and are currently examining the effectiveness of activities.

## 1.2 OVERVIEW OF THE CONSUMER PRODUCTS SUB-ACTIVITY

The Consumer Products Sub-activity encompasses a variety of activities aimed at ensuring compliance with relevant legislation, protecting against product misrepresentation and providing accurate information to consumers. The Consumer Products Sub-activity comprises a staff of 275 and an expenditure budget of approximately \$12 million (for 1984-1985).

The Consumer Products Sub-activity has sole responsibility for the development and administration of the Consumer Packaging and Labelling Act; the Textile Labelling Act; the Precious Metals Marking Act; and the National Trade Mark and True Labelling Act. It is responsible for the administration at the retail level of trade for the Canada Agricultural Products Standards Act and the Fish Inspection Act, and for provisions relating to economic fraud in the Food and Drugs Act. The Consumer Products Sub-activity is also responsible for several voluntary programs such as the Canada Standard Sizing Program and the Care Labelling Program. These legislative Acts and Departmental Programs concern approximately 300 products which have an estimated annual value of \$50 billion.

#### 1.3 APPROACH AND METHODOLOGY

Several approaches were used to address the range of issues examined in the study. These included the review of documents; the review of relevant literature; and interviews with CCAC personnel at headquarters and in regional and district offices. These study approaches are described in greater detail below.

<u>Review of documents</u>. A variety of documents and reports were reviewed as part of the study. Relevant documents were identified in Volume 2 of the Evaluation assessment study and during interviews with headquarters and regional personnel. Documents reviewed included:

- legislation, regulations and agreements concerning consumer products inspections;
- planning documents (i.e. Multi-Year Operational Plan, Operational Work Plan, Estimates Part III Expenditure Plan, etc.);
- . regional documents such as Regional Operational Plans;
- documents on and reports from the recently implemented Management Information System (MIS); and
- . reports of previous studies in Consumer Products.

<u>Review of relevant literature</u>. We have reviewed a wide range of literature on regulatory enforcement. Books, studies and articles were identified through the literature review for the Evaluation Assessment of Deceptive Marketing Practices and a computer search of data bases, and were supplemented by references identified by the project team.

Interviews with CCAC personnel. Interviews were conducted with:

- the Director and Chiefs of the Consumer Products Branch at headquarters;
- personnel in Management Services responsible for the MIS System; and
- a sample of Regional Directors, Regional Managers, Regional Specialists, District Managers and Inspectors in the five regions served by CCAC.

An interview guide was used in conducting these interviews (see Appendix 1). The guide consisted of a number of open-ended questions designed to solicit information required to address the full range of issues surrounding objectives and indicators for Consumer Products Compliance Activities.

Our intention was not to conduct a standardized survey of a random sample of personnel in the Consumer Products Branch but rather to consult with and gather information from personnel in a range of positions in the Sub-activity. The study is intended as a descriptive/analytic examination of the compliance objectives and indicators of the Consumer Products Sub-activity.

## 1.4 ORGANIZATION OF THE REPORT

The following chapters present the findings of the study. In Chapter 2, the rationale for compliance activities is discussed. The literature on the rationale for enforcement approaches, the current compliance activities and resources are described, the rationale for each work element is discussed, and

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the priorization of work elements and activities is presented. In Chapter 3, the stated objectives of the Consumer Products Sub-activity are discussed, along with possible changes in the objectives. In Chapter 4, compliance indicators currently used are reviewed and assessed. Major considerations in modifying the indicators are presented in Chapter 5. Chapter 6 discusses approaches to improving the accuracy of compliance indicators and Chapter 7 reviews improvements in the dollars at risk measure. Alternative indicators of program effectiveness, and priorization of activities are also discussed in Chapters 6 and 7.

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#### 2 RATIONALE

# 2.1 REVIEW OF LITERATURE ON RATIONALE FOR COMPLIANCE ACTIVITIES

The main rationales for enforcement approaches for regulatory enforcement presented in the literature are the penalty system and the compliance system (c.f. Veljanovski, 1984, Reiss, 1984, Hawkins and Thomas, 1984).

The penalty system is the model most people associate with law enforcement. Its philosophy is that regulations should be complied with and that any firms not complying should be punished. The principal objective of the model, therfore, is to secure conformity with laws by detecting violations, determining responsibility, and penalizing violators in order to deter the recurrence of violations.

The enforcement instruments of the penalty system are prosecutions and sanctions. Veljanovski (1984), however, places primarily emphasis on fines. According to him, the likelihood of compliance is directly affected by the amount of the perceived sanction; deterrence occurs if the expected sanction exceeds the benefits from the violation. The perceived cost of violation is determined by the severity of the penalty and the probability of detection and conviction. Increasing either of these factors results in increased compliance. The latter factor is affected by inspection activities, a very costly method of deterrence. On the other hand, there are no costs associated with increasing fines. Fines deter merely through the fear of payment. Hence, the optimum sanction would consist of sizeable fines.

One criticism of the penalty system is that all violations are treated equally; there is no distinction between trivial violations and serious ones. However, in the case of Consumer Products, the courts are expected to account for this in setting fines. Penalties should be ranked according to the degree of harm the offense inflicted in order to ensure that violators have an increased incentive to avoid the most serious harmful offenses (Hawkins and Thomas, 1984).

The compliance system is a radically different model of regulation. It is primarily concerned with preventing violations and remedying underlying problems. It typically involves direct negotiations between the enforcement officer and the violator.

Enforcement officials concerned with cost-effective compliance have three devices available: negotiation, provision of information/education and threats of prosecutions. Negotiation between the inspector and the firm is motivated by the cost-savings to each party of not going to court. The information/education given by the enforcement officials can deal with legal obligations or the least-cost method of compliance. Finally, the inspector can also employ the threat of prosecutions in order to gain compliance. Although formal penalties are often low, there are other costs associated with the threat of prosecution, such as psychic costs to managers, third party sanctions, management time, legal fees and loss of community standing (Veljanovski, 1984).

From the perspective of the enforcement official the compliance model has several advantages: prosecution is costly and its effect on compliance is not

immediate; the avoidance of prosecution saves time and money and may lead to satisfactory results in more tangible ways; and possible conflicts are avoided. According to Veljanovski (1984), the likelihood of negotiated compliance is affected by three factors: the costs of prosecutions, the perceived probability of conviction and ignorance of the regulations.

The rationale for invoking legal sanctions under the compliance model is quite different than the penalty model. Unlike the latter, it is not so much to punish the violator but to signal the breakdown of negotiations and prevent future violations.

The literature presenting the penalty system and the compliance system predominantly contrast the two models. However, in reality, many organizations appear to be employing a combined approach. The Consumer Products Sub-activity employs several different approaches to achieving compliance. These activities and the rationale for them are discussed in the following sections.

2.2 DESCRIPTION OF CONSUMER PRODUCTS COMPLIANCE ACTIVITIES

For the purposes of this study, three key operational work elements have been selected. These are:

- . inspections and enforcement activities;
- . trader education and consumer information; and
- complaints and enquiries.

In addition to these key work elements, the Sub-activity conducts:

- . radio and television food advertisement reviews; and
- . print advertisement and label reviews.

The logic chart, shown in Exhibit 1 lists the outputs of these work elements and relates them to the objectives and intended impacts of the Sub-activity. This chart was developed as part of the Evaluation Assessment Study of Consumer Products Compliance Activities. Each of these work elements is described in greater detail below.

Inspections and enforcement. Inspections are conducted by generalist inspectors at all levels of trade - manufacturing, wholesale, import and retail. These inspections are conducted to determine whether or not products are in compliance with the relevant legislation.

Inspections of a given establishment may occur as result of:

 The inspection plan for a district or region. Regional inspection work plans are established within a 12 cell matrix of level of trade (manufacturing, importer/wholesale, retail) by commodity group (manufactured and retail food, textile, precious metals, non-food packaged). Total time allocated to these cells is

#### EXHIBIT I - CONSUMER PRODUCTS COMPLIANCE ACTIVITIES LOGIC CHART\*



\* taken from the Evaluation Assessment Study of Consumer Products Compliance Activities

based on priority. Specific establishments and products are then selected for inspection based on the work plan.

- 2. Follow-up to a previous inspection. Follow-up inspections may be planned as needed when problems are noted during an inspection.
- 3. <u>Referral</u>. If an inspection in one district detects a problem which should be checked in other districts or regions, a referral to the other areas is made.
- 4. <u>Commodity concentration inspections</u>. Specific commodities to be inspected may be identified by headquarters and the regions may be instructed to conduct inspections of establishments handling the commodity.
- 5. <u>Complaints</u>. An inspection may be conducted as a result of a consumer or trader complaint.

As a result of an inspection, enforcement activities ranging from voluntary trader correction to prosecution may occur.

There is considerable variation in the authority and scope of CCAC's inspection and enforcement activities related to the various regulations within the Traded Goods Component. For example, with respect to the Textile Labelling Act, CCAC inspectors have the power of search, seizure and detection of any textile articles, packaging of textile articles, or advertising materials believed to be in violation of the regulations. Inspection activities can involve all levels of trade in the textile industry. Similar powers exist under the Consumer Packaging and Labelling Act. On the other hand, in the case of the Fish Inspection Act and the Canada Agricultural Products Act, where the department shares responsibility for their administration with other federal departments, CCAC's enforcement activities are limited to inspections at the retail level and are oriented primarily to serving consumer interests.

<u>Trader education and consumer information</u>. Regional and headquarters staff participate in a variety of activities intended to provide both traders and consumers with information concerning the regulations. These activities include the publication of informational materials and displays, and presentation of talks or seminars at conferences and meetings.

<u>Complaints and enquiries</u>. The Consumer Products Sub-activity receives complaints and enquiries from both consumers and traders. Enquiries are usually answered by the provision of information, while complaints often result in inspections.

Radio and television food advertisement approvals. All radio and television food advertisements must be reviewed for compliance with the regulations and approved by CCAC before airing.

Print advertisement and label review. A print advertisement and label review program is conducted by the Consumer Products Sub-activity. Traders voluntarily submit labels or advertisements for a review of their compliance with the regulations.

#### 2.3 RESOURCES

A headquarters staff of 35 is responsible for program development, design and review, consultation with interested groups; and the providing of functional and technical advice to the field. Headquarters staff also review radio and television food advertisements. A field staff of 240 are responsible for planning and implementing the compliance strategy. Field staff conduct inspections, trader education and consumer information programs, respond to complaints and enquiries, and conduct label and print advertisement reviews.

The resources allocated to the Consumer Products Sub-activity have remained stable over the past three years, as shown in Exhibit 2.

The Consumer Products Sub-activity Multi Year Operational Plan for 1984/85-1988/89 indicates that the person-year allocation will remain stable at 275 person years. Deployment of these person-years by work element is shown in Exhibit 3.

Minimal revenue is generated by the Sub-activity through the collection of fees finder, the textile labelling and precious metals programs. The potential to generate resources through user fees is examined in the Evaluation of Inspections Final Report (see Annex, pp. 21, 35).

#### 2.4 RATIONALE FOR WORK ELEMENTS

The work elements of the Consumer Products Sub-activity are intended to address the strategic objectives which are to:

- protect against product misrepresentation through detection, control and prevention; and
- to enhance the ability of the consumer to differentiate among product choices.

The rationale for each of the key work elements of the Sub-activity is reviewed in the following sections. The assessment of the actual effectiveness of these work elements or the degree to which they achieve the objectives of the Consumer Products Sub-activity is outside the scope of this study. However, in reviewing the rationale for each work element we identify factors which may impact on or moderate the effectiveness of the work element relative to specific objectives. In identifying factors which may affect the achievement of the objectives, we have taken as given the current resource levels. The assessment of the appropriateness of the level and distribution of resources is not a focus of this study. ļ

In analyzing the rationale of work elements, we have defined "product misrepresentation" operationally as the state of products being in violation with the regulations. The adequacy and appropriateness of the current regulations are not under consideration in this study.

#### 2.4.1 Inspections and Enforcement

Inspections and enforcement activities are intended to detect, control and prevent product misrepresentation. Detection is to occur through the

# EXHIBIT 2 - CONSUMER PRODUCTS ACTIVITY EXPENDITURES (\$000) AND PERSON-YEARS\*

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	Expenditures (\$000)	Person-Years
1985-86 Estimates	12,064	275
1984-85 Forecast	11,983	27 5
1983-84 Actual	11,322	271

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\* Consumer and Corporate Affairs Canada 1985-86 Estimates Part III.

	PERSONS-YEARS		
WORK ELEMENT	1983/84	1984/85	1985/86
· · ·	Actual	Planned	Planned
Program Development	7.0	6.0	5.5
Complaints and Enquiries	9.9	11.7	10.9
Label/Advertising Reviews	2.6	3.0	4.0
Inspection	67.5	70.5	69.4
Enforcement	21.5	22.5	23.1
Education/Information	4.7	5.8	5.9
Other Direct	35.4	34.0	33.5
TOTAL - DIRECT	148.6	153.5	152.3
TOTAL - INDIRECT	80.7	79.0	82.9
AVAILABLE			
RESOURCES	229.3	232.5	235.2
overnead	48./	42.5	40.0
TOTAL AUTHORIZED			
RESOURCES	278	275.0	275.2

# EXHIBIT 3 - PERSON YEAR DEPLOYMENT BY WORK ELEMENT\*

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\* Consumer Products Sub-Activity Multi-Year Operational Plan for 1984/85 - 1988/89.

examination, sampling and testing of products. Inspections and enforcement activities control product misrepresentation either by obtaining voluntary compliance or correction of the violation, or through forcing compliance through seizure/detention or prosecution. The most frequently cited rationale for the inspection and enforcement work element is that it provides a "presence in the marketplace" and thus achieves the objective of prevention through deterrence.

Detection. Several factors affect the degree to which inspection and enforcement activities are capable of detecting noncompliance and economic fraud. The appropriateness of the priority tiering of inspection activities affects the degree to which noncompliance is detected. To the extent that inspections are targeted at products and establishments likely to be noncompliant, detection is enhanced. However, priorization of inspection activities reduces the likelihood of inspection of certain products and establishments, limiting detection of the noncompliance of these products and establishments. If the priorization system does not target inspections to areas of violation, the detection capability of inspection activities is limited.

The detection capability of inspections is of course limited by the ability of the inspector to detect noncompliance. The training, experience, knowledge and testing/measurement tools available, all may affect the ability of an inspector to detect noncompliance. Inspections are conducted by generalist inspectors who are responsible for the inspection of up to 200 different products and the enforcement of many different Acts and related sets of regulations. Training, experience and familiarity with the regulations concerning a product class enhance the ability of the inspector to identify noncompliance.

The availability of appropriate tools and tests to determine quality and quantity also affects the degree to which noncompliance is detected through inspections. For example, availability of an INAX analyzer can assist in the evaluation of precious metals for quality, while the absence of an accurate test to measure the quantity of pork in ground beef limits the assessment of ground beef for contents.

For some products, the ability of CCAC inspection activities to detect noncompliance is limited by inter-departmental agreements restricting inspections to the retail trade level (e.g. Agriculture Canada and Fisheries and Oceans Canada). Clear delineation of responsibilities relative to other departments is viewed as important in preventing duplication of effort in inspections (see Evaluation of Inspections Final Report, CCAC, 1985, Annex, p. 4). Cooperation of other government departments such as Revenue Canada -Customs and Excise, Agriculture Canada and Fisheries and Oceans is required to effectively detect and control some types of noncompliance. The cooperation of Customs is required to provide access to information to target inspections of imports. Effective enforcement for some products requires the follow-up of other government departments which are responsible for inspection at higher trade levels.

In summary, the degree to which inspections are targeted at likely areas of noncompliance, the competency of inspectors and availability of facilities to identify fraud where it exists, and the cooperation of other government departments all may limit the effectiveness of inspections in <u>detecting</u> product

misrepresentation. Little information has been collected to determine whether some or all of these factors do in fact limit the detection capability of inspections.

One approach to answering this question with respect to the targeting of inspections would be to compare the number and type of violations detected during inspections of randomly selected establishments with those detected during directed inspections. While one might assume that directed inspections would detect more violations than inspections of randomly selected establishments, this is not necessarily true. Currently, the product noncompliance rate reported during a commodity concentration, which usually involves a wider (less directed) sample of establishments, is higher than that reported as a result of directed inspections. There are several possible explanations for this observed difference in noncompliance rates:

- inspectors conducting commodity concentrations may spend more time on inspection and therefore identify more violations;
- inspectors may review the relevant guidelines either in anticipation of the commodity concentration or during the first few inspections and therefore be more familiar with possible violations;
- inspectors may be more motivated when they are all focussing on a single commodity;
- increased availability of testing services during a commodity concentration may result in more comprehensive inspections which are able to identify more quality violations; and/or
- more random selection of establishments may be more effective than activities in directed inspections.

Regardless of explanation, it should be noted that commodity concentrations appear to be more effective in detecting noncompliance than directed inspections.

<u>Control</u>. Another objective addressed by inspection and enforcement activities is the control of product misrepresentation. Inspection and enforcement activities are to control product misrepresentation by achieving correction or elimination of violations through either voluntary compliance by the trader or through enforcement (e.g. seizure, etc.). The effectiveness of inspection and enforcement activities in controlling product misrepresentation depends on the effective detection of violations and the ability to obtain correction or elimination of violations. Factors affecting effective detection were discussed earlier. The achievement of correction or elimination of violations may be related to: Ņ

- the provision of needed information during an inspection if violations are the result of a lack of trader knowledge;
- willingness and ability to prosecute or pursue serious enforcement actions;

- the response of the court to prosecution;
- the effective selection and matching of enforcement actions to violations and situations in order to achieve control; and
- the response of other government departments in pursuing enforcement which falls within their mandate.

<u>Prevention</u>. A final objective addressed by inspection and enforcement activities is the prevention of product misrepresentation. One of the most frequently cited rationales for an active inspection service is that an inspection/enforcement presence in the marketplace deters noncompliance. While there is general agreement that the threat of detection and enforcement is critical to the decision of some traders to comply, the actual deterrent effect of current inspection and enforcement activities is difficult to estimate. This is because of the lack of a comparison or baseline data on level of compliance which would occur without inspections. Even in geographic areas where the likelihood of inspection is low, establishments' compliance rates are affected by inspection at the higher trade levels and inspection of chain stores in other districts. Although the deterrent effect of inspection is difficult to measure, several factors may affect the level of deterrence achieved. These include:

- . the perceived likelihood of detection;
- . the perceived likelihood of conviction;
- the value of fines relative to the economic gain of noncompliance; and
- the perceived disadvantages of detection (such as bad publicity, inconvenience of correcting violations, and receiving follow-up inspections).

Models of the economics of compliance typically include factors such as these in estimating the economic value and/or likelihood of compliance (c.f. Chang and Erlich, 1985, Ashenfelter and Smith, 1979).

# 2.4.2 Trader Education and Consumer Information

The work element of trader education and consumer information, like inspections and enforcement, is aimed at the objective of detection, control and prevention of product misrepresentation. The provision of consumer information is intended to educate consumers concerning the regulations. This enables consumers to detect problems and to exert some control over product misrepresentation through complaints to the trader or to CCAC. The provision of information to consumers may also assist consumers in differentiating between product choices. Trader education is intended to prevent noncompliance by educating traders concerning the regulations and how these should be met. This compliance approach is based on the assumption that noncompliance is often the result of lack of knowledge, that traders are willing to comply and simply require information concerning the regulations. (Self-regulation has been identified in the Evaluation of Inspections Final Report, CCAC, 1985, Annex, p. 35-36, as a potential cost reduction approach for study). The degree to which trader education is effective in preventing noncompliance is dependent on:

- the degree to which lack of knowledge causes violations. If noncompliance is a conscious strategy, the result of a desire to obtain economic advantages, then education programs may have little impact;
- the adequacy of the programs in training traders concerning the regulations. In order to be effective the education programs provided must train traders successfully in the scope and detail of the regulations; and
- . the targeting and coverage of training programs. To be effective, educational activities must involve sufficient numbers of those traders who are lacking in knowledge. In some product categories and establishments there is a rapid turnover in businesses and management. In these cases, frequent educational programs are needed if they are to be effective.

#### 2.4.3 Complaints and Enquiries

Response to complaints and enquiries is designed to both detect and prevent product misrepresentation. The provision of information in response to enquiries is intended to prevent noncompliance in a fashion similar to that discussed regarding the consumer information work element.

Complaints, by generating inspections of specific establishments, may lead to the detection of noncompliance. The effectiveness of complaints in detecting noncompliance may be limited by:

- . the detection capability of inspections;
- the ability of consumers to detect problems (e.g. a consumer may notice short weighting or volume of a product but cannot easily identify the substitution of 12 kt. gold for 14 kt. gold);
- <u>consumer awareness of regulations and of CCAC</u>. District offices note that the volume and type of complaints and enquiries is greatly affected by publicity and topics raised in the media and on consumer talk shows; and
- the recording and analysis of complaints. Regions vary in the manner in which complaints are recorded and coded. If complaints are recorded and coded according to type and

product area, patterns in the complaints received may be useful in identifying general problem areas.

#### 2.5 PRIORIZATION OF WORK ELEMENTS AND ACTIVITIES

Priorization of activities both among work elements and among activities within a work element may occur. With respect to priority setting among work elements, trader education and show-cause hearings have been identified in the 1984/85-1988/89 Multi Year Operational Plan (MYOP) as a less costly means of achieving compliance than through direct inspection and enforcement. The number of inspections conducted is expected to decrease in 1984/85 as a result of an emphasis on prevention through trader education and on comprehensive inspections. Comprehensive inspections (also termed investigative inspections) examine not only labelling and quantity aspects of the product, but also the validity of all quality or composition claims. As a result, comprehensive inspections are more time consuming and may require extensive sample testing. For the inspection work element, several factors are used to set priorities, determine workload and allocate resources across product groups and trade levels.

Dollars at risk is used as a measure of seriousness of impact of noncompliance for a product class. It is defined as:

(% noncompliance) X (\$ consumption) X (seriousness factor)

It is calculated for each of 34 product groupings and is used to rank product classes for inspection priority as shown in Exhibit 4. These national rankings are considered by the Regional Offices in setting priorities for inspection activities along with other factors such as regional concentration of industry by level of trade, current marketplace problems in the region, emphasis on inspecting higher trade levels, and constraints regarding interdepartmental agreements (see Evaluation of Inspections Final Report, CCAC, 1985, Annex, p. 20, for a description of recent efforts to enhance effectiveness within the priority tiering system).

Within this tiered priority setting system emphasis is placed on:

- . inspecting at the headquarters level;
- selecting flagship stores (expansion of this approach has been identified as a way of optimizing inspection plans Evaluation of Inspections Final Report, CCAC, 1985, Annex, p. 55);
- avoidance of duplicate inspections of products already inspected at higher trade levels;
- . inspection of establishments with poor compliance records;
- inspection of products which cannot be readily examined by the consumer (e.g., bulk fruits and vegetables are a low priority while fruits or vegetables sold in closed cartons are a higher priority);

Rank	Product Class	Dollars at Risk (\$000's)
1	Women's wear	\$ 212,473
2	Dairy products	206,486
3	Grain and bakery products	195,642
4	Fresh fruits and vegetables	167,535
5	Non-alcoholic beverages	150,859
6	Alcoholic beverages	134,751
7	Entertainment articles	132,385
8	Fresh and frozen meats	130,312
9	Canned, frozen, dehydrated fruits and vegetables,	129.396
10	Men's wear	125,835
11	Major household textiles	116,509
12	Cosmetics and personal care supplies	65,970
13	Household furnishings and equipment	58,846
14	Canned, processed meat and poultry	54,009
15	Smokers' products	53,259
16	Freshwater and marine foods	52,931
17	Clothing accessories	49.756
18	Household cleaning supplies	33,229
19	Precious metal articles	32.075
20	Party foods	30,988
21	Fur garments	30,544
22	Home improvement	28,274
23	Puddings, gelatin desserts, spices and flavourings	23,007
24	Paper and plastic products	19,355
25	Fats and oils	14,945
26	Fresh, frozen, BBQ, poultry	14,170
27	Piece goods and notions	12,326
28	Infant's and children's wear	11,455
29	Pet supplies	11,127
30	Automotive products	9,818
31	Eggs and egg products	5,919
32	Minor household textiles	5,832
33	Specialty foods	553
34	Fur trimmed articles	<u> </u>
		\$ 2,319,571
	Food	1,311,503
	Textiles	533,186
	Precious metals	62,619
	Non-food	412,263
		\$ 2,319,571

# EXHIBIT 4 - PRIORIZATION BY DOLLARS AT RISK (1984/85)\*

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\* Obtained from Consumer Products Sub-Activity.

- inspection of products over which the dealer has direct control of compliance, such as products which the dealer imports, manufactures, packages, labels, or determines the net contents; and
- inspection of new establishments or establishments under new management.

#### 2.6 SUMMARY

In summary, within the Consumer Products Sub-activity a variety of activities are undertaken to achieve compliance. These activities are targeted based on a priority tiering system. The underlying rationale of these work elements or activities often combine compliance and penalty approaches. In addition, some activities are based on a preventive approach. In some cases the selection of approach is flexible and is left to the discretion of the inspector. For example, after identifying a case of product misrepresentation an inspector must choose the appropriate action to take. He or she may orient towards a compliance approach (eg. providing information and gaining agreement for trader correction) or towards a penalty approach (e.g. prosecution). The mandatory approval of radio and television food advertisements adopts a purely preventive approach, while the review of labels combines preventive and compliance approaches since the program is voluntary. The Consumer Products Compliance activities are directed at achieving the objective of detection, deterrence and control of product misrepresentation. However the achievement of this objective may be limited by factors specific to the activity.

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#### **3 OBJECTIVES**

There are several levels of objectives for the Consumer Products Sub-activity. The broad objectives of the compliance program administered by the Consumer Affairs Bureau are to:

- realize general objectives of the legislation;
- ensure consistent and uniform application of the law;
- ensure an approach to enforcement that is logical, consistent and fair, and sufficiently stringent to deter willful contravention of the law; and
- maximize compliance at minimum cost.

The first of these objectives is basically a statement of the overall goal of the program, while the latter three objectives concern the approach used and the manner in which this goal is addressed. The last objective, to maximize compliance at minimum cost, is a useful guideline only if either a goal level of compliance is established or a maximum budget for compliance activities is set. In practice this objective might be stated as - "to maximize compliance given the resource levels of Sub-activity."

3.1 STRATEGIC OBJECTIVES

The Consumer Products' strategic objectives are to:

- protect against product misrepresentation through detection, control and prevention; and
- enhance the ability of the consumer to differentiate among product choices.

These are the formal objectives of the compliance activities. In the following sections the clarity of these objectives, other unstated objectives and the degree to which the objectives are measureable, are discussed.

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## 3.1.1 Clarity

There appears to be general agreement amongst those involved with the Consumer Products Sub-activity that the first strategic objective is clearly articulated, well understood, and realistic. Some of those interviewed felt that the party protected, the consumer, should be added to the statement to avoid any potential confusion over the primary focus of the program. With this addition, the first strategic objective would be:

 to protect consumers against product misrepresentation through detection, control and prevention.

While consumers are viewed as the primary concern of the program, industry and business do derive benefits from the compliance activities. For example, inspection activities at the manufacturing level may protect a

wholesaler/retailer from product misrepresentation when ordering goods. Program objectives regarding industry are discussed in greater detail later.

The second strategic objective, to enhance the ability of the consumer to differentiate among product choices, is not well understood. It is not clear that any of the work elements or activities specifically address this issue. Activities related to the review of labels, and the inspection and enforcement of labelling regulations, and comprehensive inspections examining the accuracy of labelling information may prevent misrepresentation on labels and ensure that required information is provided and accurate. However, the ability of consumers to differentiate among product choices is dependent on many factors -- whether the information, ability to interpret it, and interest or motivation to use it. The objective, as currently stated, implies a responsibility not only to provide consumers with relevant information, but also to assist them in using and interpreting this information. Education in the use and interpretation of information is a responsibility of provincial educatio departments.

This objective may be more appropriately worded in terms of the provision of accurate information to assist consumers in making product choices as opposed to necessarily enhancing their ability to differentiate among product choices. A more appropriate wording of the objective would be:

 to assist consumers in making effective product choices through ensuring the provision of factual product information.

This is similar to the wording suggested at a recent meeting of District Managers.

This wording focuses the responsibility of the Sub-activity on the provision of factual product information. This objective can be clearly linked to the activities of label reviews, inspections for label violations, consumer education and the response to consumer enquiries.

#### 3.1.2 Unstated Objectives

The formal objectives of the Consumer Products Sub-activity are oriented towards consumers, congruent with the title of the Sub-activity. In spite of this emphasis on consumer protection and service, some concerns of business and industry are also addressed by the compliance activities. As noted earlier, those involved in lower trade levels are protected against product misrepresentation at the upper trade levels. In addition, an impact of the compliance activities is the promotion of equity and fair competition in the marketplace.

To the extent that the regulations are applied consistently and uniformly, and compliance with the regulations is attained, fair competition and equity in the marketplace are promoted. The Consumer Products Sub-activity also responds to complaints from businesses concerning suspected noncompliance of another business, again ensuring fair competition. Amongst those interviewed, many felt that these impacts were unstated informal objectives of the Sub-activity, which should be formally acknowledged. Thus, an additional proposed objective of the compliance activities is:

• to promote and ensure equity and fair competition in the marketplace through the detection, control and prevention of product misrepresentation.

What impact would the inclusion of an objective concerning industry have on the Consumer Products Sub-activity? In most situations the objectives of consumer protection and promotion of fair competition are not conflicting, since attaining compliance with the regulations should lead to the achievement of both of these objectives. The achievement of this unstated industry objective can be viewed as a secondary impact of the achievement of the other strategic objectives. However, the inclusion of objectives concerning consumers and industry may lead to conflict in some areas of program planning and management. Currently the priorization of inspection activities is based on the ranking of product class by dollars at risk. The dollars at risk value is based on a seriousness of infraction weighting. This seriousness weighting was derived from a survey of consumers. Industry weightings of seriousness may be quite different. If there were formal objectives concerning both consumers and the industry, a new method of priorizing activities that considers the potentially competing demands of these two groups would be needed.

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Targeting of activities by level of trade to achieve both consumer and industry objectives may also be problematic. Industry concerns may focus on the inspection of imports as the highest priority, while emphasis on inspections at the upper trade levels generally (including manufacturing as well as importing) may most efficiently protect consumers.

In summary, although the compliance activities benefit industry through the promotion of equity and fair competition, embodying this impact in a program objective will add another dimension to the planning and management of program activities.

#### 3.1.3 Measuring Achievement of the Strategic Objectives

Clear objectives and the indicators of their attainment are necessary not only to evaluate the degree to which the objectives are achieved but also to effectively manage the program. The first objective of the Sub-activity, to protect against product misrepresentation, can be measured through the use of indicators of compliance. To provide an accurate measure of the achievement of the objective, a valid and reliable indicator of the rate of compliance is needed.

The second objective of the Sub-activity, to enhance the ability of the consumer to differentiate among product choices, is currently neither clearly defined nor linked to specific activities. Because of this, it is difficult to identify indicators of achievement.

The proposed rewording of the second objective, to assist consumers in making product choices through the provision of factual product information, is less vague. This wording of the second objective clearly indicates a concrete measurable objective -- the provision of factual product information. The comprehensiveness of labelling regulations in requiring the provision of information relevant to consumer decisions, compliance with these regulations, and industry participation in voluntary labelling programs are all indicators of the provision of factual product information.

The assumed impact of this -- assisting consumers to make effective product choices -- is more difficult to measure. In order to assess achievement of this objective, "effective" product choice must first be defined. The effectiveness of a choice may vary with the situation and the consumer. A measure of the degree to which the information provided is relevant to product choice is also needed. Periodic consumer surveys would be required to obtain indicators of this aspect of the objective.

With respect to the potential third objective of the Sub-activity, to promote equity and fair competition through protection against product misrepresentation, the achievement of protection against product misrepresentation can be measured through the use of indicators of compliance. The achievement of this objective and the incremental effect of compliance activities on the promotion of fair competition and equity are very difficult to measure. Again objective criteria for measuring "equity" and "fair competition" would be necessary.

#### 3.2 COMPLIANCE OBJECTIVES

The specific compliance program objectives of the Sub-activity are to:

- maintain/improve product compliance rates;
- maintain/improve establishment compliance rates; and
- reduce the volume of complaints and enquiries specific to product choice.

These objectives can be linked to the strategic objectives of the Sub-activity and operationally define these strategic objectives. The maintenance/improvement of compliance rates is related to the strategic objective to protect against product misrepresentation, while the reduction of complaints and enquiries specific to product choice relates to the strategic objective to enhance the ability of consumers to differentiate among product choices.

In examining the appropriateness and adequacy of maintaining/improving compliance rates as a program objective, several questions are raised. First, is it reasonable to assume that given current resource levels that compliance activities have an impact on the level of compliance in the marketplace? While unequivocal proof of the impact of the program is not available, the program does appear to have an effect on compliance through deterrance, through detection and correction, and through prevention of violations. All of those interviewed believed that the program as currently implemented affects compliance in the marketplace. Another evaluation module, which is assessing the impact of the compliance activities, will provide more objective information on this question.

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A second question of concern regarding the objective of improving compliance rates is -- Can the level of compliance in the marketplace be reliably and validly measured? As described in Chapter 4, potential biases in the current compliance rates limit their usefulness. However, we believe that it is possible to obtain valid, reliable indicators of compliance in the marketplace. Alternative approaches are described in Chapter 6.

The third question which is critical to the evaluation of the objective to maintain/improving compliance rates concerns the ability to attribute changes in compliance to the program activities. Even though it may be reasonable to assume that the compliance activities have an impact on compliance in the marketplace, if other factors also affect compliance, the incremental effect of the sub-activity's compliance activities may not be identifiable.

In summary, if a reliable and valid measure of compliance in the marketplace is available and changes in compliance can be attributed to program activities, maintaining or improving product and establishment compliance rates are reasonable program objectives. The adequacy of current compliance indicators is discussed further in Chapter 4.

The program objective of reducing the volume of complaints and enquiries specific to product choice is linked to the enhancement of consumers' ability to differentiate products. However, the volume of complaints and enquiries specific to product choice is dependent not only on the frequency of consumer problems regarding product differentiation and choice, but also on the knowledge and awareness of consumers. All of the District Managers interviewed noted that the volume of complaints and enquiries fluctuates greatly and rises sharply following publicity in the media, informational presentations in shopping centres or any other advertising concerning the Consumer Products Sub-activity. Thus, a decrease in complaints may signal a decrease in consumer awareness and knowledge, as opposed to enhanced ability to differentiate among product choices.

#### 4 INDICATORS

Three main indicators are used relative to the program objectives. These are product compliance rates, establishment compliance rates, and dollars at risk. Several operational indicators of outputs or workload are also used. An MIS system has been recently developed and implemented in all Regions during the past year. This system inputs all inspection reports. It can provide information and summary reports on inspection and enforcement activities and may provide a variety of new indicators.

In the following sections each of the main indicators currently used in the Sub-activity is described and issues related to the use of these indicators are discussed.

#### 4.1 COMPLIANCE RATES

#### 4.1.1 Description of Compliance Measures

Two main compliance rates are calculated -- product compliance rates, and establishment compliance rates. Product compliance rates are computed by:

# # of units accepted + # units marginal (for net quantity only) X 100 # of units sampled

Separate product compliance rates are computed for quantity, quality and labelling violations. Establishment compliance rates are intended to be aggregate profiles of the various products inspected in the establishment. Inspectors follow a positive reporting system whereby every product inspected, whether compliant or in violation, is reported. Previous to the implementation of the MIS system, only those products inspected and found to be in violation were recorded.

# 4.1.2 Potential Biases in Compliance Rates

Both product and establishment compliance rates may be biased, i.e. systematically differ from the true or real level of compliance. In assessing the current indicators, we have identified potential sources of bias. Using an interview and document review approach we are not able to determine whether each specific potential source of bias actually occurs. Nor can we determine the degree of bias. Potential sources of bias are identified below.

Directed inspections. Most inspections are directed in that the choice of products and or establishments for inspection may be based on referrals from other regions, complaints, repeat inspections of noncompliant establishments, or priorization of products according to dollars at risk. Because of this targetting of inspection activities to identified problem areas, the noncompliance rate obtained may be inflated. In fact the degree of inflation of the rate may be an indicator of the effectiveness of the priorization and targetting approach.

<u>Concentration of inspections</u>. The concentration of inspection activities in certain areas and the tendency to conduct repeat inspections of a noncompliant establishment may produce a deflated non-compliance rate which overestimates the rate of compliance. Travel budgets do not permit an equal concentration of inspections in all areas according to industy or population concentration. Inspection activities are often more concentrated in areas near a Consumer Products office. This may result in a stronger presence in the marketplace in these areas and greater deterrent of noncompliance. Since areas where inspection activities are concentrated may be overrepresented in the compliance data, the overall rate may be biased.

The tendency to reinspect a previously non-compliant establishment may also bias the compliance rate. If compliance activities and interventions are effective, compliance should be higher on reinspection. Closely inspected establishments, whether as a result of a reinspections or concentration of inspections in the area of the establishment, would be expected to be more compliant.

Concentration of inspection activities may also occur relative to the brands of products examined, similarly biasing the results.

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Recording Bias. Differences in the recording of compliance by inspectors may affect the reliability and validity of the compliance rate. With the recent implementation of the MIS system, the Sub-activity adopted a positive reporting system in which all products examined, regardless of whether they are compliant, are to be recorded. Previous to this, inspectors only recorded those products inspected which were found to be noncompliant. The conversion to a positive reporting system has increased the amount of recording and paperwork required of inspectors. Some inspectors still may tend not to record products in complete compliance, while others may report every product inspected. There may also be differences in interpretation of what is meant by an "inspected product". An inspector may quickly look over the labels of several products and on the basis of this select some for a more indepth inspection. Some inspectors may consider all of the products examined to have been "inspected" and therefore record them, while others may consider only the products examined in depth to have been "inspected". There may also be a tendency on repeat inspections not to record the positive compliance of products noted during the previous inspection. Whether any of these recording biases actually occur is not known, however it is important to note that there is the potential for them to occur.

Quality of the Inspection. The compliance rate is affected by the accuracy, knowledge and diligence of the inspector conducting the inspection and his interpretation of the regulations. As noted earlier, noncompliance rates found during commodity concentration inspections are usually higher than those obtained during regular directed inspections. One explanation of this difference is that the inspector is more familiar with the regulations during a commodity concentration and is particularly motivated to identify violations of the commodity. This suggests that the compliance rates obtained during the normal directed inspections may underestimate noncompliance.

Monitoring. The accuracy of inspections and of recording of compliance are usually monitored through the review of inspection reports. In reviewing inspection reports, the District Manager notes the complexity of violations found, the consistency of violations found by different inspectors in different outlets of the same chain store and the completeness of the information recorded. In some districts, either the District Manager or Operations Supervisor periodically accompanies an inspector on his rounds, but there are no requirements for this. Shadow re-inspections in which an establishment is reinspected to monitor the accuracy of the inspector and the recording of inspection results, are not conducted.

<u>Resources for Inspections</u>. Variability in the availability of resources and tools for inspection result in inter-inspector, inter-district, or inter-regional variations in what is identified as noncompliant. The availability of resources for testing samples may affect the accuracy of the inspection. Limitations on the resources available for detailed or complex testing of products may result in a bias towards the identification and recording of easily recognized noncompliant products and the identification of easily recognized types of noncompliance (e.g. labelling violations as opposed to quality violations). Limitations on the resources available to purchase samples for testing may similarly bias the compliance rates. Moreover the availability of technology to detect violations may bias compliance rates. Products for which a detection technology is not available may have inflated compliance rates.

Inspector Discretion. The inspector exercises a level of discretion in the selection of establishments for inspection and in the selection of products to be inspected. The way in which this discretion is used may affect the compliance rates observed.

Manipulation. The compliance rates are potentially open to manipulation by inspectors through reporting biases or the selection of establishments and products for inspection. By selecting establishments and products which are more likely to be in compliance, the inspector could potentially inflate the compliance rate obtained. Compliance may also be manipulated at higher levels of management. Through modification of the definition of compliance, recording and calculation of compliance rates and interpretation of regulations, increases or decreases in compliance may be effected by upper management.

#### 4.1.3 Usage

The compliance rates are a widely used indicator in the Consumer Products Sub-activity. Product compliance rates are one component of the dollars at risk measure. Compliance rates are currently used as a proxy measure of the likelihood of an infraction occurring and so guide the targetting of inspections. Product compliance rates calculated at the Regional level assist in the priorization of activities. Establishment compliance rates are used when selecting establishments for inspection. Compliance rates are potential indicators of consumer protection, but do not necessarily reflect consumer satisfaction.

Several factors limit the use and interpretability of compliance rates as an indicator of the effectiveness of the compliance activities and as measure of consumer protection. First, as described earlier, the current compliance measures may be biased in a variety of ways. Thus, the compliance rates can not be assumed to be valid or reliable indicators of the level of adherence to the regulations. Second, the current compliance measures are susceptible to manipulation by inspectors. Third, compliance is affected by many factors outside of the control of the Consumer Products Sub-activity. For example, a change in the economy may stimulate a change in the compliance rate. A change
in the regulations may also cause a sudden change in the compliance rate. Because of these factors, the amount of change considered to be "significant" (as oppposed to a normal fluctuation) in a given product compliance rate is not agreed upon, goal levels of compliance are not stated, and decreases or increases in the compliance rates are not readily interpretable. For example, an increase in reported compliance may reflect:

- a true improvement in compliance;
- a change in reporting bias;
- decreased diligence of inspectors in identifying problems; or
- a reduction in complaints due to lack of knowledge of the regulations.

A decrease in compliance may reflect:

- a true decrease in compliance;
- improved targetting of inspections towards offenders;
- a change in reporting bias; or
- a change in the economy.

Even the compilation of data on compliance over an extended period of time will not eliminate inherent biases, nor increase the interpretability of the compliance rates as currently calculated. In order to obtain a valid and reliable measure of the level of compliance with the regulations in the marketplace: þ

- either a representative sample of establishments and products should be inspected or there must be some correction for bias in the selection of establishments and products;
- consistent, comprehensive inspections should be conducted by an inspector who is well trained and knowledgeable of the regulations;
- the results of the inspection should be consistently and accurately recorded; and
- the inspection process should be closely monitored and resistant to manipulation.

Under these conditions, the compliance rates obtained would reflect the level of actual compliance in the marketplace, and changes in the rates would reflect true changes in adherence to the regulations. In order to use these compliance rates as indicators of program effectiveness, however, changes in the compliance rates and the level of compliance attributable to the compliance activities must be identifiable. In the ideal, this would require comparison or baseline data on the level of compliance in the absence of compliance activities, in order to identify the induced benefits or effects of the Sub-activity on the level of compliance and to discriminate between changes in compliance as a result of the compliance program and changes resulting from other factors. Where this approach is not feasible, comparisons of establishments receiving different levels and types of inspection and enforcement activity may provide some information on program impacts.

### 4.1.4 Compliance Rate Goals

If a reliable and valid measure of compliance were available, this measure could be used as an effectiveness measure and could be used to establish target compliance rates. The attainment of 100% compliance is not necessarily the ultimate or optimal target level.

The goal of a regulatory or enforcement agency is to obtain compliance with its particular regulations. For such organizations to try and obtain 100 percent compliance, however, is not perceived as being feasible or cost justified. Instead, agencies should strive for an optimal level of compliance/deterrence. Two ways of determining such a target level, often cited in the literature, are resource availability and cost justification.

In the first approach, the degree of compliance obtained is viewed as being a factor of the availability of resources. Funding, to achieve compliance, is divided between rule making costs, inspection and enforcement costs, and industry compliance costs. It is perceived that the larger the available resources, the higher the compliance rate. Regulatory or enforcement agencies, however, are normally granted resource allocations which limit the level of compliance which can reasonably be achieved. These budgets essentially establish a target level of compliance that society believes it can afford.

Another method of establishing a target level of compliance/deterrence is through cost justification. A cost is not perceived to be warranted if the prevention of an offense costs the enforcement agency and the trader more than the harm the violation would impose. For example, agencies should not spend two dollars in enforcement (or compliance costs imposed on the private sector) to prevent only one dollar of damage. While a useful approach in theory, it is difficult to apply in practice since the harm of a violation often difficult to quantify in monetary terms.

In order for enforcement or regulatory agencies to employ cost justification, they need to examine the costs associated with preventing an offense. In particular, agencies need to consider two problems in the way they execute laws: that they do not take into account, explicitly and fully, the costs they impose on the activities or persons regulated; and that they do not employ appropriate methods for determining the extent of enforcement.

An appropriate scale of activities and an appropriate target level of compliance may be established by attempting to balance marginal costs and marginal benefits. If enforcement activities focus first on major violations that are easy to detect and prove, followed by minor violations that are more difficult to perceive, the cost of detecting violations would, thus, increase between the two types of violations as more effort would be required in the latter. Moreover, the benefits received from detecting major violations would diminish with respect to minor ones. As a result, as the number of violations detected increased, the marginal cost of deterring violations would increase and the marginal benefits would decrease. A target compliance level would be determined at the intersection point of these two factors.

Specific compliance targets are not currently used in the Consumer Products Sub-activity. Meaningful targets may only be established with a reliable, valid measure of compliance which is resistant to manipulation and other biases.

### 4.2 DOLLARS AT RISK

### 4.2.1 Description of Dollars at Risk

Dollars at risk is a measure of the value of non-compliant goods in the marketplace. For each of 34 product groups it is calculated as:

(% noncompliant) X (\$ consumption) X (seriousness factor).

The percentage of goods inspected found to be noncompliant is obtained from the MIS system. The value of the product consumed is obtained from Statistics Canada family expenditure surveys of consumers. The seriousness factor is intended to reflect the relative seriousness to consumers of a particular type of violation (quantity, quality, labelling) in a product. These seriousness weightings were derived from a consumer survey conducted in 1982.

### 4.2.2 Measurement Issues - Dollars at Risk

The measurement of dollars at risk is dependent on the integrity of the three factors on which it is based -- noncompliance rate, consumption data, and seriousness weighting -- and on the computation formula used to combine these factors.

As noted earlier, there are many potential biases in the current measurement of noncompliance rates. Dollars at risk for a product category is computed using the noncompliance rates for quality, quantity and labelling. Any biases in these noncompliance rates are then reflected in the dollars at risk measure.

The consumption data for product categories are based on the Statistics Canada Expenditure by Family Income Report which is scheduled to be undertaken every two years. There are several problems with the consumption data.

The consumption data is sometimes several years out of date. The consumption data currently in use was based on a 1982 survey. The last previous survey was in 1978. Thus, the consumption data often does not reflect current levels of consumption. This is especially true of products which may have shown large recent changes in consumption (e.g. entertainment articles such as VCRs).

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The computational formula for dollars at risk assumes that the full value of product at risk is lost if there is an infraction. This is rarely the case. For example, if a consumer purchases a jar of oil labelled "olive oil" which is actually corn oil, the jar of oil may still be used by the consumer. The value lost is the difference in value between the jar of corn oil and a jar of olive oil, and not the full price of the product. A more accurate measure of damage from noncompliance would consider the market value of the noncompliant product and other costs of noncompliance to product consumer. In the Evaluation of Inspections Final Report (CCAC, 1985, Annex, p. 58) the possibility of using benefit/cost or trade-offs analysis in determining the allocation resources to inspection activities for product categories. Stigler (1970) using an example of fraudulent labelling of textiles suggests the following approach:

> "The damage to the consumer from the purchase of a mislabeled textile could be estimated, and will obviously vary with the mislabeling (assuming that the legal standards are sensible!). The difference between market value of the true and alleged grades is one component of the damage. A second and more elusive component is the additional cost of deception (earlier replacement, skin irritation, and so forth): The consumer who would not have purchased the inferior quality at a competitive price had he known its inferiority has suffered additional damage. Thus the measure of damage is the amount a consumer would pay to avoid the deception, that is, the value of the insured correct quality minus the value of the actual quality (Stigler, 1970, p. 532-533)."

The product categories used in computing dollars at risk have been defined by Statistics Canada. The division and size of categories has a major impact on the priority within the 34 product group list. Merging of several categories such as fresh fruit and vegetables with canned, frozen dehydrated fruits and vegetables, honey and maple products would create a new category with a priority rank of 1 as opposed to rankings of 4 and 9 respectively.

The seriousness weightings, like the consumption data, are based on a 1982 survey of consumers. This study has never been updated, thus any changes in consumer concerns over the past four years are not reflected in these weightings.

There is limited variation between the seriousness weightings for different products and types of violations (quality, quantity, labelling). The reason for this is not clear. It is possible that the specific infraction (e.g. mismarking 10 KT gold as 14 KT), as opposed to the general type of violation (quality), is more relevant to consumer judgements of seriousness.

### 4.2.3 Usage

Dollars at risk is used primarily to rank the 34 product categories for priority tiering and targetting of inspection activities. It is also currently referred to as a measure of program effectiveness, in formal documentation.

<u>Priorization</u>. Dollars at risk is used to rank the 34 product groups on a national basis, however the planning an implementation of the compliance strategy occurs at the regional/district office level. While the general ranking of product categories by dollars at risk nationally is considered in planning the compliance strategy at the regional/district level, the targetting and priorization of activities is primarily determined by the regional concentration of industry by trade level and the recognition of marketplace

problems in the district. Dollars at risk calculated on a regional level would be more useful in priority tiering retail inspections at the regional level, though the concentration of industry by level trade must still be considered if inspections at the upper trade levels are to be emphasized.

Effectiveness measurement. The dollars at risk measure is generally viewed as a measure of the benefits of compliance and therefore the compliance activities directed at ensuring compliance. The value of this as a measure of program effectiveness is limited by potential bias in the compliance rates, problems with the information on consumption value and seriousness, and the difficulty of identifying the induced and direct benefits attributable to the compliance activities. The only component of the dollars at risk measure which the compliance strategy can be expected to effect is the noncompliance rate. If used to track program effectiveness over time, dollars at risk could show a steady increase in spite of steady improvements in the compliance rates. This would be the result of increases in consumption offsetting decreases in noncompliance.

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### 4.3 OUTPUT INDICATORS

### 4.3.1 Description of Output Indicators

A variety of operational indicators of output are compiled. These include:

- number of inspection hours;
- number of inspections;
- number of complaints and enquiries;
- number of advertising reviews;
- number of label reviews; and
- number of various enforcement activities.

There is the potential to obtain additional output measures from the MIS system.

### 4.3.2 Usage

The output indicators are used to gauge the volume of work handled by the Sub-activity and to plan and target work elements. For 1985/86 - 1988/89 planning estimates are to:

- maintain the annual number of inspections at 35,000;
- maintain the number of complaints and enquiries at 84,500;
- increase the number of advertising reviews by 4% to 16,500; and

increase the number of label reviews by 1% to 15,000.

The output measures also provide an estimate of and track the work performed by inspectors. A shift of emphasis to performing fewer inspections but conducting more in-depth inspections can be tracked by examining the hours of inspection time and the number of inspections conducted.

These output indicators are not indicators of the true effectiveness of the program. They reflect the volume of activities performed and not the quality of the activities or their impact or effectiveness. More detailed analysis of work procedures relative to these indicators is needed if judgements concerning efficiency or effectiveness are desired. The investigation of work standards and methods was suggested in the Evaluation of Inspection Activities Final Report (CCAC, 1985) as an approach that might be used to identify potential ways of increasing efficiency or decreasing costs.

In the absence of accurate effectiveness measures there is often a temptation to use output indicators as measures of program effectiveness. As Direr (1980) notes there is a danger in using output indicators as proxies of effectiveness:

"... the measurement of regulatory goal attainment presents formidable problems of estimating deterrent impact and valuing social benefits. Those difficulties impel the regulator to adopt more readily calibrated performance standards as proxies for his ultimate objective. As students of organization have repeatedly observed, over time those proxies tend to displace the ultimate objective as the organization's true goal". (p. 275).

Thus, while output indicators provide useful information on the volume and type of activities undertaken, they are most appropriately used to track work performance and not to judge effectiveness.

### 4.4 SUMMARY

A variety of indicators are currently available and used within the Consumer Products Sub-activity. Compliance rates as currently measured do not provide a valid, accurate estimate of compliance in the marketplace or of program effectiveness. Several problems with the calculation of dollars at risk also limit its utility as a measure of program effectiveness and or as a measure of the benefits of the program. Output indicators can track the workload and productivity of the Sub-activity but do not indicate the quality of performance or the effectiveness of these activities. In the following chapter, improvements to these indicators are discussed and alternative indicators examined.

### 5 MAJOR CONSIDERATIONS IN REVIEWING AND MODIFYING THE INDICATORS

In reviewing and assessing the current indicators and identifying alternative improvements in the indicators, several factors must be considered. The objective of this study is to assess the current objectives and indicators, identify ways of improving the indicators and suggest any new indicators which are required. We have assumed in reviewing and assessing the compliance indicators the continuation of the current organization and orientation of the program. In order to be useful the recommended changes in the indicators should be realistic and developed within the context of the program. Thus, factors such as resource constraints, the objectives of the Sub-Activity, the availability of information, and other factors should be considered. These major considerations are described below.

Resources. The Sub-Activity has experienced no sizeable increases in resources over the past five years, yet number of establishments to be inspected and total dollars of consumption of consumer products has increased during the same period. The level of activities undertaken are limited by the resources available.

The resources available for measurement activities are limited. In developing indicators attempts should be made to minimize the resources required. One way of doing this is to integrate their measurement with the work elements of the Sub-activity.

Objectives. The objectives of the Sub-Activity, to prevent product misrepresentation and to assist consumers in making product choices, should be considered when revising the indicators. First, indicators should be developed that shed light on whether the Sub-activity is attaining these objectives and guiding management decisions appropriately by providing information on program effectiveness. Second, the measurement of the indicators should not hinder achievement of the objectives.

Measurement activities which divert resources from enforcement activities may reduce the effectiveness of the program. Although an ideal set of indicators might be identified, if their accurate measurement consumed all of the resources of the program, these indicators would be of little value. Under these conditions the program would function to monitor noncompliance but not enforce the regulations, or achieve the program objectives.

Need for Indicators. Indicators are needed for a variety of purposes:

- to guide management decisions concerning the allocation and targetting of resources;
- to evaluate staff performance;
- to measure program effectiveness with respect to objectives achievement;
- to measure the broad benefits of the program; and
- to monitor the volume of work performed.

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There should be a clear rationale for every indicator. Both the need for the indicator, how the indicator is to be used in addressing this need should be justified.

Availability of Information. In some cases the indicators feasible for the Sub-activity are limited by the information available. Some types of information are difficult or very expensive to collect. The availability of information and feasibility of collecting information which is not readily available must be considered in developing new indicators and refining the current indicators.

<u>Cooperation of Other Government Departments and Other Levels of</u> <u>Government</u>. The development of some indicators requires the cooperation of and access to information of other government departments. For example, Statistics Canada provides information used in the calculation of dollars at risk. Access to this information is a prerequisite for calculating this indicator.

Management Information System (MIS) Capability. The Sub-activity has recently implemented a MIS system which records inspection/enforcement data. The potential of this system as source of information and a medium for data collection should be taken into account when modifying current indicators or developing new indicators. It is more efficient to utilize the MIS system as a source of data and a mechanism for data collection than to establish a separate data collection system for new indicators. Thus to the extent possible, new indicators and improvements to the current indicators should be developed in the context of the MIS system. There are plans to review the MIS system after has it has been operational for at least one year. Likely future changes in the system must also be considered when developing indicators. In addition, the planned review of the MIS system may provide a checkpoint at which modifications in the system can be made to provide new or improved indicators.

### 6 IMPROVING COMPLIANCE INDICATORS

In this chapter, improvements in the current compliance indicators are identified and discussed.

### 6.1 NEED FOR AND USES OF COMPLIANCE RATES

Information on the actual rate of compliance for products and establishments in the marketplace is needed to assess the effectiveness of the compliance activities and to assist in setting priorities. This information may be used:

- as one portion of dollars at risk measure (including data on consumption and seriousness of violations) to evaluate the general impact of the program;
- . as part of a dollars at risk measure to establish program priorities;

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- . to evaluate the effectiveness of specific compliance activities;
- . to target activities at the district level towards product/establishments with low compliance.

The need for measurement and use of an indicator of dollars at risk which includes data on compliance is discussed in the following chapter. In addition to being used to calculate dollars at risk in order to evaluate the effectiveness and guide activities at the national level, compliance rates may be used to evaluate effectiveness and target activities at the district level.

Two alternative ways of presenting compliance rates which may be useful in evaluating the effectiveness of activities at the district level are:

- time series of product compliance rates; and
- time series of establishment compliance rates.

Presentation of this information in graphs would provide a picture of the trends and changes in compliance for specific products or activities. Seasonal fluctuations in compliance would also be identified. Such charts could provide useful feedback to Inspectors and District Managers on effectiveness and could be used to identify priority areas where noncompliance is increasing. Actual compliance level, expected compliance level (i.e. the compliance level that would be expected if current trends in compliance continue with no intervention) and targetted compliance levels could be identified on the charts.

Some of the difficulties involved in establishing compliance targets were discussed earlier.

### 6.2 IMPROVING COMPLIANCE MEASUREMENT

In order to provide an accurate measure of program effectiveness and to provide interpretable information on product and establishment compliance trends, a compliance indicator is needed which reliably and validly measures the rate of compliance. In the following sections possible improvements in the measurement of compliance are discussed. Included are alternative approaches for reducing the potential bias in current indicators, for assessing and correcting for bias, and for preventing bias.

In many cases several alternative approaches are presented. The advantages and disadvantages of different alternatives are discussed. The selection of a specific alternative may depend on many factors -- the resources available, the priorities and goals of management, the costs of measurement, etc.

In many instances additional information is needed and further research is recommended in order to evaluate the feasibility, costs, and benefits of different alternatives.

Several approaches may be taken to improve the compliance indicators. These include:

- <u>Monitoring</u> more consistent monitoring and use of new methods of monitoring;
- . Training improved/increased training of inspectors;
- . <u>Resource review</u> identification of products or areas where compliance cannot be accurately measured; and
- Selection for inspection correction or avoidance of selection bias.

Each of these approaches is outlined in greater detail below.

### 6.2.1 Monitoring

Several types of potential bias in the compliance rates may be addressed through effective monitoring of the inspection process. Monitoring of inspections may:

- ensure more consistent and higher quality of inspections;
- ensure more consistent recording of results;
- provide a measure of the accuracy of inspections;
- reduce the potential for manipulation; and
- in some cases improve compliance.

Various monitoring approaches are described below. Included are both monitoring approaches and additional approaches which are either new or utilized inconsistently.

Review of inspection reports. The review of inspection reports can provide information on the complexity of violations identified, the completeness of recording on the report, consistency of violations found by different inspectors in different outlets of the same chain store, and the

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consistency with which enforcement actions are selected in response to particular violations. This type of monitoring is currently conducted by the District Managers in all regions. There is no formal recording of the results of this review. Although useful, the review of documents does not permit a direct review of the quality of the inspection or the consistency of recording. In reviewing the reports, these can only be assessed relative to the reports of other inspectors, and not relative to the actual inspection or independent standards of quality.

Rotations of Inspectors. An informal method of monitoring inspector accuracy is to occasionally rotate inspectors between inspection areas or establishment lists. This permits comparison of overall violation rates for inspection areas between inspectors. This approach is used to a limited extent in the larger district offices. Specific inspection areas or establishment lists are not defined in every district, limiting the applicability of this approach. In area offices staffed by only one officer, rotation is obviously not possible. It should be noted that occasional rotation of inspectors, while preventing inspectors from becoming so familiar with those inspected that objectivity is jeopardized, also prevents the building of a continuous relationship between the inspector and establishment managers which may assist in obtaining compliance through education and cooperation.

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Accompaniement Inspections. An alternative monitoring approach is to conduct accompaniement inspections during which the District Manager or Operations Supervisor accompanies an inspector on his rounds and assesses the accuracy, quality, and completeness of the inspections and the inspection reports. Although the policy of the Sub-activity is to conduct accompaniement inspections resource levels restrict the frequency with which such inspections are conducted. The approach is periodically used in several regions. While it provides for direct assessment of the inspection process, the awareness of inspectors of the monitoring procedure may affect their behavior while being observed. Thus, the procedure may overestimate the quality and accuracy of the inspection, since inspector motivation is probably optimized. The awareness of the monitoring is not likely to affect inspector knowledge, which can be accurately assessed by this procedure.

<u>Shadow re-inspections</u>. Shadow re-inspections, in which an establishment is reinspected after a normal inspection has been conducted, avoid the problem of inspectors temporarily modifying their behavior because of awareness of the monitoring. Shadow re-inspections may therefore provide a more realistic assessment of the inspection and recording activities. If conducted without prior warning and unpredictably, monitoring procedure may have a general effect on inspection activities -- increasing motivation, consistency, and detering manipulation and biased recording of inspection results. However, shadow inspections may also pose problems regarding staff acceptance of monitoring and inspector morale, by generating resentment in inspectors.

Shadow re-inspections may also affect traders. Immediately following an inspection at the manufacturing level, a trader may feel "safe" from inspection and may be more likely to substitute ingredients or violate the regulations. Shadow re-inspections would detect and discourage this. Monitoring of this type, however, may be objected to by traders on the grounds that they are being "harassed" by inspectors, and may generate an industry perception of duplication of government efforts.

The shadow re-inspection process must take into account the specific sample obtained by the inspector and on site corrections made by the inspector. The samples inspected from a production line may be markedly different even if re-inspection is conducted only a few hours after the original inspection. This should not be interpreted as an indication of lack of accuracy in the first inspection. Corrections are frequently made during the inspection. Again the re-inspection process should allow for recording of this.

Inspection simulation. Another approach to monitoring the inspection process and measuring the accuracy of inspections in identifying violations is to hold period inspection simulations where inspectors examine the same products, record their findings and decisions, and then discuss their results. This type of simulation, which as an integral part of the training program, provides information on accuracy and agreement between inspectors and provides a forum for discussing variations in inspection approach and improving consistency between inspectors. This approach may be especially useful in improving inspection techniques on problem products. Again, the awareness of inspectors that accuracy is being assessed and the competitive demands of the situation likely result in more thorough inspections during the simulations.

In summary, there are several possible alternative approaches to monitoring. These approaches vary in cost, with the review of inspection documents being the least expensive approach and inspection simulations and shadow re-inspections the most expensive. Regardless of the approach used, monitoring is important in ensuring consistency and quality in inspections. Recording the results of monitoring provide information on accuracy which can then be used to adjust compliance rates based on inspections for inter-inspector variability. The conduct of shadow reinspection provides the most realistic assessment of inspector performance and may have a deterrent effect on inspector manipulation or bias in recording inspection results.

### 6.2.2 Training

Another approach to preventing bias resulting from variation in the quality of inspections is to provide increased training of inspectors. All inspectors participate in a national training program. Inspectors are responsible for a wide variety of products and the enforcement of many different legislative acts. Some variations in inspection may be due to a lack of familiarity with the regulations or differences in interpretation. Ongoing training may correct these problems. Monitoring activities can be useful in identifying gaps in inspector knowledge, which are to be expected when so many different products and regulations are involved.

### 6.2.3 Resource Review

Variability in the availability of resources and equipment for inspections and the lack of availability of appropriate testing equipment may bias compliance rates based on inspection activities. A resource review would provide a method of identifying geographic areas and products whose compliance rates are likely affected. A resource review would consist of covening a panel of experts to review the product categories of concern in the Consumer Products Sub-activity and identify areas where either:

- current tests are not capable of detecting the major types of fraud;

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- lack of availability of testing equipment limits violation detection; or
- lack of resources to purchase samples limits violation detection.

In the latter two instances the resultant degree of underdetection can be measured in controlled studies and used to adjust obtained compliance if a more accurate estimate of the level of compliance is desired. This type of correction is useful if a valid measure of the level of compliance is desired. However if concern is primarily centered on detecting changes in compliance, as long as the resources available remain stable, changes in compliance could be reliabily detected without any correction for the measurement of the absolute level of compliance.

### 6.2.4 Selection for Inspections

The directed selection of establishments and products for inspection and the concentration of inspection activities in certain areas results in measured compliance rates which cannot be assumed to reflect the true level of compliance in the marketplace. The selection approach used in identifying products and establishments is based on priority tiering to direct activities to areas of greatest need. Any changes in the method used to priorize and direct activities, in turn affects the measurement of compliance. Alternative approaches to priorization are discussed in later sections. In the following sections alternative approaches to correcting for or avoiding selection bias are presented.

Correction of compliance rates for directed selection. The current priority tiering system is designed to direct inspections toward noncompliant products and establishments. The probability of being selected for inspection is not equal for all establishments, and the compliance rates obtained are not representative of the total population. More accurate compliance rates could be calculated if the computational formulae for compliance took into consideration the over-representation of certain types of establishments and products, by weighting the compliance results obtained from inspections according to the proportion of the population of which the selected product/establishment is representative. For example, if in-store bakery products of major chain stores are inspected and bakery products of a small corner bakery are inspected, the results of each of these inspections would be weighted according to the market share of consumption for each type of product by establishment and a compliance rate for the product in the market place calculated. Although data is available on consumption by product and volume of trade by establishment, information on consumption of products from different establishments is not readily available.

This approach also assumes that we have an appropriate basis on which to weight the findings. The above examples assumes that the chain store inspected is representative of all chain stores. If the particular chain store location inspected was selected because of recent change in manager, then the compliance may be significantly lower than in other locations of the chain store.

In order to appropriately weight the compliance rates resulting from directed inspections one must:

- be able to identify that portion of the population of which the selected product establishment is representative (these should be unique, non-overlapping groupings);
- have background information on the population of establishments and products covered by the legislation, including marketshare of consumption of products by establishment type; and
- inspect a sufficient number of products and establishments representative of various portions of the population to obtain an overall compliance rate for the marketplace.

The feasibility of this approach to correcting compliance rates for directed selection of establishments requires further study. A review of Statistics Canada data together with data from major trade associations may provide a method for estimating consumption of products by establishment types. Advantages of this approach to correcting compliance rates include: low cost, lack of interference with priority tiering of activities, and ability to be integrated in the MIS system.

Identifying the source of an inspection. While many inspections are directed at establishments thought to be high risk, scheduled inspections of all establishments are also conducted. Scheduled inspections are conducted to ensure that every establishment is inspected on a regular basis, i.e. every 1 or 2 years depending on the district. Large establishments, upper trade level establishments and priority establishments are scheduled for more frequent inspections. The MIS system permits the coding of the source of inspection -scheduled, referral, reinspection or follow-up inspection, complaint or enquiry, commodity concentration, etc. Coding this information would enable the calculation of compliance rates based only on the results of scheduled, that is non-directed, inspections. The findings of routinely scheduled inspections can be weighted according to establishment size, (which is currently coded as small, medium or large according to square footage of space) to provide a more accurate measure of compliance in the marketplace.

This approach has the advantage of using compliance data currently collected, with minor additional coding on the MIS system. The only additional information required is the general size of the establishment.

<u>Probability sampling</u>. An alternative to attempting to correct for bias due to direction or select only those inspections currently conducted which are not directed, is to implement a separate selection and inspection produce for monitoring compliance in the marketplace. Enforcement focussed inspection activities would still be priorized and directed at high risk establishments, but a separate series of inspections would be conducted to measure compliance in the marketplace. These measurement focussed inspections would be based on a probability sample of establishments. Using this approach a certain percentage of the inspections conducted would be randomly selected and identified as such in the MIS.

This approach avoids bias in the selection of the sample and ensures that compliance rates are based on a more representative group of establishments. However, the use of a separate set of inspections for measuring compliance in the marketplace may be costly and divert resources away from enforcement

activities which are central to the objectives of the program. The costs involved in this approach are dependent to a large degree on the effectiveness of current methods of directing inspections. While the priority tiering and direction methods are intended to target activities to seriously noncompliant establishments and products, the comparative effectiveness of current methods is not known. The finding that commodity concentration inspections detect a higher level of noncompliance than directed inspections suggests that alternative establishment selection methods may be more effective in detecting noncompliance. The deterrent effect of random selection of establishments may in fact be greater than that of directed inspections.

With directed inspections, the frequency of inspections and especially the interval between inspections may be more predictable than with randomly determined inspections. Under the current inspection system, establishments are usually not reinspected for at least 2 months following an inspection. Aware of this lapse time between inspections, some establishments may feel free to violate the regulations immediately following an inspection. For example, a manufacturer may be less concerned about substituting ingredients immediately following an inspection or maybe decide to use up some old noncompliant labels. If inspections cannot be easily predicted, the manufacturer would not feel free of the threat of inspection and able to avoid detection.

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As noted, the costs of conducting inspections on a probability sample of establishments depends on the effectiveness (with respect to detection and deterrence) of probability sampled inspections as compared with directed inspections. A study comparing the effectiveness of these approaches in detecting and deterring noncompliance is required to determine the feasibility of this approach. This could be accomplished in a pilot test of probability sampling.

If probability sampling of establishments is employed an adequate sampling frame is required. Ideally the sampling frame should include all establishments. However it is difficult to construct and maintain a list of all establishments, due to continual openings and closings of establishments, and lack of a centralized registry of establishments. A project is underway to identify the number of establishments. Inspectors currently develop establishment lists from telephone books, observation of establishments and word of mouth while making inspection rounds.

Subjective impressions of the completeness of current establishment lists vary. Of those interviewed for this study, many believed that current lists are complete with very few establishments missing. Others believed that, although every effort is made to identify new establishments, many establishments were likely missing from the lists. Provincial sales tax rolls, if coded in a compatable fashion, could be useful in identifying new establishments. While lists compiled by Statistics Canada are not updated as frequently as required for inspections, most new establishments would appear on provincial tax rolls. Accessibility to this information in every province requires further study. Health and Welfare data on manufacturing food plants and Department of Regional Industrial Expansion data on importers could be used. Again, the feasibility of this requires further study.

Another requirement for estimating compliance from probability samples is that a sufficient number of establishments and product samples be drawn from the sampling frame. The sample size required depends on the precision of estimation required, the variability in compliance, and the expected level of compliance. Once the MIS system has been in operation for over one year in all districts, compliance data from the system may be used to estimate variability in compliance and the general level of compliance, for calculating sample size requirements. Information obtained from the MIS system may also contribute to the development of an appropriate sampling plan (see Appendix C).

In summary, probability sampling is an alternative approach for obtaining an accurate indicator of compliance in the marketplace. The costs of this approach are dependent on the relative effectiveness of probability sampling in detecting, deterring and controlling noncompliance. Sample selection and sample size determination will be facilitated by the MIS system and in 1986 sample size requirements may be estimated. Provincial sales tax rolls may be useful in establishing a complete sampling frame.

Use of commodity concentration inspections. As noted earlier, the noncompliance rate observed during commodity concentration inspections is generally higher than for the same products inspected during directed inspections. Many of the explanations for this difference are based on the assumption that inspections conducted during commodity concentrations are of higher quality (in that they are more thorough, accurate, detailed, etc.) Commodity concentration inspections also tend to involve a broader selection of establishments than are usually included in directed inspections. The selection approach used in commodity concentrations could be modified to include a probability sample on which compliance rates could be calculated. This alternative would combine high quality concentrated inspection methods with use of a less biased sample of establishments.

The Prairie Region currently conducts monthly commodity concentrations in each district on a rotating basis so that all 34 product classes are covered (see Exhibit 5). This approach adapted nationally could provide accurate measures of compliance in the marketplace.

### 6.3 SUMMARY

A variety of approaches to improving the accuracy of compliance rates and avoiding potential sources of bias are possible. Increased monitoring of the inspection process may contribute to more accurate measurement and recording of compliance. Improved monitoring approaches or more consistent application of current monitoring approaches may be useful. Increased training of inspectors may be of benefit in reducing possible variations in the quality of inspections. A review of the availability of appropriate testing equipment and resources can be identifying products and geographic areas where compliance cannot currently be adequately measured.

A final approach to improving the accuracy of compliance rates is to correct for or modify the directed selection method currently used to identify establishments and products for inspection. Alternative methods include:

. correcting compliance rates for directed selection;

 using the results of only non-directed inspection when calculating compliance;

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1985/86 ;	APR11.	HAY	JUNE	SEPTEMBER	OCTOBER	NOVEMBER	JANUARY	MARCH
	22	25	3	13	16	8		31
SASKATOON	Home Improvements Items (Blitz 1)	Fats 6 Oils	Grain & Bakery Products	Energnide 6 Household Purnishings	Freshwater & Marine Food	Fresh & Frozen Heats	Valentine's Seasonal [tems (Becond week)	Eggs & Egg Products
	19	12	23	30		9	29	33
CALGARY	Precious Hetal Articles	Connetics & Personal Care Suppiles	Puddings Desserts Spices Flavouring	Automotive Products (Blitz 1)	Halloween Seasonal Items (First week)	Canned & Frozen Fruit & Vegetables, Honey, Maple	Pet Supplies	Specialty Foods (BBQ season)
	4	17	ŀl	34	22	20	27	7
REGINA	Fresh Pruit 6 Vegetables	Clothing Accessories	Najor Household Textiles	Fur Trimmed Articles	Home Imptovement Items (Blitz 2)	Party Goods (Christmas)	Piece Goods & Notions	Entertainment Articles (sporting goods)
	2	24	15	26	10		30	32
EDMONTON	Dairy Products	Paper & Plastic Products	Smoker's Products (Father's Day)	Fresh & Frozen Poultry (Thanksgiving)	Nens Vear	Christmas Seasonal Items (First week)	Automotive Products (Blitz 2)	Hinor Houschold Textiles
	1	14	18	1	5	21	2B	
WINNIPEG	Womens Wear (Blitz 1)	Canned Processed Neat Poultry	Honsehold Cleaning Supplies	Womens Wear (Blitz 2)	Non-Alcoholic Beverages	fur Garments (Christmas)	lnfants & Childrens Wear	Easter (seasonal items)

### EXHIBIT 5 - COMMODITY CONCENTRATION ROTATION SCHEDULE FOR THE PRAIRIE REGION

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- selecting a separate probability sample of establishments for the measurement of compliance; and
- . including a probability sample in commodity concentration programs for the measurement of compliance.

. . .

The costs of implementing each of these approaches is dependent on the avilability of information and relative effectiveness of directed selection in detecting, deterring and controlling noncompliance. The feasibility and costs of these various alternatives require further study.

### 7 DOLLARS AT RISK

The dollars at risk measure is used both as an indicator for priorizing activities and as an indicator of program effectiveness. Approaches to improving the dollars at risk measure and alternative indicators to dollars at risk are discussed below. The first section of this chapter focusses on dollars at risk and alternative indicators for priorization of activities. In the second section, dollars at risk as an indicator of program effectiveness is covered.

7.1 DOLLARS AT RISK AND ADDITIONAL INDICATORS FOR PRIORIZATION OF ACTIVITIES

An accurate measure of dollars at risk may provide useful information for setting national priorities. Dollars at risk is currently used to rank the 34 product classes nationally. This ranking list is then used at the Regional and District Level along with information on concentration of industry by level, complaints and enquiries and knowledge of the local marketplace to priorize and direct activities.

While only the relative rankings are currently used to priorize activities, it should be recognized that dollars at risk is a continuous measure and could be used to identify continuous priority weightings. If the dollars at risk for a product class ranked llth are twice those of the 12th ranked product class, its priority weight should be twice that of the 12th ranked product. This weighting of priorities as opposed to simple ranking would permit closer linkages between priorities and resource allocations on product classes.

The way in which dollars at risk is used and the need for additional information to implement activities according to this priorization depends on the trade level at which activities are to be concentrated. Current program strategy is to focus enforcement activities at the upper trade levels.

If activities are to be concentrated at the upper trade levels, then dollars at risk along with information on the distribution of upper trade level establishments in the regions is needed to determine the priorization of activities within regions and the distribution of resources among the regions. If activities are to be concentrated at the retail level, dollars at risk calculated at a regional level would be useful in guiding activities in the regions and the distribution of inspection resources among regions.

### 7.1.1 Additional Indicators

Under the current approach of focussing on upper trade levels, two additional new indicators could assist in the application of dollars at risk in targetting activities.

Industry concentration by region. In order to target activities of the upper trade levels, thorough information on their distribution is needed. Data on industry concentration by province is collected as part of the Statistics Canada Census of Manufacturing. The compatibility and adaptability of the categories used in this census with the product classes used in the Consumer Products Sub-activity, should be examined, as well as potential impacts of the time lag involved in the collection and compilation of this data. Volumes of imports by region. Another concern in targetting activities at the upper trade levels is ensuring coverage of imports. Information on the volume of imports by region is needed. This information could be obtained from Customs and Excise - Revenue Canada data on the volume and value of imports clearing at various points of entry. The compatibility and adaptability of the Customs and Excise commodity codes with the product classes used in the Consumer Products Sub-activity should be examined. Customs and Excise - Revenue Canada has recently begun automating many of their procedures. This should permit easier and less costly access to the information required. The Sub-activity is currently examining this.

The importance and value of access to customs information was noted by many of the Regional Managers and District Managers interviewed. In some regions, a specific inspector has been assigned to liaise with local customs officials and concentrate on imports.

Dollars at risk together with information on the distribution of industry and the volume of imports by regions, would provide thorough information for guiding the priorization of activities and the distribution of inspection resources amongst the regions. Using this approach and focussing on the upper trade levels would imply that inspection activities and resources would be concentrated in the major manufacturing/importing regions. In order to maintain a marketplace presence in the non-industrial regions, allowances for continuance of a minimal level of retail inspections would be required.

Regional dollars at risk. If activities were to be focussed at the retail trade level, then dollars at risk calculated on a regional basis would be useful. This could be calculated using regional breakdowns of Statistics Canada data, regional compliance levels from the MIS system, and general or region specific seriousness weightings. However, dollars at risk calculated at a regional level is of little use if activities are focussed at the upper trade levels. If the focus is on the upper trade levels, the manufactured/imported value of goods and not the value of goods consumed locally would affect inspection requirements.

### 7.2 IMPROVING DOLLARS AT RISK AS A PRIORIZATION INDICATOR

Several problems with the current dollars at risk indicator were identified earlier. These included:

- bias of the compliance rates used;
- lack of recent data on consumption; and
- lack of variability in the seriousness weightings.

### 7.2.1 Compliance

Approaches to improving the measurement of compliance rates were discussed in Chapter 6. The development of an accurate measure of compliance is fundamental to the improvement of the dollars at risk measure.

### 7.2.2 Dollars Consumption

The timeliness of consumption data is determined by Statistics Canada who collects this information. In using the consumption data to rank product classes by dollars at risk, changes in the relative consumption ranks of product classes are more important than changes in the absolute level of consumption. Frequently updated consumption data is valuable if the relative consumption of different product classes varies greatly from year to year. Comparison of 1978 Statistics Canada consumption data with the 1982 Statistics Canada consumption data indicates that the relative ranking of over one third of the product classes changed by at least two ranks (see Exhibit 6). Although it would be useful to have consumption data updated yearly, it is unlikely that Statistics Canada will be able to increase its frequency to that extent.

### 7.2.3 Seriousness

The dollars at risk measure combines the noncompliance rate with dollars of consumption and the seriousness of violations to rank product classes. The measurement of seriousness is vital to this approach to priorization. Current seriousness weightings are based on a consumer survey conducted in 1982. Seriousness weightings obtained in this survey show little variation. Weightings for product class by violation type range from .243 to .306 and for product classes overall (where all types are included) from .776 to .820 (see Exhibit 7). This lack of variability is surprising given the wide variation in products and violation types possible.

Alternative approaches to measuring seriousness include:

- use of a consumer survey employing scaling techniques such as multidimensional scaling, conjoint measurement, multiattribute choice making or estimation of economic value of avoiding violation (see Appendix D for a brief summary of these measurement techniques);
- use of an expert opinion panel to establish seriousness weightings; and
- use of inspector opinion or enforcement guidelines to establish seriousness weightings (c.f. Evaluation of Inspection Final Report, CCAC, 1985, Annex p. 47-50).

Each of these alternatives is discussed below.

Scaling of seriousness through consumer survey. An improved survey approach which uses multidimensional scaling techniques, conjoint measurement or multiattribute choice making should produce improved weightings. The approach used should employ a breakdown of violation category relevant to consumers judgement of seriousness. Rating quality violations in general may not be as meaningful to consumers as specific types of quality violations. The scaling approach should also attempt to value different types of violations. While it is difficult to establish a market price for the value of protection against violations, the scaling techniques employed should address the economic value of avoiding different types of violations, i.e. the price a consumer would be willing to pay to obtain the product without the violation.

## EXHIBIT 6 - COMPARISON OF \$ CONSUMPTION\* 1984/85 - 1985/86

$\{ 1 \}$	984/85		1	985/86	1	
( –	\$ CONSUMPTION	:	1	\$ CONSUMPTION	%	RANK
KANK	Stats.Can.1978	PRODUCT CLASS	RANK	Stats.Can.1982	INCREASE	CHANGE
	(000's)			(000's)		
	\$ 2,864,547	Women's Wear	1	\$ 3,539,231	23.5	1
	3,686,829	Entertainment Articles	2	3,511,133	- 4.8	1
<b></b>	2,430,605	Fresh/Frozen Meat	3	3,490,186	43.6	1
	1,893,937	Dairy Products	4	3,294,257	73.9	2
	1,472,715	Grain & Bakery Products	5	2,633,413	78.8	4
7	1,737,089	Smokers' Products	6	2,621,535	50.9	1
	2,328,719	Men's Wear	7	2,578,747	10.7	2
	2,439,966	Alcoholic Beverages	8	2,449,746	.4	5
46	968,450	Cosmetics & Pers.Care Suppls.	9	2,337,988	141.4	7
<b>,⊞</b> 8	1,634,963	Fresh Fruit & Vegetables	10	2,327,897	42.4	2
	1,160,460	H/hold Furnishs. & Equip.	11	2,072,960	78.6	2
	1,294,867	Non-Alcoholic Beverages	12	1,936,040	49.5	1
15	1,092,057	Canned, Proc. Meat & Poultry	13	1,856,340	70.0	2
B	867,405	Can.Fro.Deh.Fr.&Veg.Hon&Maple	14	1,557,467	79.5	4
	1,381,872	Major Household Textiles	15	1,456,692	5.4	5
19	798,041	Household Cleaning Supples	16	1,418,375	77.7	3
	871,244	Paper & Plastic Products	17	1,366,647	56.9	0
	1,222,864	Home Improvement	18	1,047,976	- 14.3	6
	640,234	Infants' & Children's Wear	19	1,013,490	58.3	3
<u>21</u>	669,634	Clothing Accessories	20	990,500	47.9	1
	709,237	Precious Netal Articles	21	758,042	6.9	1
	390,019	Pudds.Gels.Dess.Spcs.&Flavs.	22	737,233	89.0	4
28	296,415	Freshwater & Marine Foods	23	617,673	108.4	5
	467,424	Pet Supplies	: 24	590,085	26.2	0
	639,633	Fresh, Frozen, BBQ, Poultry	25	547,936	- 14.3	2
29	274,574	Party Foods	26	537,974	95.9	3
<b>6</b>	400,222	Minor Household Textiles	27	508,980	27.2	2
	334,817	Piece Goods & Notions	28	418,935	25.1	1
2	234,012	Fats & Oils	29	381,895	63.2	3
21	240,252	Eggs & Egg Products	<b>3</b> 0	368,612	53.4	1
Б	261,613	Fur Garments	31	332,721	27.2	1
<b>4</b>	1.096.256	Automotive Products	32	122,615	- 88.8	18
33		Specialty Foods	33	106,266		0
<b>4</b>		Fur Trimmed Articles	34			0
	\$36,800,972			\$49,529,577	34.6	
L						
	\$15,201,420	FOOD		\$22,842,925	50.3	
	8,620,045	TEXTILES		10,506,575	21.9	
	970,850	P.M.M.		1,090,763	12.4	
_	12,008,657	NON-FOOD		15,089,314	25.6	
	\$36,800,972			\$49,529,577	34.6	

Adapted from table prepared by Consumer Products Branch September 24, 1984.

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EXHIBIT 7	-	SERIOUSNESS	WEIGHTINGS	BY	PRODUCT	CLASS*
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	v	IOLATION TYPE		
PRODUCT CLASS	QUANTITY	LABELLING	QUALITY	TOTAL
Meat, Fish and Poultry	.257	.255	.278	<b>.79</b> 0
Eggs	.253	.248	.276	.777
Fresh Fruit and Vegetables	.252	.248	.276	.776
Dairy & Vegetable Oil Products	.261	.250	.278	.789
Grain & Bakery Products	.260	.248	.277	.785
Process Fruit, Vegetables				
& Meat	.263	.250	.281	.794
Other Foods & Beverages	.266	.248	.276	<b>.79</b> 0
Clothing & Accessories		.251	.279	<b>.5</b> 30
Household Textiles	<b></b>	.252	.278	.530
Precious Metal Articles		.306	.300	•60 <b>6</b>
Entertainment Articles	.274	.255	.291	.820
Home Improvement &				1
Automotive Products	.271	.257	.292	.820
Cleaning & Paper Products	.263	.250	.285	.798
Pet Supplies	.268	.243	.285	.796
Cosmetic Products	. 27 1	.256	.288	.815
TOTAL	.263	.253	.282	.798

Expert opinion panel. Prior to conducting the consumer survey in 1978, seriousness weightings were determined by a panel of personnel at Consumer Products headquarters. A similar panel including representatives from consumer organizations could again be used to establish seriousness weightings.

Inspector opinion. An alternative approach is to have inspectors code violation seriousness on the inspection report forms entered into the MIS system. Specific criteria for rating violations could be employed. These criteria may be similar to those developed in some product areas as part of the enforcement guidelines, and involve consideration of factors such as danger to health, number people affected, and the ability of consumer to inspect, detect and avoid the product in violation (e.g., bulk fruit). Trader knowledge and intention which are considered in most enforcement guidelines would not be a factor in rating the seriousness of the violation to consumers. The criteria used could be developed from a consumer survey or by an expert panel.

The use of a consumer survey is costly but would involve consumers, who are the primary constituency of the program, in ranking seriousness of violations. This approach does assume that consumers are knowledgeable of the potential impacts of them on product violations. The majority view of consumers may however, obscure important minority concerns. The expert panel approach is less costly and may ensure the concerns of minority groups of consumers for whom seriousness weightings may vary from those of the general population of consumers (e.g., individuals with serious allergies for whom violations involving ingredient or composition labelling may be life threatening) are considered. The use of inspectors to code seriousness would ensure that seriousness is rated at the level at which it actually impacts on consumers -specific violations. The time required for inspectors to enter a code for seriousness should be minimal.

Data on seriousness in the MIS system would also be useful in identifying priority problems. Currently priority problems are identifed by compliance rate alone. For each product class the priority problem area (quality, quantity, labelling) with highest noncompliance rate is listed and the specific product with the highest noncompliance rate in that problem area are identified. For example, for 1985 in the women's wear product class, the priority problem area was quality (noncompliance rate 12.5%). Of women's wear products with quality violations, the priority problems were blazers and vests (noncompliance rate 36.8%). Data on the seriousness of noncompliance for different product violations would enable the identification of priority problem areas and specific products according to the seriousness and frequency of noncompliance as opposed to just the rate of noncompliance.

### 7.3 OTHER METHODS OF PRIORIZATION

In addition to dollars at risk, other indicators may be used to priorize activities. For example, compliance rates, or complaints and enquiries are currently being used to set national or regions priorities.

### 7.3.1 Compliance Rates

While compliance rates are used to establish priorities at the national or regional level, failure to consider information on the value of goods involved or the seriousness of the violations may result in products with low

consumption values, and high noncompliance rates for minor violations, being given high priority, while products with high consumption values, and moderate noncompliance rates for serious violations are given low priority.

### 7.3.2 Complaints and Enquiries

An alternative approach to dollars at risk is to use the volume and types of complaints and enquiries to establish priority areas. Complaints and enquiries are used informally by District Managers to identify problem areas. Formalization of this process and coding/recording of complaints and enquiries would facilitate this process. Exhibit 8 provides a sample recording log for coding complaints according to the product involved, the type of complaint and the outcome of any inspection. Compilation of this information may assist in identifying new problem areas of concern to consumers or traders.

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In some regulatory agencies, inspection activities are based only on complaints and enquiries, with no scheduled inspections of establishments against whom there are no complaints. This generally reduces the number of inspections conducted and therefore the resources required for inspection/enforcement activities. The likelihood of finding a violation during an inspection in response to a complaint should be higher than in less directed inspections.

The effectiveness of this approach to priorization in the Consumer Products Sub-activity is limited by several factors. First, many violations cannot be easily detected by consumers or other traders. Sophisticated testing of samples is often required. Second, the volume and type of complaints vary greatly and appear to be strongly influenced by consumer programs, media announcements, etc. Third, the percentage of complaints which are justified or are relevant to the program is important. If few complaints are relevant or justified, the inspection process will not be effectively directed. Fourth, complaints may be used in this approach by consumers or other traders to harass establishments.

Finally, use of complaints and enquiries alone to drive the inspection process usually results in the adoption of a case-by-case mode of investigation and negotiation of complaints. This mode of enforcement usually provides immediate assistance to individual consumers but unless general patterns of complaints are identified and addressed, consumers as a class are not protected (Bardach and Kagan, 1982; Silbey, 1984). Traders may be quite willing to settle with individual consumers, however satisfactory conclusion of an individual consumer complaint does not guarantee that the trader or establishment will comply with the regulations. To effectively enforce the regulations, inspections and enforcement actions initiated by individual consumer complaints should focus on the general practices of the trader/establishment and their impact on consumers in general.

### 7.3.3 Summary

A dollars at risk measure, incorporating improved indicators of compliance and seriousness, provides the most useful method of establishing national inspection priorities. To implement these priorities at the regional level additional information, such as regional concentration of industry and level of imports, is required.

### EXHIBIT 8 - SAMPLE CONSUMER PRODUCTS - COMPLAINT LOG

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																DISTRICT					
CONTROL OR REFERENCE NUMBER	DATE CÓMPLAINT RECEIVED		<u>РЕ</u> Т Е Х Т І Е	Р Ч М	ROI N O N F O O D	O T H F R		PE U U U U V V		OMP O T H E R	ĸ	R I E F OF	DESCRIPTION COMPLAINT	 NAME & ADDRESS OF ESTABLISDOUT	,	AME OF INSPECTOR ASSIGNED TO COMPLAINT <sup>®</sup>	DATE CONCLIDED	RES .IUST FFTED	RUTS OR CORCL ROT .RUSTAFIED	USTONS REFERRED TO	
	15/04/85	x					X				s.	hot t	Wr. Butter	Joe's Grocery 100 Hain Street 7		J.1 `	16/05/85		Wt. Check Okav	Agrieulture Canada 16/05/85	
2	16/04/85			x					X		Ni Ri	n Qu i ng	ality Mark on	.Hm's Jowellry 101 Water Street		W.I	17/04/85	No Markings on remaining stock		Ontario Reg. 18/04/85	
3	19/04/85				X			x			Ч Ац .11	1 nds () ( 1 - ( - 5	hteld Washer freeze troze u°C	Sata's Gatage 102 South Avenue		X.I					

Dollars at risk is also used as a measure of program effectiveness. Issues regarding the use of this measure as an indicator of program effectiveness include:

- the need for an accurate compliance measure to be used in calculating dollars at risk;
- the need for an adequate measure of seriousness to be used in calculating dollars at risk; and
- the need for a method of attributing changes in dollars at risk to program activities.

The first two issues, concerning the need for accurate compliance rates and an improved measure of seriousness were addressed earlier. The final issue, concerning the ability to attribute changes in dollars at risk to program activities, is central to the use of dollars at risk as an effectiveness measure. Factors contributing to this problem of attribution include:

- difficulty estimating the deterrent impact of the program;
- difficulty identifying the impact of the many environmental variables over which the Sub-activity has no control, which affect dollars at risk (e.g., state of the economy, level of competition in the marketplace, etc.); and
- lack of control for sudden increases in the level of consumption when a new Statistics Canada survey is completed.

The problem of estimating the deterrent impact of the program is a pervasive one in the evaluation of regulatory agencies. Even if inspection activities were withdrawn from a district on an experimental basis, inspections at higher trade levels and of other outlets of chain stores in the district would likely affect the level of compliance. The incremental impact of inspections locally could, however, be estimated in such a study. Alternatively, the deterrent impact might be estimated through a survey of traders and establishments. Although this approach is subject to potential reporting biases, awareness of inspection/enforcement activities which is a prerequisite for deterrence and reported impact of this could be addressed.

A second issue of concern in using dollars at risk as an effectiveness measure is that of attributing changes in dollars at risk to program activities. A variety of factors external to the program are believed to affect the level of compliance. Estimation of the impact of these factors would permit statistical control for their effects. This would require a study to identify these factors and estimate their relationship to compliance.

Finally, sudden changes in the level of consumption of products reduce the interpretability of the dollars at risk measures as an effectiveness measure. Compliance may greatly increase but this increase may be offset by a large increase in the dollars of consumption, yielding an increase in dollars at risk in spite of improved effectiveness in the level of compliance. This problem

could be avoided by calculating a weighted average compliance rate using the percentage of total consumption dollars at risk as an effectiveness measure as opposed to the amount of dollars at risk. Although consumption dollars may increase, as a result of increases in either inflation or the true level of consumption, if the program is effective the proportion of consumption dollars at risk should decrease.

The weighted average compliance rate would be calculated as:

### % noncompliant x <u>\$'s product consumption</u> x seriousness factor total \$'s consumption

The weighted average compliance rate weights the product compliance rates according to consumption level (i.e. % total consumption dollars the product represents) and seriousness of noncompliance to consumers. Because the percentage of total consumption dollars at risk is used as opposed the absolute dollar level of consumption, general inflation will not result in an increase in the measure in spite of improved compliance levels.

The weighted average compliance rate is a useful effectiveness measure since it is reflects not only the level of compliance generated by compliance activities but also the targetting of activities towards high consumption value products and serious violations. In this way, it provides effectiveness information not available from the review of compliance rates alone. A small change in compliance for a serious violation involving a product of high consumption value is weighted more heavily than a larger change in compliance for a minor violation involving a product with low consumption value.

### 7.5 EFFICIENCY MEASURES

One factor not considered in the calculation of dollars at risk is the enforcement costs incurred. The program should strive to minimize dollars at risk within the resource budget of the Sub-activity. Ideally the value of benefits produced should exceed the enforcement costs incurred. The costs of various enforcement activities relative to the potential benefits obtained from preventing/correcting violations should be considered in targetting and priorizing activities. This would require information on the relative costs and effectiveness of different inspection/enforcement activities, this information is not currently available but could be collected as part of a study of the impact of program activities.

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### 8 SUMMARY

This study reviewed the rationale for compliance activities, and assessed the current compliance objectives and indicators of the program. Information was collected through the review of literature and program documents, and through interviews with personnel at national headquarters, regional offices and district offices.

Major findings concerning each area of the study were:

### Rationale

• There is a clear rationale for current program work elements. The rationale and program model are well understood by program staff.

### Compliance Objectives

. The first strategic objective, to protect consumers against product misrepresentation through detection control and prevention, is clearly articulated, well understood and realistic. More precision could be given to this objective, however, by indicating that consumers are the group being protected. Ŋ

- . The second strategic objective of the program, to enhance the ability of the consumer to differentiate among product choices, is not well understood. This objective requires clarification.
- Although the program focusses on consumer protection and service, concerns of business and industry are also addressed. This is not currently reflected in the program objectives.

### Compliance Indicators

- . Current compliance rates are subject to potential biases in measurement and cannot be assumed to reflect the true level of compliance in the marketplace.
- . The dollars at risk measure utilizes potentially biased compliance rates, and seriousness weightings which show little variation and do not appear to reflect the seriousness for consumers of infractions.
- Sudden changes in the consumption level of products may result in increases in dollars at risk in spite of greatly improved compliance.

Exhibit 9 presents the current strategic objectives, along with alternative wordings of the objectives, intended to clarify their meaning. Also included is an additional objective concerning business and industry.

A variety of alternative approaches to modifying and improving the compliance indicators were presented. Exhibit 10 summarizes the compliance indicators along with their intended use and alternative approaches for modifying/improving the indicators.

### EXHIBIT 9 - SUMMARY OF CLARIFICATION OF OBJECTIVES

### STRATEGIC OBJECTIVE

To protect against product misrepresentation through detection, control and prevention.

To enhance the ability of the consumer to differentiate among product choices.

(Unstated business/industry objective.)

### SUGGESTED WORDING

To protect consumers against product misrepresentation through detection, control and prevention.

To assist consumers in making effective product choices through ensuring the provision of factual product information.

To promote and ensure equity and fair competition in the marketplace through the detection, control and prevention of product misrepresentation.

### INDICATORS -

 product and establishment compliance rates

 weighted average compliance rates

. labelling compliance rates

weighted average compliance rate

	EXHIBIT OF - SUMMARY OF ALTERNATIVE APPRO	ACHES FOR IMPROVING COMPLIANCE INDICATORS
INDICATOR	USAGE	ALTERNATIVE APPROACHES FOR MODIFYING/IMPROVING/DEVELAPING
Froduct and Establishmen) Compliance Rates	- to evaluate the effectiveness of the specific compliance activities a) the regional and district level; and	<ul> <li>Presentation of time series of compliance rates as graphs.</li> <li>Improved or more consistent monitoring through:</li> </ul>
	- to target activities at the district feed towards products/establishments with low compliance.	<ul> <li>review o) reports</li> <li>retation of inspectors</li> <li>accomparisment inspections</li> <li>shadow re-inspections</li> <li>inspection simulation</li> <li>Increased training.</li> </ul>
		<ul> <li>Resource review to identify areas where compliance cannot be accurately measured.</li> <li>Hodification of the way in which products/establishments are selected for the uncertainty by:</li> </ul>
		<ul> <li>correcting compliance rates for directed inspection</li> <li>intentifying and using only nondirected inspections in calculating compliance</li> <li>probability sampling</li> <li>including probability sampling in commodity concentration inspections</li> </ul>
Dollars at risk	- to priorize program activities.	<ul> <li>Development of two new indicators to assist in the application of dollars at risk in targetting activities;</li> </ul>
		<ul> <li>Industry concentration by region</li> <li>volume of imports by region</li> </ul>
		- Use of improved compliance rates.
		- More timely data on dollars consumption.
		- Improved scaling of seriousness weightings through either:
		. consumer survey . expert opinion papel . inspectur opinion
Weighted Average Compliance Rate	- to measure program effectiveness	<ul> <li>Use of propartion of consumption dollars at risk as opposed to absolute dollars at risk.</li> </ul>

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- Use of improved compliance rates.
- Estimate and control for other external factors affecting compliance.

Several approaches may be taken to improve the accuracy of compliance rates. More consistent and/or improved monitoring of the inspection process, increased training, and the identification of areas where compliance cannot be accurately measured may assist in improving the accuracy of compliance rates. However, none of these approaches addresses the problem of current compliance rates being based on directed inspections establishments which may not be representative of establishments in the marketplace. The accuracy of compliance rates may be improved by either correcting for or modifying the directed selection method currently used to identify establishments and products for inspection.

The dollars at risk measure may be improved by using more accurate compliance rates in its calculation. Other approaches to improving the dollars at risk measure include the use of more timely dollars consumption data and improved seriousness weightings. Two new indicators may assist in applying dollars at risk at the regional level to target activities. These new indicators are industry concentration by region and volume of imports by region.

In order to more adequately measure program effectiveness a modification of the dollars at risk indicator may be useful. This is the weighted average compliance rate. This indicator uses the proportion of consumption dollars at risk as opposed to absolute dollars at risk, and so is not subject to sudden increases due to inflation alone. Thus this indicator more adequately reflects compliance obtained and effectiveness of targeting of activities.

In conclusion, a variety of approaches to improving the compliance indicators and developing new indicators are possible.

# INTERVIEW GUIDE

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### INTERVIEW GUIDE

I. EXPLANATION OF PURPOSE OF STUDY

**II.** RESPONDENT INFORMATION

Name	
Address	
Phone	
Position	
Completed by	
Date	

**III. SUB-ACTIVITY OBJECTIVES** 

- 1. The formal objectives of Consumer Products Sub-activity are to:
  - protect against product misrepresentation through detection, control and prevention.
  - enhance the ability of the consumer to differentiate among product choices.

In your opinion, are there any additional or informal objectives which the sub-activity addresses?

- 2. To what extent is the achievement of these objectives currently measurable? How?
  - protect against product misrepresentation.
  - enable consumers to differentiate among product choices.

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3. Are there alternative, better, ways of stating the objectives which would increase their clarity and assist in their measurement?

### IV. ACTIVITIES AND RATIONALE

Activities:

aterhouse Associates

Inspection and Enforcement/Products;

Radio and TV Food Advertisement Approvals;

Print Advertisement and Label Review;

Trader, Education and Consumer Information; and

Complaints and Enquiries.

- 1. For each activity category above:
  - a) How is each activity related to the objectives of the program?
  - b) Why is the activity undertaken?
    - in what ways is it expected to detect non-compliance?
    - in what ways is it expected to deter non-compliance?
    - in what ways is it expected to monitor non-compliance?
  - c) Given current resource levels and their distribution, to what extent can the activity be expected to detect, deter, or monitor compliance?
  - d) To what degree is the activity effective in detecting, deterring or monitoring compliance? What is the basis for your opinion?

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- e) What factors limit the impact or effectiveness of the activity?
- f) Does the impact/effectiveness vary for different product groups?
- g) Does the impact/effectiveness vary by region or location (rural/urban)?
- V. RESOURCING
- 1. How are current resources allocated to:
  - activities?
  - regions
  - product groups?
- 2. How are priority areas identified?
- 3. Which infractions are likely to generate priority inspections? Which are not?
- 4. How are priorities set for complaints and enquiries?
VI. INDICATORS

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# Operational Goals

- 1. The operational objectives of the program are:
  - to maintain/improve product compliance rates;
  - to maintain/improve establishment compliance rates; and
  - to reduce the volume of complaints and enquiries specific to product choice.

Are these reasonable goals?

- 2. Is it reasonable to set compliance targets?
  - a) If no, why not?
  - b) If yes, what factors should be considered in establishing targets?

#### Monitoring

1. How are the operational activities monitored? At what level (district, regional, national)? At what frequency (quarterly, yearly)?

2. How is this information used?

# Waterhouse Associates

## Compliance Indicators

1. What measures of compliance are currently used?

We are aware of - dollars at risk, product compliance rates, establishment compliance rate - are there any additional measures?

- 2. For each compliance indicator mentioned:
  - a) How is the measure obtained?
  - b) How is the measure used?
  - c) To what extent is the indicator an accurate measure of compliance?

If not, what are the problems with the indicators?

How can the indicator be improved?

- d) Is the indicator appropriate to monitor compliance? to make comparisons between regions? products?
- e) To what extent is the indicator a measure of consumer protection? consumer satisfaction?



- 3. In your opinion do the seriousness weightings for \$'s at risk reflect consumers views of the seriousness of the infraction?
- 4. Do \$'s at risk adequately reflect the value of economic loss to consumers?
- 5. How frequently are the aspects of \$'s at risk updated? How frequently should they be updated?

i.e. weighting

\$'s consumption

non-compliance rates

- 6. Should \$'s at risk be computed at a regional level?
- 7. Are there any current indicators of the following? If so, describe. If not, what are the potential indicators? Are they needed?

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- likelihood of an infraction occurring
- likelihood of detection

- repeat offenses

- consumer awareness of regulations
- industry awareness of regulations

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- 8. Are there additional, new, indicators that are needed?
- 9. The MIS system generates a number of reports.

In what ways are these reports used?

Are there additional indicators that could be derived from these reports?

10. Are there other kinds of information which you would like to have to assist you in the compliance activities program?

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APPENDIX B

#### REFERENCES

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# PROBABILITY SAMPLING

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APPENDIX C

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#### PROBABILITY SAMPLING

Probability sampling involves the selection of random sample of establishments for inspection. In order to draw a sample, a sampling frame of all possible establishments must be available or developed. All district offices in the Sub-activity maintain an establishment list which could be used for this purpose. The comprehensiveness of this list is difficult to determine. Although the list is regularly updated, there are frequent openings and closings of establishments which make it difficult to maintain a complete and accurate list.

The sample may be drawn completely or may be stratified for type and size of establishment. Stratification by type and size of establishment is recommended to avoid oversampling of small establishments. The required size of sample drawn in each strata is dependent on the degree of variability in compliance rates within the establishment grouping or strata, and the accuracy of estimation desired. Once the MIS system has been in operation for two years MIS data on compliance by establishment type and size can be used to assist in determining sample size requirements.

In addition to the sampling of establishments, consideration should be given to the sampling of product brands. The sampling plan should ensure that a variety of brands are inspected.

# APPENDIX D

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# SUMMARY DESCRIPTION OF SCALING/MEASUREMENT TECHNIQUES

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## SUMMARY DESCRIPTION OF SCALING/MEASUREMENT TECHNIQUES

<u>Multidimensional Scaling</u>. This scaling technique is concerned with the measurement of preferences and judgements such as consumers' judgements of seriousness of violations. It can be used to assess the degree of similarity/ dissimilarity between different violations for consumers.

<u>Multiattribute Choice Making and Conjoint Analysis</u>. These measurement techniques focus on how people make "tradeoff" decisions in choosing among multiattribute alternatives (e.g. a sweater for \$21.99 with a care label but no fiber content marking, vs. a sweater for \$42.00 with care label and fiber content marking).

#### Approach

Regardless of the specific scaling technique employed, careful attention should be given to the identification of categories of infraction and product groupings which are relevant to consumers and the use of terminology which is meaningful to consumers. The Sub-activity's classification of infractions into the categories of labelling, quality and quantity violations may be too general to be meaningful to consumers. For example, consumers' perceptions of the seriousness of the violation may be dependent on a more specific breakdown of categories of infractions such as type of labelling violation (e.g., size of print, omission of country of origin, etc). A small preliminary survey or a focus group study could identify appropriate categories and terminology for a more detailed study.

To reduce the costs of a full study of seriousness weightings, the number of infractions and products to be studied might be reduced. Infractions which are generally agreed upon as very minor or products which are given low inspection priority by the Sub-activity for other reasons (e.g., loose fruit which can be examined by the consumer) could be excluded from the study.

Typically in a multi-dimensional scaling task a sample of consumers would be presented with a series of descriptions of infractions varying on a number of factors such as type of infraction, product type, cost of product, etc., to rank or rate according to seriousness. Subjective ratings of the importance of the factors with respect to infraction seriousness or a replication of the infraction stimuli ranking is also often collected to examine the similarity of the scaling model based on rankings with participants self-explicated model and to examine stability of rankings over time. The collection of demographic information on participants would enable an assessment of whether consumers who show similar ratings of seriousness tend to be similar demographic variables.

# APPENDIX E

# COMMENTS RECEIVED ON THE DRAFT FINAL REPORT

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#### Peat, Marwick and Partners Management Consultants 21st Hoor, Tower B Place de Ville 112 Kent Street

October 7, 1985

Ottawa, Onturio K1P 5P2

(613) 237-6402

PRIVATE

Mr. Bernard Laurin Program Evaluation Officer Program Evaluation, Audit, Evaluation and Control Consumer and Corporate Affairs Place du Portage Phase I 50 Victoria Street HULL, Quebec KIA OC9

PEAT MARWICK

Dear Bernard:

We are pleased to provide our comments and suggestions regarding the final draft report produced by Price Waterhouse and Associates on Objectives and Indicators. Overall, we found the study to be well written and organized. We offer the following points as potential areas of clarification or elaboration:

- We agree with the last sentence on page 30; however, more often than not, the real world is not the ideal.
  A description of what can be done in the absence of an ideal world would probably be useful at the end of this paragraph. For example, a quasi-experimental design such as the one in our study can be used to determine the effects of the inspection activities.
- A number of alternative approaches are presented as ways to improve compliance measurement and to rank seriousness. Would it not be useful to have some indication or recommendations as to which approaches would be most feasible?

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October 7, 1985

Mr. B. Laurin

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- With respect to probability sampling (page 50) it should be emphasized that the sampling plan must be according to the objectives developed of the inspection. A different type of probability sample is for required for monitoring compliance levels, determining non-compliance and for detecting noncompliance. It is therefore necessary to study the way in which a probability sample combining these objectives can lead to optimal allocation of inspection resources.
- One input into the sampling scheme discussed in the point above could be based on past compliance history. A risk index could be created based on various known characteristics of high-compliance and low-compliance establishments (the Peat Marwick study is determining such characteristics). The sampling scheme might include the selection of high and low risk establishments but with low-risk establishments being inspected more often than high risk establishments (e.g., using porbability proportional to risk sampling).
- With respect to the weighted average compliance rate (page 62 & 63) would nota deflation factor (particularly by product class, if possible) have the same effect? Also, it is not really clear what is being calculated -- is it a new dollars at risk (with relative \$ consumption measure) or a weighted average compliance rate, or are these the same thing?
- There may be advantages to having a dollars at risk value which measures an absolute value of consumption dollars (versus the relative value described on page 63). An absolute value will take into account greater consumption levels of a product even if the proportion of the consumption oif that product remains the same overall. In a time sequence (e.g., comparing to last year's results), this non-relative risk appears to be important.

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## Mr. B. Laurin

# - 3 -

- Another effectiveness measure might be the use of a single overall dollars at risk figure, i.e., adding up all the product classes. The figure could be compared, over time, by region, by office, etc., to determine differences in overall effectiveness. This is clearly one summary measure, and does not replace other measures.
- Do you want to make any comments in the report on reporting of effectiveness indicators, e.g., breakdowns by characteristics, frequency of reporting, etc?

We appreciate being able to provide our comments and suggestions on the Objectives and Indicators Study and we hope that they will be of some assistance. Should you have any questions, do not hesitate to contact me or David Zalinger.

Yours very truly,

PEAT, MARWICK and PARTNERS

Debbie Fischer / Mul

Debbie Fischer Senior Consultant

DF:mv

# Thorne Slevenson & Kellogg

Management Consultants

2300 Yonge Street Toronto, Ontario, Canada M4P 1G2 (416) 483-4313 Cable Stevkell Telex 065-24347



October 3, 1985

Mr. B. Laurin Program Evaluation Officer Program Evaluation Audit and Control Bureau of Policy Co-ordination Consumer and Corporate Affairs Canada Place du Portage Phase I 50 Rue Victoria Hull, Quebec K1A 0C9

Dear Mr. Laurin:

As requested in your letter of September 25, I have reviewed the draft final report of the Objectives and Indicators Study of Consumer Compliance Activities produced by Price Waterhouse and Associates.

Overall, I find the report satisfies the Terms of Reference. It is a clear, comprehensive review of the subject matter.

Detailed comments on specific paragraphs and sentences follow:

P.ii. Paragraph before last, last sentence.

Although this is an Executive Summary, the issue discussed here is so important that it deserves a bit more expansion, especially for those who will only read the Executive Summary. In particular, one should discuss briefly the kind of modification to the inspection plan that would be entailed. The inspection plan would have to be modified in order to:

a) Maximize the impact of inspection vis-a-vis program objectives.

b) Obtain unbiased measure of performance.

P.11 Third paragraph.

The first sentence is clear; so is the rest of the paragraph. But what is the connection between the first sentence of the paragraph and the rest? It would appear that there are two ideas here, not one.

P.16 Line #4 from the bottom.

Typo: "constraints". Also in the formula, should this not be "% non-compliance"?

Mr. B. Laurin October 3, 1985 Page 2.

## P.19 At bottom.

The rewording of the objective makes sense in the light of the activities that are within the program's domain. However, as indicated in the last complete paragraph on that page, a number of conditions have to be satisfied if the public is to use information displayed on product label effectively.

For the sake of completion, it would be worthwhile to note which federal, provincial or other agencies are mandated with educating the public in the use of this information. One could then discuss what linkages should develop between the Program and such agencies.

- P.21 I believe the report recommends against the inclusion of an industry objective. Achieving this objective will be a national fallout of the other objectives. The first full paragraph on the page should make that clearer.
- P.26 Brand is one source of bias that should be mentioned specifically. Even if a total product is being targeted, there is no assurance that samples will be collected in proportion to brand share and therefore results could be biased one way or another.
- P.26 At this stage, would it be possible to show what we believe the most ff important sources of bias to be? Such ranking surely would help in the next module.
- P.47 Typo.

14 lines from bottom: "based on (the) priority tiering."

- P.43 Again, one would like to see the application of experience and judgement ff to highlight those approaches that are more likely to remove bias in measuring indicators. At least, one should indicate more systematically the pros and cons of various approaches.
- P.50 Is it not possible to run the probability sample only periodically; say once a year for one or two months? Even while the probability sample is surveyed, some directed inspections could still be carried out -- dependent upon the sample size required. Thus, the system of directed inspections could still be maintained if it is found to have a greater chance of detection of non-compliance than random sampling.

Mr. B. Laurin October 3, 1985 Page 3.

The problem of brand sampling should also be mentioned here. One possibility might be to sample from shoppers' shopping carts in order to reflect market purchases.

P.54 Third paragraph.

I have to admit that the logic escapes me. Maybe one should explain how priority weights relate to program resource allocation.

P.58 Exhibit 7.

Why zero seriousness weighting given to "quantity" for Clothing, Textiles and Precious Metals? A footnote seems to be missing (star in the title).

\* \* \*

In conclusion, a very comprehensive report. But some insight as to preferred approaches might help make the exercise more practical and of greater immediate benefit to the sub-activity.

Yours very truly,

# THORNE STEVENSON & KELLOGG

Pucker

Leon Rucker Principal

LR:rw

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# CONSUMER AND CORPORATE AFFAIRS CANADA

# EVALUATION OF THE EFFECTIVENESS OF CONSUMER PRODUCTS COMPLIANCE ACTIVITIES

# AN ANALYSIS BASED ON TORONTO DISTRICT OFFICE FILES



Peat, Marwick and Partners Manageneeat Consultants 2(s) Floer, 'lower B Place de Ville 112 Kent Street Ottawa, Ontario K1P 5P2 9339 237-0402

December 28, 1985

## PRIVATE

Mr. Ken Tiedemann Audit Evaluation and Control Bureau of Policy Coordination Consumer and Corporate Affairs 17th Floor, Place du Portage, Phase I 50 Victoria Street HULL, Québec KIA OC9

Dear Mr. Tiedemann:

We are pleased to submit our final report, the Evaluation of the Effectiveness of Consumer Products Compliance Activities - An Analysis Based on Toronto District Office Files.

We enjoyed working on this challenging and unique assignment and wish to express our gratitude for the significant encouragement from yourself and the officers of the Consumer Products Branch who so generously gave us their time and advice.

Yours very truly,

PEAT, MARWICK and PARTNERS

David Zali

Managing Partner

DZ:nl

# EVALUATION OF THE EFFECTIVENESS OF CONSUMER PRODUCTS COMPLIANCE ACTIVITIES

# AN ANALYSIS BASED ON TORONTO DISTRICT OFFICE FILES

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## EVALUATION OF THE EFFECTIVENESS OF CONSUMER PRODUCTS COMPLIANCE ACTIVITIES

# AN ANALYSIS BASED ON TORONTO DISTRICT OFFICE FILES

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#### EXECUTIVE SUMMARY

# EVALUATION OF THE EFFECTIVENESS OF CONSUMER PRODUCTS COMPLIANCE ACTIVITIES - AN ANALYSIS BASED ON TORONTO DISTRICT OFFICE FILES

## STUDY OBJECTIVES AND BACKGROUND

This study had two objectives. The first objective was to determine the feasibility of measuring the effectiveness of different compliance activities undertaken by the Consumer Products Sub-activity. Given that such measurement was feasible, the second objective was to determine the effectiveness of these compliance activities. The study was also intended to make recommendations regarding the feasibility of extending the pilot to other parts of Canada and to other program areas.

In dealing with the Consumer Products compliance activities, we were concerned with the effectiveness of activities relating to the enforcement of the standards and regulations overseeing the quality, quantity and labelling disclosure of information for a wide variety of traded goods. These activities include actions associated with inspection and enforcement as well as complaints and enquiries. We were also interested in determining the effectiveness of trader education compliance activities; however, it should be noted that we only looked at trader education performed on a regular basis, as part of inspection and enforcement, and not at the delivery of formal trader education, such as seminars, media interviews, etc. Thus, in studying the relative effectiveness of the different compliance activities, we investigated whether, for example, trader education and warning letters had a relatively greater impact on an establishment's compliance than did an information letter or an oral warning.

#### Methodology and Data Collection Approach

The Toronto office was selected as the pilot site for the study. As a preliminary step, we examined the establishment files and MIS reporting format in order to determine the type of information retained on the various compliance activities. We found that data on compliance activities and about particular establishments are available in the establishment files and in the MIS. The pilot site retained compliance activity data in establishment files from the date of first contact with an establishment, although we determined that this is not a uniform practice across Canada. The MIS data had been collected for just over two years.

Once we had identified that the data kept on compliance activities were useful and amenable to statistical manipulation, we developed an analytic design. The design used was a historical design with differing levels/types of treatments. Since compliance activities are performed on establishments at different points in time and encompass different actions, we felt the use of such a design coupled with a statistical modelling approach would allow us to determine the effects of these varying treatments (actions) on compliance.



A random sample of 898 establishments was selected from a list of establishments available at the pilot site. Our sampling strategy ensured that establishments in all trade levels and product classes were selected. Data on the history of compliance were extracted from the establishment files. We were only interested in the data collected for inspections, enforcement actions and complaints which occurred since January, 1980.

The information extracted from the establishment files was recorded as data items for inclusion into a database, and statistical models\* were based on these items.

## STUDY RESULTS

## Feasibility

The above description of our methodology and data collection approach responds to the first objective of the study. We were able to confirm that a pilot study aimed at determining the effectiveness of different compliance activities was feasible to undertake. Indeed, we found that appropriate and useful data on compliance activities are collected, both in hardcopy files and in the MIS. We were able to use an establishment list kept by the pilot site as a frame for sample selection. Using our analytic methodology, we were able to determine the effects of varying activities on compliance.

## Effectiveness of Compliance Activities

In our analysis of the data, we developed basic models which related increases in percentage compliance between consecutive inspections to a number of explanatory factors. The major findings which deal with program effectiveness are shown in Exhibit 1 and are described below:

- Trader education, written warnings and trader commitment as part of inspections are all effective instruments in bringing about increases in <u>labelling</u> compliance.
- The one enforcement action which is effective in bringing about an increase in <u>quality</u> compliance is trader commitment.

<sup>\*</sup> All models used in the analysis were ultimately put in linear regression format. The final models created were the result of a long series of exploratory analyses, using as principal tools, stepwise regression (forward selection), all possible subsets regression, basic residual analysis and general logical reasoning. Final model specification, after data reduction, rested primarily on the best of all subsets routine, which looks at all combinations of variables, and chooses as best, the one with the lowest C<sub>p</sub> statistic. The models were constructed as a series of iterations based on logical thinking and various kinds of exploratory analytical techniques.

# EXHIBIT 1

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# INCREMENTAL EFFECTS OF PROGRAM INTERVENTION VARIABLES FOR LABELLING, QUALITY, QUANTITY AND MEAN PERCENTAGE COMPLIANCE

PROGRAM				
INTERVENTION VARIABLES	Labelling	Quality	Quantity	<u>Mean</u>
Time Between Inspections	-	<b>-</b>	-1%	-
Previous Actions:				
- Trader Education	+19%	-	-	+16%
- Written Warning	+10%	-	-	-
- Trader Commitment	+10%	+24%	-	+19%

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 Both trader education and trader commitment as part of inspections are effective in bringing about an increase in mean\* compliance for all regulatory areas.

These results indicate that what occurs in an inspection, rather than the fact of an inspection itself, is usually the most important factor in determining increases in compliance. In relation to the area of <u>quantity</u> compliance, however, we found that the time between inspections was an important factor in determining increases in compliance. The positive effects of an inspection in quantity compliance are less if the time between inspections is large.

Enforcement actions such as trader education, written warnings and/or trader commitment all have incremental effects on compliance. Other mechanisms, such as oral warnings and trader correction, were not seen to have significant impacts.

We also developed models which looked at differences in the probability of an action occurring in the current versus the previous inspection. These difference models were created for actions in which all lots or items were found acceptable, or in which either seizure and detention or a written warning occurred. Our findings are summarized in Exhibit 2. The models describe the effect of various program intervention variables (i.e., previous actions, time between inspections and number of past inspections) on each of the three specific actions. These models demonstrate the relationship among enforcement actions, as highlighted below:

- The program intervention variables which are effective in increasing the probability of having an inspection with all lots acceptable (in all regulatory areas) tend to be enforcement actions which are not too severe, such as trader education and trader correction.
- A written or oral warning indicating that more severe action could be taken if a violation is repeated, is effective in decreasing the probability of products being seized and detained in a subsequent inspection.
- The two main enforcement actions which are effective in decreasing the probability of a written warning are an information letter and a seizure and detention.

Our analysis also showed that complaints and referrals have an effect on mean percentage compliance (i.e., compliance in all or any regulatory area). We found that inspections which occurred as a result of complaints or referrals tended to have a lower percentage compliance than inspections undertaken for other reasons. We can therefore surmise that the referrals and complaints are

з.

<sup>\*</sup> The mean compliance was derived by calculating the mean of any or all percentage compliance values for labelling, quality and/or quantity. The mean compliance is, therefore, a summary of an establishment's overall performance.

# EXHIBIT 2

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# PROGRAM EFFECTIVENESS SHOWN IN THE OTHER DIFFERENCE MODELS

# 1) Increase in Probability of An Inspection with all Lots Acceptable

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PROGRAM INTERVENTION VARIABLES	Labelling	Quality	Quantity	Mean
Previous Actions:				
- Trader Education	+19%	+29%	-	+26%
- Trader Correction	+41%	+13%	+30%	+49%
- Seizure and Detention	-	-	+22%	-
- Volantary Disposal/Return	+22%	-	-	+16%
- Trader Commitment	+36%	-	-	+30%

# 2) Decrease in Probability of An Inspection with a Seizure and Detention

PROGRAM INTERVENTION VARIABLES	Labelling	Quality	Quantity	Mean
Time Between Inspections	-	-	-1%	-
Previous Actions:				
- Oral Warning	-	<del>_</del>	<del>.</del>	+25%
- Written Warning	+38%	+7%	+4%	+8%

# 3) Decrease in Probability of An Inspection with a Written Warning

PROGRAM INTERVENTION VARIABLES	Labelling	Quality	Quantity	Mean
Number of Inspections in Last 5 Years	-	-	+5%	-
Previous Actions:				
- Information Letter	+35%	+87%	+75%	+18%
- Trader Education	_	-	-	+4%
- Seizure and Detention	+29%	+31%	-	+6%
- Trader Commitment	-	+22%	-	+8%



aiding inspectors in identifying problems. When a complaint or referral was the reason for a previous inspection, we found there was an increase in compliance in the current inspection, indicating a positive effect on subsequent compliance.

#### Extension

As long as comparable data on compliance activities can be found in other district offices (which we believe is the case), there should be no problem in extending this pilot into a national study. If a national study were undertaken, it would be necessary to add some variables into the models to allow for regional differences, such as the province and the community size. As well, we recommend that a national study should commence no earlier than April, 1986. This would ensure that a sufficient number of establishments have been inspected under the MIS reporting system. For modelling purposes, we believe that a large number of establishments should have at least two inspections under the MIS method of reporting.

Before a national study is undertaken, consideration should be made as to whether the present form of the analysis is adequate for the Consumer Products Sub-activity or whether further refinement to the analysis is necessary. Further types of analysis can still be performed on the present database and the database can be supplemented with more extensive information.

With respect to the extension of this pilot to other programs, we believe our approach is completely generalizable, as long as data are available regarding compliance activities for these programs. Modification would have to be made for program differences such as the inspection processes used and enforcement actions undertaken.

Our approach and methodology to determine the effectiveness of compliance activities, to the best of our understanding, has been the first of its kind in this area. We have been able to actually assess the relative effectiveness of compliance activities, and using our methodology, such measurements can be extended nationally and to other program areas.

## IMPLICATIONS OF THE FINDINGS

As noted above, the findings of this study provide the first (to our knowledge) quantification of the effect that compliance activities are having on compliance levels. Thus, these findings are important in their own right. They indicate that the inspection function is having an incremental impact on compliance levels and that certain actions are substantially more effective than others in achieving increased compliance. These findings imply that the inspection function has significant and valuable results from the perspective of the Sub-activity objective of protecting against product misrepresentation through detection, deterrence and control (monitoring).

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The findings are also important in light of current strategies being considered to enhance the inspection function. We believe that the results of the study have various applications to improving the cost-effectiveness of inspections.

1.1

It should be noted that we are referring here to the general applicability of the findings if they were derived from a national sample of establishments rather than a sample of establishments from the Toronto District Office. If such a national study were to be undertaken and results such as those found in the pilot study were revealed, then the following types of applications to inspection improvement are feasible. These applications are described in relation to the objectives of the inspection function.

#### Deterrence

This study was able to identify which inspection/enforcement activities are most effective in contributing to the achievement of the deterrence objective (if this is measured in terms of improved compliance). The effect of these activities on deterrence was measured at the level of the individual trader. We were not able to determine the overall effect of the inspection activities on bringing about deterrence in the marketplace. In order to measure the latter effect, it would be necessary to employ a different methodological approach to the one used here (e.g., a survey of traders, inspection of never-inspected establishments, etc.).

The study results clearly indicate that less stringent activities (such as trader education) and negotiating activities (such as trader commitment and written warning) are having a greater impact on compliance levels than other, more stringent activities. This implies that some shift to educational and negotiation activities from more stringent compliance activities may actually reduce risk. Assuming these activities are less costly as well, the overall cost-effectiveness of compliance activities will be greatly increased. Some of the resources freed up could be used for, among other things, undertaking more stringent and costly actions against establishments where compliance is known to be problematic.

If the database included a larger sample of establishments from across Canada, there are a number of further refinements which could be made in terms of how best to expand the education and negotiating activities described above:

• A database which is expanded nationally could be used to determine whether there are geographic (provincial, urban/ rural) differences in the effectiveness of compliance activities. This information could then be used to make decisions regarding inspection resources and activities on a district-specific basis, if differences resulting from the geographic factor were identified. 5.

• An expanded database could identify whether certain inspection activities would be more effective in increasing compliance in particular trade levels, industry types, sizes of establishments, product classes (and any combination of the above). Should such an analysis determine differences in the effectiveness of compliance activities, then the information could be used to make decisions regarding inspection resources and activities on the basis of particular types of establishments, product classes, etc.

## Detection

The inspection function serves as a means of identifying or detecting the level of marketplace non-compliance. The Sub-activity already uses two mechanisms (the dollars at risk and a tiered priority system) to determine how best (costeffectively) to allocate resources toward the detection objective.

Another mechanism of resource allocation for the purposes of detection brought forth in this study, is the use of complaints and referrals.\* The findings clearly show that when an inspection is the result of a complaint or referral, there is an increased tendency for non-compliance to be detected. As well, when a subsequent inspection is carried out, compliance levels tend to improve (a deterrence effect).

We are not suggesting that all inspection resources be devoted to following-up on complaints and referrals nor that all complaints and referrals be followedup. Clearly this is impractical and not feasible. However, we are suggesting that using complaints and referrals as another method of priority setting could bring desirable results both from a detection and deterrence perspective. Of course, the selection of complaints and referrals which are to be acted upon would require some assessment of the factors which would truly warrant the expenditure of resources on an inspection (e.g., the estimated degree of non-compliance, the severity of the non-compliance, the segment size implicated). The fact that consumers have been able to detect the noncompliance would certainly be another important factor to consider in these decisions.

Another approach to resource allocation for the purposes of detection which could be developed from the data collected in a national study would be an establishment risk index. The risk index could be developed for each establishment which has been inspected or for a number of prototype establishments (e.g., large retail food stores in urban British Columbia, small retail food stores in urban British Columbia, etc.). The index would be

<sup>\*</sup> The Sub-activity currently uses complaints and referrals as a tool to isolate problems and change inspection emphasis.



created on the basis of various known characteristics of low and high compliance establishments.\* Inspection resources could then be allocated according to known probabilities of identifying non-compliance, with low-compliance (high-risk) establishments being inspected more frequently than high-compliance (low-risk) establishments.\*\* The beauty of such an indicator is that the data needed to develop it are currently being collected as part of the MIS.

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It should be noted that our methodology was not directed toward making a judgment on the effectiveness of compliance activities in <u>detecting</u> non-compliance across the full spectrum of establishments. It would be necessary to employ a much different range of methodologies, such as the conduct of shadow inspections to determine what has been missed in inspected establishments and the conduct of inspections outside the regular schedule of establishments to determine the extent of non-compliance where there is presently no inspection.

## Monitoring

Another component of the inspection function is a monitoring element or the identification of the overall state of compliance or non-compliance in the marketplace. The risk index which was described above can be used as an indicator for monitoring purposes. A risk index developed for all the establishments which have been inspected across Canada would provide one measure of the overall current risk in the marketplace. This is because most establishments, according to program personnel are inspected, therefore, a fairly complete picture of the level of risk in the marketplace could now be determined.

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It is not advisable, however, to alter inspection strategies to respond only to the risk indices since the following scenario would likely result. More inspection resources would be concentrated on the high risk establishments (low-compliance) and low risk (high-compliance) establishments would be inspected much less frequently or never at all. The level of risk of non-compliance for formerly high risk establishments would continue to be recorded whereas the level of risk in low-risk establishments would not. Thus, if there was increasing non-compliance in formerly low risk establishments, it would not be recorded in the Sub-activity database. If these low-risk establishments became higher-risk (at least relative to others), the inspection process would not be maximizing detection any longer with these establishments being excluded nor be obtaining an accurate assessment of overall risk in the system.

\* Such a risk index has been successfully applied to over 30,000 highway-railway crossings in Canada as a means of determining inspection and upgrading requirements.

\*\* The risk index could, in fact, be strengthened by using seriousness of noncompliance as well, i.e., incorporating into the definition of risk the probability of non-compliance multiplied by expected severity of non-compliance.

In order to avoid such a scenario, inspections would have to be conducted, at least in part, on a random basis, so that both high and low risk establishments could be inspected. This could allow for:

- continuous updating of the priority allocations based on detection (i.e., continuous assessment of which establishments are high-risk)
- a continuous monitoring of the overall level of risk in the system (a form of performance measurement)
- a deterrent effect on all establishments (since they all have a chance of being inspected).

## Summary of Implications

In summary, the results of the study point to several strategies which can be used for the improved cost-effectiveness of the inspection function:

- expansion of known effective, less costly inspection actions for purposes of deterrence
- expansion of the use of complaints and referrals as priority setting and resource allocation mechanisms for purposes of detection
- use of a risk index in combination with random sampling as priority setting and resource allocation mechanisms for the purposes of detection, monitoring and deterrence.

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## I - INTRODUCTION

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#### BACKGROUND

The Consumer Products Branch is part of the Consumer Affairs Bureau, one of the four operational bureaux of the Department of Consumer and Corporate Affairs. The responsibilities of the Consumer Products Branch include:

- The administration of a wide range of Acts and regulations in whole or in part. These are the:
  - Consumer Packaging and Labelling Act
  - Precious Metals Marking Act
  - Textile Labelling Act
  - National Trade Mark and True Labelling Act.
  - In an advisory and consultative role, the development of standards and regulations under Acts whose responsibility lie under other federal departments. These acts are:
    - Food and Drugs Act
    - Canada Agricultural Products Standards Act
    - Fish Inspection Act.
- The administration of two voluntary programs:
  - Care Labelling Program
  - Canada Standard Size Program.
- The monitoring (under the Traded Goods Component) of developments in the market and the preparation of recommendations for legislative/regulatory changes in consultation with consumer/trade associations, other departments and levels of government and international standard writing associations.

The Consumer Products compliance activities comprise its inspection and enforcement, trader education and consumer information, complaints and enquiries and program development, implementation and evaluation activities. Compliance activities relate to the enforcement of the standards and regulations overseeing the quantity, quality, labelling and other disclosure of

information for a wide variety of traded goods identified under the relevant Acts and regulations (specified above). The activities are aimed at protecting against product mis-representation through detection, control and deterrence and enhancing the ability of the consumer to differentiate among product choices.

The key operational work elements comprising the Consumer Products Sub-Activity are described below.

#### Inspections and Enforcement

Inspections are undertaken to ensure that a high degree of compliance is maintained at the trade levels of manufacturing, import/wholesale and retail in predefined product classes (food, textile, precious metals and non-food). The district office staff of the Consumer Products Sub-activity have responsibility for undertaking these inspections and enforcement activities.

A visit to an establishment, other than one which is scheduled or planned, may be initiated for a number of reasons, including a complaint, a referral from another region or government agency, a follow-up to a previous visit, a sample pick-up or a problem-product blitz. The activities which may form part of an inspection are:

- Inspection of products for compliance with quality, quantity and/or labelling regulatory areas. Inspections in the quality area deal with product composition, performance and claims. Advertising and packaging claims are included in inspections of product labelling.
- Enforcement actions such as providing trader education, giving an oral warning and seizing and detaining products. Other actions performed on the part of the trader include, returning the goods to the supplier, correcting the problem, disposing voluntarily of the non-compliant products or providing a commitment to correct the problem. Some enforcement actions, such as sending an information letter on a written warning, are noted in an establishment report for later in-office activities. (Definitions for all actions are included in Appendix A.)
- Completion of an establishment report. The report includes the reason for the visit or inspection and the reinspection date. Also included in this report is a summary, by product, of:
  - the regulatory area of compliance the product is being examined for
  - the number sampled
  - the number accepted

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• the number marginal (applicable for quantity, only)

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- the number defective
- the problem found
- enforcement actions (up to a maximum of three).

Another enforcement action which is not performed in an inspection or through trader education is a visit to an establishment where no establishment report is completed. This occurs for release of seizures, sample pick-up, or non-inspection walk-throughs carried out to maintain an inspection presence. In-office enforcement activities may involve product evaluations or label reviews, advertising reviews, writing letters (for information and warning purposes) and referrals to other regions or government agencies.

#### Complaints and Enquiries

The Branch handles complaints and enquiries received from consumers, industry, other government agencies and the media concerning departmental activities, services and legislation. The complaints and enquiries activity is a useful tool for isolating problems and trends in the marketplace, identifying the need for new regulations, clarifying policy, changing inspection emphasis, etc. This activity is also beneficial in that it may result in timely corrective action being taken in an important product area.

# Trader Education and Consumer Information

The Sub-activity is responsible for the preparation and delivery of seminars, media interviews, meetings and materials for traders, trade organizations, consumers and consumer organizations. The purpose of this activity is to develop a higher level of consumer and trade awareness and understanding of legislative requirements. These information activities are performed as an alternative to direct inspection for achieving marketplace compliance.

#### STUDY PURPOSE

The purpose of this study was to identify the feasibility of developing a quasi-experimental design aimed at determining the effectiveness of different compliance activities. The study was intended to make recommendations regarding the feasibility of extending the pilot to other parts of Canada and to other program areas. The study was also intended to follow-up, in a preliminary manner, ideas related to the trade-off analysis discussed in the earlier evaluation of inspections (final report, dated September, 1985).

The design was implemented as a pilot project so that the relative effectiveness of the inspection, enforcement and complaints and enquiries compliance activities described above could be determined. We did not deal with enquiries since these are more often requests for information rather than the reason for initiating an inspection. The effectiveness of the trader



education compliance activities was also to be determined; however, we looked at trader education performed on a regular basis as part of the inspection/enforcement activity rather than the delivery of formal trader education (e.g., seminars, media interviews, etc.). This was because no file documentation regarding seminars, media interviews, etc. was available.

#### METHODOLOGY

## Overall Design and Data Collection Approach

The Toronto district office was selected as the pilot site for the study. The reason for the selection of this location was that the Toronto area would have a large number of establishments in all trade levels and product classes.

As a first step to the study, it was necessary to become familiar with the file and MIS information retained by the Sub-activity. We examined a preliminary sample of establishment files in order to determine what records are kept on compliance activities and what additional descriptive information is collected on each establishment. We also had discussions with program staff regarding the format of the new MIS and any changes to the manner in which inspection findings have been recorded prior to and after the implementation of the MIS. This information helped us to identify an additional data source to the establishment files and also forewarned us of differences in the calculation of compliance indicators over time.

At the early stages of the study, we investigated the possibility of using a quasi-experimental design involving a control and treatment group. Such a design could only be used if establishments which had never been inspected could be found, i.e., a control group. We determined that it would be possible to find such establishments but that they would be few in number and primarily at the retail trade level.

This information led us to a more feasible and practical approach - a historical design with differing levels/types of treatments. Since compliance activities are performed on establishments at different points in time and encompass different specific actions, we felt that we would be able to determine the effects of these varying treatments (actions) on compliance through a statistical modelling approach.

The next step involved the design of the sample. Our sampling strategy ensured that establishments in all trade levels and product classes were selected. The list of establishments kept by the Toronto distict office was used as the frame for sample selection. Approximately 900 establishments were selected at random from a total of about 8,530 establishments. Data on the history of compliance activities were extracted from the establishment files.

Details on the methodology used in the study are provided in the sections below.


#### Data Collection and Sampling Design

1.1

Prior to beginning our data collection, we did an exploratory review of files at the Ottawa and Toronto district offices. At the same time, we interviewed district office staff regarding the filing systems and the lists on establishments retained by the offices. We also met with individuals responsible for the MIS at headquarters and in Toronto in order to determine the applicability of the information in the system to our study. It was our original intention to use the MIS to obtain information about the establishments in our sample; however, we found that the format of the MIS print-out was not conducive for this purpose.\* Therefore, we collected all the data from establishment files.

From our review of establishment files, we were able to identify the forms and correspondence which contained information relevant to our study. These were:

- establishment report forms filled out by inspectors during an inspection
- letters addressed to the establishment for such purposes as trader information and written warning
- complaint letters written by consumers
- seizure and detention forms, resulting from inspections
- sample record forms, which may have been taken for a variety of purposes, such as surveys, ad hoc and inspection related reasons

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 photocopied establishment report forms sent from other regions for referral purposes.

Examples of an establishment report, a seizure and detention form and sample record form are included in Appendix B.

The establishment files in the Ottawa and Toronto district office differed somewhat in that the forms and letters contained in the establishment files in the Ottawa office only date back three years while the Toronto office keeps all information from the date of first contact with an establishment.

<sup>\*</sup> The MIS print-out not only contained information for the establishments in our sample, but it contained information for all establishments which had an inspection since the initiation of the MIS. However, the print-out did not list establishments in any particular order and the information for inspections was too detailed for our requirements.



The selection of establishments to be included in the study was based on a systematic sample chosen from a list of establishments available at the pilot site. This list classified establishments according to product classes (food, textile, precious metals, and non-food) for each of three trade levels (manufacturing, retail and import/wholesale). For each trade level, a sample of 300 establishments was chosen. However, because certain establishment files were not available or not valid,\* the next establishment on the list was chosen (if it was available and valid). The final sample consisted of 898 establishments drawn from an approximate total of 8,530 establishments. Descriptive statistics of the final sample are shown in Appendix C.

#### Data Items

The data items which were recorded for each establishment in the final sample are shown are Exhibit I-1. We were only interested in the data collected for inspections, enforcement actions and complaints and enquiries which occurred since January, 1980. Information on the data items was collected from the establishment files and transformed into a database for modelling purposes.

It should be noted that the data items for establishment ratings are only applicable for inspections which took place prior to the initiation of the MIS (i.e., prior to July, 1983). Establishments were given a rating of good, average or poor. This rating was based mainly on the opinion of the inspector. After the MIS was put in place, establishment ratings were no longer recorded.

With respect to percentage compliance, the data items also differ, depending on whether the inspection was conducted before or after the initiation of the MIS. Prior to the MIS, an overall compliance rating for an establishment was not recorded. However, the number of acceptable lots and number of sampled lots\*\* were recorded and we used this data, whenever they were available, to calculate percentage compliance. If the inspection was conducted after the initiation of the MIS, we were able to determine percentage compliance from the actual number of units sampled and number of units found acceptable. These were recorded according to quantity, quality and labelling categories of inspection. The number of units found to be marginal in the quantity category of inspection was also recorded. These units were considered as acceptable in the calculation of percentage quantity compliance. For each of the three categories of inspection, we calculated overall percentage compliance ratings for all the products inspected in an establishment.

\*\* A lot may contain one or more items.

<sup>\*</sup> If the file did not contain data/information for the time frame being considered in our study (i.e., January 1980 to June 1985), it was considered invalid.

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#### DATA ITEMS

### 1. Establishment Identification

- identification number
- establishment type
- establishment size
- establishment zone.

### 2. Inspections Since January, 1980

- pre vs. post MIS inspection
- date of inspection
- inspection rating
- reason for the inspection
- quantity number sampled
  - number acceptable
  - number marginal
- quality number sampled
  - number acceptable
- labelling number sampled
  - number acceptable
- action codes
- date of the next scheduled inspection.
- 3. Enforcement Actions Since January 1, 1980

Dates and regulatory area (quality/quantity/labelling) for each action below:

- information letter
- warning letter
- sample
- referrals
- complaints
- seizure/detention
- prosecution.

The database which was developed for modelling purposes required the creation of variables and multiple records. Since in the modelling phase, described below, we compared compliance in consecutive inspections for each establishment, we considered any consecutive inspections as one case. For example, if an establishment was inspected at times  $T_1$ ,  $T_2$ ,  $T_3$  and  $T_4$ , then we compared compliance at  $T_1$  versus  $T_2$ ,  $T_2$  versus  $T_3$  and  $T_3$  versus  $T_4$ , which provided us three cases or records. This creation of multiple records increased the sample size and allowed for a more reliable estimation of the results in the modelling phase. Even though in our modelling we were actually comparing compliance in any consecutive inspections, for the sake of brevity, we will refer to this as "inspections of an establishment". Descriptive statistics on the number of consecutive inspections are shown in Appendix C.

The main objective in the modelling phase was to relate changes in compliance between consecutive inspections to a number of explanatory factors. In particular, we wanted to relate what occurred in the previous inspection and circumstances leading up to the re-inspection to the change in compliance in the current inspection. The history of inspections and enforcement actions was also considered. Since many of the data items involved dates in which activities took place, many variables had to be created with this in mind. For example, if we compared compliance in inspections at time  $T_1$  versus  $T_2$ , with  $T_1$ referred to as the current inspection and  $T_2$  referred to as the previous inspection, we were then able to create variables which indicated:

- The enforcement actions which occurred or did not occur in the previous inspection (i.e., at time T<sub>2</sub>).
- The reason for current and previous inspections (i.e., at time T<sub>1</sub> and T<sub>2</sub>, respectively).
- The number of months between inspections (i.e., at time T1 and T2).
- The number of complaints and referrals received in between inspections (i.e., between T<sub>2</sub> and T<sub>1</sub>).
- The number of inspections and the number of inspections with particular enforcement actions, such as information letters and trader education, in the last 3 and 5 years from the current inspection. In other words, if the current inspection occurred in January, 1985, then we considered what happened in the inspections which took place in the last 3 and 5 years from January, 1985 (i.e., between T1-36 and T1 for 3 year variables and T1-60 and T1 for 5 year variables).
- Percentage of inspections in the last 5 years from the current inspection (i.e., between  $T_1-60$  and  $T_1$ ) with particular enforcement actions, such as written warnings and trader commitment.

### A complete list of variables in the database is shown in Appendix D.

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#### Analytical Methodology

#### Models

All models used in the analysis were ultimately put in linear regression format. The final models created were the result of a long series of exploratory analyses, using as principal tools stepwise regression (forward selection), all possible subsets regression, basic residual analysis and general logical reasoning. Final model specification, after data reduction, rested primarily on the best of all subsets routine, which looks at all combinations of variables, and chooses as best, the one with lowest  $C_p$ statistic (refer to Appendix D for further information on the use of  $C_p$ statistic). In no case did we begin with a pre-determined model specification and merely estimate model values. The models were constructed as a series of iterations based on logical thinking and various kinds of exploratory analytical techniques.

In developing the final models, several scenarios were considered. These scenarios were based on whether the current and the previous inspection occurred before (pre-MIS) or after the introduction of the MIS (post-MIS). The four scenarios which could be considered were:

Current Inspection	Previous Inspection
Post-MIS	Post-MIS
Post-MIS	Pre-MIS
Pre-MIS	<b>Pre-MIS</b>
Pre/Post-MIS	<b>Pre/Post-MIS</b>

Although all these scenarios were considered, all the results in this report show only the difference in compliance measures for consecutive inspections which occurred post-MIS. Post-MIS data is considered by program personnel and ourselves to be more accurate and consistent than data collected before the introduction of the MIS. Variables which were found to be significant in other scenarios were maintained in the final model, even if these variables were not significant in the post-MIS model. Variations among the models were slight, which increased confidence in their final validity.

We developed a basic difference model which looked at the increase in percentage compliance between inspections of establishments inspected for labelling, quantity and quality regulatory areas. As well, we developed other models which looked at differences in the probability an action occurring in the current versus the previous inspection. These models are referred to as "other difference models" in this report. Other difference models were created for actions in which all lots or items were found to be acceptable, or in which either a seizure and detention or a written warning occurred. Difference

models for these actions were created in accordance with each one of the categories for inspection (i.e., labelling, quantity or quality) under consideration. A basic and other difference models were also developed for the mean compliance. That is, the mean of the labelling, quality and/or quantity percentage compliance.

Our models used the compliance indicators which are collected as part of the inspection process. We are aware that there are a number of biases associated with these indicators, as pointed out in a concurrent study investigating the indicators of the Sub-activity. Because our models use differences, we feel many of the biases are eliminated. This is because any systematic bias would be eliminated by differencing. If the bias is random, then the bias associated with the indicators is not really problematic and, for our purposes, the use of differences is just an additional safeguard.

All variables in the final models were classified as one of two types -program intervention and control. Program intervention variables were variables which were related to program effectiveness. Control variables were included in the model to allow for better estimation of the incremental factors, although they were not in themselves measures of effectiveness, i.e., they were included as statistical matching variables. Thus, program intervention variables were generally variables which indicated what occurred in the previous inspection or between inspections, or the actual number of past inspections, while control variables indicated the history of compliance activities or described the establishment. For example, an enforcement action which occurred in the previous inspection would be a program intervention variable, while the fact that the establishment was in the food business would be a control variable.

#### Model Validation

Given the pilot nature of this study, we were more concerned with qualitative than quantitative validation.\* In particular, we focused on model specification -- how certain were we that the correct variables were included in the model. This confirmation was done principally by comparing model results from different databases:

- data from inspections which were conducted following the introduction of the MIS
- data from inspections preceding the introduction of the MIS

<sup>\*</sup> By quantitative validation, we mean such procedures as split sample or jack-knifing procedures, which produce quantitative estimates of coefficient reliability. Qualitative validation refers to such issues as face validity (does the model make sense) and model specification (validity of the form of the model).

 data from establishments which had one inspection after and another inspection before the introduction of the MIS

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 data from establishments which had inspections either before or after the introduction of the MIS.

By analyzing and comparing results from these different model-building exercises, we confirmed that the correct variables were being included in the final models.

### Significance Levels

All significance levels in this report are based on the regression models. In modelling, the significance level is an indication of how strong a relationship exists between two variables when other conditions are controlled. Thus, if the apparent effect of a variable can be explained by these other conditions, then it would not be reported as significant. To illustrate this, consider the example discussed below.

Initially, in analyzing descriptive statistics which compare compliance in the current inspection with the previous inspection, we find that:

- Traders which previously committed to eventual correction of the violative product(s), had a higher mean increase in compliance than traders which made no such previous commitment.
- Establishments which deal in food products, had a lower mean increase in compliance than establishments in all other product classes (textile, precious metals and non-food). However, there was no significant difference in the increases of the other three product classes.
- Establishments which were given an oral warning in their previous inspection, had a higher mean increase in compliance than establishments which had no such warning.
- Importers had a higher mean increase in compliance than retailers and manufacturers. But there was no significant difference in the increases of retailers and manufacturers.
- Establishments with previous action voluntary disposal or return had a lower mean increase in compliance than establishments without this previous action.

Each of these relationships, on their own, is statistically significant. However in analyzing the interrelationships, we come up with the picture shown in Exhibit I-2. Analyzing this Exhibit, we see the following: •





- The incremental effects of previous action oral warning seems mainly due to the effect of previous action trader commitment. Traders which are given oral warnings also tend to commit to correcting the non-compliance.
- When food is introduced as a control variable, the import effect disappears. There is a negative relationship between food and import which indicates that importers tend to deal in products other than food. There is also a negative relationship between food and increase in compliance i.e, food establishments tend to have a lower mean increase in compliance. These two negative relationships produce a positive effect between import and increase in compliance (i.e., a negative multiplied by a negative produces a positive). Therefore, the model shows that importers tend to have a higher increase in compliance than all other trade levels, primarily because of their negative relationship with food.
- The effect of previous action disposal/return seems mainly due to the effect of food establishments. When food is taken into account, there is no difference in the increase in compliance.

Thus, in reporting differences in the increases in compliance, only previous action trader commitment and food are described as significant.

Significance levels are reported in the p notation. For example, p=.0324 implies a level of significance of .0324, i.e., we are 96.76% confident that the observed differences were not due to chance. Final models were based on the C<sub>p</sub> statistic, so there was no necessary significant cut-off. However, almost all variables were significant at p=.2000. In reporting the regression models, t-values are also shown in order to illustrate the strength of relationships. The absolute value of the t-score, like the significance level, indicates the strength of the relationship. A t-score of 14 indicates a stronger relationship than one of 9, even though both have significance levels of .0000.

#### Missing Data

There is no definitive way of handling missing data. We felt that in order to make full usage of the percentage compliance value available in our database, it was necessary to impute values for the missing data. For many variables, a missing data item was imputed by the average of all known values, but for some we tried to maximize what was known about the establishment. For example, if we knew how many inspections occurred in the last year, say X, then we assumed that in the last 3 years (if this value is missing) 3 times X, occurred.

It should be noted that missing values for percentage compliance were never imputed, because these values were used to create the dependent variables in our basic models. As independent variables, missing values of percentage compliance were also not substituted. Missing values for percentage compliance occur mainly because a given establishment is not always inspected for all regulatory areas (i.e., labelling, quality and quantity). Thus, if an establishment was inspected for quality, but percentage quality compliance data were not available for consecutive inspections, then this set of inspection results could not be included in the basic model (but was included in the other difference models). There is, therefore, variation in the characteristics of establishments in the sub-sample for which a model was developed. This is true even when we were comparing the sub-sample for all models in a regulatory area.

### LIMITATIONS

Given the restricted scope, time and budget available for this work, there are certain limitations of the study which are referred to below:

- First, the study was a pilot, conducted at the Toronto district office. Thus, the study results apply to that district office only and the establishments in its catchment area. Extrapolation of the findings to Canada as a whole cannot be made without a broader study involving district offices across Canada. Such a broader study may reveal distinctions among particular districts with respect to the effectiveness of compliance activities.
- Second, although the study involved an extensive data collection and analytical effort, we were not able to exhaust the type of data which could be collected and the analyses which could be undertaken. We believe that the study provides an excellent indication of the type of analyses that can be performed, but certainly, further work is possible, using either the existing database only or supplementing it with other data.
- Third, our study was limited to undertaking a review of files and the conduct of analyses on the data collected. We also reviewed some associated documents and spoke to program personnel in order to provide us with a solid understanding of the inspection process. However, a more in-depth study (e.g., interviews with traders, inspectors, etc.), which would provide a deeper understanding of the study results, could not be undertaken. We believe this type of work should be conducted as part of the ongoing evaluation of the Sub-activity.

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These limitations should be kept in mind when reviewing this report. We do not, however, believe any of these limitations compromise the validity or usefulness of the findings.

#### REPORT ORGANIZATION

The next three chapters describe the results of our analyses in each category of inspection, namely, labelling, quality and quantity. A subsequent chapter describes our findings in relation to the mean compliance.

All these four chapters are organized in essentially the same manner and include:

- the final increase in percentage compliance models
- descriptive statistics for some variables
- other difference models, with related descriptive statistics.

The final chapter of the report summarizes the overall results of the study.

There are several appendices to the report. The appendices are introduced in the report in relation to the sections to which they pertain. Appendix A contains definitions for terminology used in this report. Examples of some forms found in the establishment files are included in Appendix B. A description of the final sample is shown in Appendix C. Appendix D contains a description of the modelling phase of this study. Detailed summaries for all labelling, quality, quantity and mean compliance models, other than increase in percentage compliance models, are provided in Appendices E, F, G and H, respectively.

### II - LABELLING

This chapter will focus on compliance in the area of labelling.\* In the Consumer Products Management Information System Definition and Instructions Manual (April, 1984), a problem-type label:

"Refers to non-compliance with relevant legislation in respect to required label information or label information which is permitted, or prohibited <u>assuming the product itself is in</u> <u>compliance</u>. Compliance of labels may be determined without examining the product itself. Also includes acceptable and/or required <u>marks</u> under the Precious Metals Marking Regulations, assuming the article itself is in compliance."

The models and descriptive tables in this chapter, include only those inspections of establishments for which labelling was an area in which compliance was measured.

#### MODEL FOR INCREASE IN PERCENTAGE COMPLIANCE

As discussed in Chapter I, our basic models are difference models, which look at changes in compliance percentage between inspections. Thus our first model here relates changes in labelling compliance to a number of explanatory factors.

The final percentage compliance difference model for labelling is shown in Exhibit II-1 and II-2. The most important program intervention variable explaining increase in percentage compliance is previous action trader education. The coefficient for previous action trader education, .19, indicates that given two establishments similar in every respect except that only one has been given trader education in the previous inspection, the establishment with trader education is expected to have an increase in labelling compliance of 19% more than the one without trader education. In other words, trader education had an incremental effect of 19% in terms of increasing labelling compliance.

The other major findings are as follows:

 establishments which committed to eventual correction of all future production or shipments of goods in the previous inspection increased compliance by 10% compared to similar establishments which did not make such a commitment

<sup>\*</sup> This includes advertising and packaging.

## MODEL FOR INCREASE IN PERCENTAGE COMPLIANCE: LABELLING

Type of Variable	Variable	Coefficient	t-Value	Significance	Interpretation
Program Intervention	Previous Action Trader Education	. 19	3.35	.001	Increase in compliance of 19% when action in the previous inspection involved trader education.
	Previous Action Trader Commitment	.10	1.85	.065	Increase in compliance of 10% when action in the previous inspection involved trader commitment
	Previous Action Written Warning	.10	1.60	.110	Increase in compliance of 10% when action in the previous inspection involved a written warning.
Control	Percentage of Inspection with all lots Acceptable in last 5 Years	0020	3.42	.001	For each 1% increase in the percentage of past inspections with all lots Acceptable, compliance decreased .20%
	Food	12	2.42	.016	Average decrease of 12% for food establishments
	Constant	.11			
					$C_p = 4$
					$R^2 = 0.111$
					N = 357

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LABELLING COMPLIANCE



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an establishment which received a written warning in the previous inspection, had an increase in compliance of 10% more than an establishment which did not receive a written warning (everything else being equal).

These findings are the basic ones related to program effectiveness. In other words, they tell us trader education, trader commitment, and written warnings as part of inspections are all effective instruments in bringing about increases in labelling compliance.

The other variables are matching or control variables. Their inclusion in the model allows for better estimation of the incrementality factors, but they are not measures of effectiveness. However, their interpretation may be interesting in terms of general patterns, and is provided below:

- each extra percent of past inspections which had all lots acceptable, decreased compliance by .20% (regression towards the mean effect\*)
- food establishments tend to decrease in labelling compliance by 12% more than other establishments. This also implies that there is no difference between the increases in compliance for establishments in the other product classes (i.e., textile, precious metals and non-food).

These results are highlighted further in the descriptive statistics shown in Exhibit II-3. For example, we see:

- 60.0% of establishments which had previous action trader education, increased compliance by more than 10%, while only 23.8% of establishments which had previous action trader education increased by more than 10%
- of those establishments which had previous action trader commitment, 45.0% had increases in percentage compliance of more than 10% compared to 25.6% of establishments which had no previous action trader commitment

Regression toward the mean signifies that particularly high values in one inspection will tend to be lower in the next (and vice-versa) due to normal statistical variability.

### LABELLING: VARIABLES IN THE FINAL MODEL BY CHANGES IN PERCENTAGE COMPLIANCE

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	VARIABLE	DECREASE 10% +	DECREASE	INCREASE 0-10%	INCREASE	TOTAL	NET CHANGE
% OF ESTABLISHMENTS	Previous Actions:						
	Trader Education - With	8.0%	15.9%	16.0%	60.0%	100.0%	(26.7%)
	- Withou	ıt 23.1	43.7	9.4	23.8	100.0	(1.2)
	Trader Commitment - With	13.4	31.7	10.0	45.0	100.0	(20.0)
	- Withou	it 22.6	41.4	10.4	25.6	100.0	(1.7)
	Written Warning - With	9.5	38.2	14.3	38.0	100.0	(14.9)
	- Withou	it 22.5	40.0	9.8	27.6	100.0	(3.4)
	Food Non Rood/Textiles/	25.7	28.1	18.2	28.0	100.0	(4.4)
	Precious Metals	18.2	46.6	5.8	29.3	100.0	(5.0)
MEAN 2*	Percentage of Past	332%	57.7%	14.4%	17.9%	36.5%	
•	all lots Acceptable						

\*N.B. These percentages are the mean values of the variable for each group of establishments. Establishments were divided into four groups based on the change in compliance. There is also one column - TOTAL - which is all establishments in the labelling subsample. For example, the first percentage in this row is 33.2% which indicates that establishments which had major decreases in compliance had a mean percentage of past inspections with all lots acceptable of 33.2% compared to a mean of 36.5% for the complete subsample. of those with previous action written warning, only 9.5% had major decreases in compliance, while 38.0% had major increases. In comparison, of those with no previous action written warning about equal percentages had major decreases and increases (i.e., 25.5% versus 27.6%)

 25.7% of food establishments decreased more than 10% in compliance, while only 18.2% of other types of establishments decreased more than 10% in compliance.

In terms of net change and here net change refers to the overall mean percentage increase in compliance, we find:

- the average increase in compliance for establishments which received some education in the previous inspection was 26.7%, as opposed to 1.2% for those which did not
- establishments which did not receive a written warning in the previous inspection had an average increase of 3.4%, while those which did increased an average of 14.9%
- establishments which committed to eventual correction of the non-compliant product(s) in their previous inspections had a mean percentage increase in compliance of 20.0%, compared to 1.7% for those which had made no such commitment.

These descriptive statistics provide further evidence that when trader education, trader commitment and written warnings occur in an inspection, there is a higher tendency for increased percentage compliance in a subsequent inspection. Labelling compliance does not tend to increase as much when these actions do not occur in an inspection.

#### Effects of Other Variables

The section above dealt with the variables that entered the final model. This section focuses on those variables that are not in the final model.

The mean percentage increase in compliance for some establishment and all program intervention variables are shown in Exhibits II-4, II-5 and II-6. It should be noted that in these Exhibits, we describe variables excluded from the final model as well as some of those which are included. Also shown in these Exhibits is a description of the subsample for which labelling is an area in which compliance was measured. Labelling is probably the one area in which compliance is measured throughout all product classes and trade levels.

NET CHANGE IN LABELLING COMPLIANCE BY TYPE OF ESTABLISHMENT

	% OF CASE	NET CHANGE**
Trade Level		
Manufacture	35.6	2.8
Retail	33.6	2.0
Wholesale/Import	30.8	10.0
Product Class		
*Food	37.0	4.4
Textile	29.7	5.6
Precious Metals	7.8	-6.1
Non-Food	25.5	7.6
Establishment Size		
Small	27.2	4.8
Medium	24.9	9.2
Large	47.9	2.5

N = 357

\* Variable in the final model.

\*\* Mean percentage increase.

### NET CHANGE IN LABELLING COMPLIANCE BY NUMBER OF PAST INSPECTIONS, AND TIME BETWEEN INSPECTIONS

	% OF CASE	NET CHANGE*
Number of Inspections in Last 3 Years		
1	22.4	3.8
2-3	46.2	5.3
More than 3	31.4	4.7
Number of Inspections in Last 5 Years		
1 <b>-</b> 3	30.5	3.8
4-5	35.6	5.1
6-9	25.5	7.2
More than 9	8.4	-0.2
Time Between Current and Previous Inspecti	ons	
0-3 Months	20.4	6.4
3-6 Months	21.3	8.4
6-9 Months	20.2	2.6
9-12 MOnths	18.5	5.5
More than 12 Months	19.6	0.6

## N = 357

\* Mean percentage increase.

## NET CHANGE IN LABELLING COMPLIANCE BY ACTIONS IN THE PREVIOUS INSPECTION

ACTION IN THE	% OF CASES	NET C	HANGE**
PREVIOUS INSPECTION	WITH ACTION	WITH ACTION	WITHOUT ACTION
*Trader Education	14.0	26.7	1.2
Information Letter	6.4	4.7	4.8
Trader Correction	50.7	10.5	-1.2
Oral Warning	3.4	9.6	4.6
*Written Warning	11.8	14.9	3.4
Seizure & Detention	7.0	5.5	4.7
*Trader Commitment	16.8	20.0	1.7
Voluntary Disposal/Return	8.7	0.0	33.1

N = 357

\* Variable in the final model.

**\*\*** Mean Percentage increase.

Exhibit II-4 describes establishment characteristics (trade level, product class and establishment size) and changes in compliance. Key features are indicated below:

- import establishments had a mean increase of 10.0%, compared to 2.8% and 2.0% for manufacturing and retail establishments, respectively
- establishments which deal in precious metals had a mean decrease in compliance, while establishments which deal in other products had a mean increase in compliance
- medium-size establishments had a higher mean increase in compliance (9.2%) than small (4.8%) and large (2.5%) size establishments.

Exhibit II-5 describes changes in compliance by number of past inspections and time between inspections. We see that: /

- as the number of past inspections (for the last 3 years) increased, there are not large differences in the mean increase in compliance
- as the number of past inspections (for the last 5 years) increased the mean increase in compliance seems to increase and then decrease substantially (for 6-9 inspections increases of 7.2% compared with -0.2% for more than 9 inspections)
- as the number of months between inspections increased, the percentage increase in compliance appears to decrease (increases of 6.4% for 0-3 months versus 0.6% for more than 12 months).

Exhibit II-6 shows the changes in compliance by actions in the previous inspection. Some of the important findings relating to variables not in the final model are:

- the average increase in compliance for establishments which corrected the non-compliance in their previous inspection was 10.5%, as opposed to -1.2% for those which did not
- establishments which were given an oral warning in their previous inspection had a mean increase of 9.6% in compliance versus 4.6% for those establishments which were not

 establishments which had a previous action of voluntary disposal/return had no change in compliance, while establishments without this action had a mean increase of 33.1%. This indicates a negative relationship between this action and increases in compliance.

Each of the foregoing Exhibits (11-4 to 11-6) showed the relationship of specific control and program variables to increases in labelling compliance. These relationships, on their own, are statistically significant. However, in analyzing the interrelationships with the final model variables, and hence interpreting their exclusion from the model, we derived the picture shown in Exhibit II-7. Analyzing this Exhibit, we see the following:

- the import effect disappears when food is controlled for
- the precious metals effect disappears when percentage acceptable is controlled for
- the number of past inspections (for the last 5 years) effect disappears when food is controlled for. Food establishments are inspected more often then establishments in other product classes (in the area of labelling)
- the effect of time between inspections seems mainly due to the percentage of past inspection with all lots acceptable effect, i.e., the establishments with higher percentage of past inspections with all lots acceptable tend not to be re-inspected as quickly as establishments which have lower percentages of past inspections with all lots acceptable
- establishments with previous action trader correction are establishments which had a low percentage of past inspections acceptable and had previous action trader education
- the effect of previous action oral warning seems mainly due to the effect of previous action trader commitment. Establishments which are given oral warnings also tend to commit to correcting the noncompliance
- the effect of previous action disposal/return seems mainly due to the effect of food establishments. When food is taken into account, there is no difference in the increase in compliance for establishments which had and those which did not have previous action disposal/return.

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### OTHER DIFFERENCE MODELS

Supplementary models were developed for changes or differences in the probability of an inspection with actions: all lots acceptable, a seizure and detention, and a written warning. The influence of program intervention and control variables on these changes is elaborated in Appendix E. Exhibits II-8, II-9 and II-10, illustrate the final other difference models. If we compare these models with the increase in percentage compliance model, we see that some of the same program intervention variables are having an incremental effect. For example:

- in Exhibit II-8, a previous action of trader education increased the probability of an inspection with all lots acceptable by 19%. Also, the probability of an inspection with all lots acceptable increased by 36%, when there was trader commitment in the previous inspection
- in Exhibit II-9, a previous action written warning decreased the probability of an inspection with a seizure and detention by 38%.

In addition to the variables that are common to the basic model (increase in percentage compliance), a number of other variables were identified as significantly influencing the probability of an inspection with a particular action. We can observe that:

- in Exhibit II-8, the probability that the next inspection will have all lots acceptable increased by 41% when the trader had to correct some non-compliance in the last inspection. Also, there was a 22% increase in probability of an inspection with all lots acceptable when voluntary disposal or returning of products was an enforcement action in the previous inspection
- in Exhibit II-10 a previous action information letter decreased the probability of an inspection with a written warning by 35%. With a seizure and detention as an enforcement action, there was a 29% decrease in probability that the next inspection will result in a written warning.

The results of the other difference models are shown further in the descriptive statistics in Exhibits II-11, II-12 and II-13. These Exhibits indicate the change in compliance status between the previous and current inspections for each of the three actions under consideration. For example, in the all lots acceptable model (Exhibit II-11), a change in compliance status from "unacceptable to acceptable" means that some of the lots were unacceptable in the

EXHIBIT II-8



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## LABELLING: INSPECTIONS WITH SEIZURES AND DETENTIONS



### LABELLING: INSPECTIONS WITH WRITTEN WARNINGS





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### LABELLING: VARIABLES IN THE FINAL ALL LOTS ACCEPTABLE MODEL BY CHANGE IN COMPLIANCE STATUS FROM PREVIOUS TO CURRENT INSPECTION

### CHANGE IN COMPLIANCE STATUS

	VARIABLE		UNACCEPTABLE TO ACCEPTABLE	NO CHANGE	ACCEPTABLE TO UNACCEPTABLE	TOTAL	NET CHANGE
% OF ESTABLISHMENTS	Previous Action:						
	Trader Education	- With	46.6%	53.4%	0.0%	100.0%	(46.6%)
		- Without	16.3	70.0	13.7	100.0	(2.6)
	Trader Commitment	- With	39.0	61.0	0.0	100.0	(39.0)
		- Without	15.9	69.4	14.7	100.0	(1.2)
	Trader Correction	- With	<b>29.</b> 0	71.0	0.0	100.0	(29.0)
		- Without	11.9	64.3	23.8	100.0	(-11.9)
	Voluntary Disposal	/					•
	Return	- With	9.1	90.9	0.0	100.0	(9.1)
		- Without	21.5	65.8	12.7	100.0	(8.8)
	Food		13.4	79.6	7.0	100.0	(6.4)
	Non-Food/Textile/Pre	cious Metal	s 25.0	60.3	14.7	100.0	(10.3)
	Retail		12.3	79.2	8.5	100.0	(3.8)
	Manufacture/Import		24.4	62.4	13.2	100.0	(11.1)
	Large		17.3	66.9	15.8	100.0	(1.5)
	Medium		24.3	70.8	4.9	100.0	(19.4)
	Small		22.7	66.4	10.9	100.0	(11.6)
MEAN X*	Previous Percentage						
	Labelling Complia	ince	51.0%	66.0%	96.2%	66.4%	
	Percentage of Inspec	tions			(0.1	25.2	
	with all lots Acc	eptable	23./	33+1	08.1	32.3	

\* N.B. These values are the means of the variable for the three groups of establishments (based on change in compliance status) and for all establishments in the labelling subsample.

## LABELLING: VARIABLES IN THE FINAL SEIZURE AND DETENTION MODEL BY CHANGE IN COMPLIANCE STATUS FROM PREVIOUS TO CURRENT INSPECTION

				CHANGE IN CO	MPLIANCE STATUS	-	
	VARIABLE		SEIZURE TO No seizure	NO CHANGE	NO SEIZURE TO SEIZURE*	TOTAL	NET CHANGE
<b>% OF ESTABLISHMENTS</b>	Previous Action Writte	en		70 08	1 5 84	100 09	(00 08)
	warning	- With - Without	23•4% 2•3	73.34 97.4	0.3	100.0%	(23.9%) (2.0)
<u>MEAN 2</u> **	Percentage of Past In with seizures and detentions	spections	37.2%	3.7%	14.3%	5.7%	
<u>MEAN </u> #**	Number of Inspections a Written Warning the last 5 Years	with in	0.48	0.14	0.50	0.16	

\* Small Sample Size

\*\* N.B. These values are the means of the variable for the three groups of establishments (based on change in compliance status) and for all establishments in the labelling subsample.

## LABELLING: VARIABLES IN THE FINAL WRITTEN WARNING MODEL BY CHANGE IN COMPLIANCE STATUS FROM PREVIOUS TO CURRENT INSPECTION

				CHANGE IN C	COMPLIANCE STATUS	3	
			WARNING TO		NO WARNING		NET
	VARIABLE		NO WARNING	NO CHANGE	TO WARNING*	TOTAL	CHANGE
% OF ESTABLISHMENTS	Previous Action:						
	Seizure and Detention	n - With	57.5%	42.5%	0.0%	100.0%	(57.5%)
		- Without	10.2	89.1	0.7	100.0	(9.5)
	Information Letter	- With	55.0	42.0	2.6	100.0	(52.6)
		- Without	10.7	88.8	0.5	100.0	(10.2)
	Food		31.6	67.8	0.6	100.0	(31.1)
	Non Food/Textile/Preciou	us Metals	3.•5	95-8	0.7	100.0	(2.8)
	Retail		14.0	85.3	0.7	100.0	(13.2)
	Manufacture/Import		14.5	84.9	0.6	100.0	(13.9)
<u>MEAN %</u> **	Percentage of Past Inspe with written warnings	ections B	6.7%	1.5%	3.7%	2.2%	
MEAN #**	Number of Inspections wi information letters i the past 3 years	lth In	0.11	0.03	0.00	0.04	

\* Small Sample Size

\*\* N.B. These values are the means of the variable for the three groups of establishments (based on change in compliance status) and for all establishments in the labelling subsample.

previous inspection and in the current inspection, all lots were acceptable. On the other hand, a change in compliance from "acceptable to unacceptable" means that all lots were acceptable in the previous inspection and some were unacceptable in the current inspection. No change in compliance status means that the establishments had either all lots acceptable or some lots unacceptable in both the previous and current inspections. The net change in compliance status is also shown in these Exhibits. This is simply the difference between the changes in compliance status. Thus, in Exhibit II-11, this is the difference between the percentage of establishments that changed from "unacceptable to acceptable" and those that changed from "acceptable to unacceptable".

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Focusing on the program intervention variables only, we see that the occurrence or non-occurrence of specific actions has a large effect on change in compliance status, for example:

- in Exhibit II-11, 46.6% establishments which had a previous action trader education changed from the unacceptable to acceptable status whereas only 16.3% of establishments without this action had a similar change in status. In terms of the net change in status, an overall net change of 46.6% is shown for establishments with versus 2.6% without the action. A similar finding is apparent for all the other program intervention variables (i.e., trader commitment, trader correction, voluntary disposal). In all cases with the action, the net change is from the unacceptable to acceptable status and without the action, the net change is either from the acceptable to unacceptable status or the reverse.
- in Exhibit II-12, we see that with the program intervention variable, previous action written warning, 25.4% of establishments changed from a seizure status in the previous inspection to no seizure in the current inspection. Without a written warning, only 2.3% of establishments had a similar change in status. Because a written warning generally precedes a seizure, a very small percentage of establishments changed from a no seizure to seizure situation, without a written warning (i.e., 0.3%). It should be noted that with a previous action written warning very few establishments (1.5%) changed from a no seizure to seizure situation, indicating the effectiveness of the written warning.
- in Exhibit II-13, 57.5% of establishments which had a seizure and detention changed from the warning to no warning status compared to 10.2% of establishments which did not have this action. In terms of net change, an overall net change of 57.5% is shown for

II.7

establishments with versus 9.5% for establishments without the action. This indicates that seizure and detention actions have a strong effect on improving compliance status (i.e., from warning to no warning). A similar effect on compliance status is found with a previous action information letter.

Exhibit II-14, summarizes the net change in compliance status for the three actions under consideration (all lots acceptable, seizure and detention, written warning) by the occurrence or non-occurrence of various enforcement actions in the previous inspection. We can observe that within each action, there are several enforcement actions which on their own are having an effect on changing compliance status, although they did not appear in the final other difference model. For example, in addition to the variables in the final model, oral warning and written warning are having an effect on changing compliance status with respect to all lots acceptable.

The Exhibit also shows that among actions, there are several enforcement actions which on their own are having an effect on changing compliance status although they do not appear in all the final other difference models. For example, we see that trader commitment, on its own has a statistically significant effect on all changes in compliance status being considered although it only appears in the final all lots acceptable model. We find a similar effect with trader education and written warning. We can therefore infer that trader education, written warning and trader commitment are having an effect at different stages of the inspection process. It is also interesting to note that these three enforcement actions all entered our basic (change in percentage labelling compliance) model.

LABELLING: NET CHANGE IN COMPLIANCE STATUS BY ACTION

•	ACCEP Net C	ACCEPTABLE NET CHANGE		SEIZURE & DETENTION NET CHANGE		WRITTEN WARNING NET CHANGE	
ACTION IN THE PREVIOUS INSPECTION	WITH ACTION	WITHOUT ACTION	WITH ACTION	WITHOUT ACTION	WITH ACTION	WITHOUT ACTION	
Trader Education	46.6%	2.6%	6.5%	5.0%	16.1%	13.4%	
Information Letter	3.3	9.2	23.7	3.6	52.6*	10.2	
Trader Correction	29.0*	-11.9	5.0	5.4	14.2	13.3	
Oral Warning	12.5	8.7	29.4	4.3	35.3	12.0	
Written Warning	9.3	8.7	23.9*	2.0	NA	NA	
Seizure and Detention	6.1	9.0	NA	NA	57.5*	9.5	
Trader Commitment	39.0*	1.2	12.0	3.7	30.1	10.1	
Voluntary Disposal/Return	9.1*	8.8	7.9	5.0	26.3	12.6	

\* Variables in the final model.



### III - QUALITY

This chapter will deal with the regulatory area of quality compliance. Included under quality are problems related to:

- grades (permanent and condition defects)
- composition/substitution
- package misrepresentation
- claims/performance (misrepresentation and care of textiles).

The results in this chapter include only inspections in which an establishment was inspected for quality compliance.

#### MODEL FOR INCREASE IN PERCENTAGE COMPLIANCE

The increase in percentage quality compliance between consecutive inspections was modelled to determine what program intervention variables had an incremental effect on compliance. The final difference model is shown in Exhibits III-1 and III-2. The only program intervention variable in the final model is previous action trader commitment. Its coefficient of .24 indicates that given an establishment with trader commitment in its previous inspection and another without this previous action (everything else being equal), the establishment with the action will have an increase in compliance of 24% more than the other.

The control variables in this model indicate that:

- retailers increased compliance by 22% more than manufacturers and importers (everything else being equal)
- establishments with a greater number of inspections having written warnings decreased more in compliance (12% for every extra inspection).

These findings are further borne out by analyzing the descriptive statistics in Exhibit III-3. For example, of the establishments which committed to taking some future action in their previous inspection, 22.2% increased in compliance by more than 10%, while only 3.7% decreased in compliance by more than 10%. In comparison, of the establishments which had no previous action trader commitment, about equal percentages increased and decreased by more than 10% (i.e., 30.1% versus 26.0%). In terms of net change, we find that establishments which had this action increased on average of 13.5% as opposed to -0.8%

## MODEL FOR INCREASE IN COMPLIANCE PERCENTAGE: QUALITY

Type of Variable	Variable	Coefficient	t-Value	Significance	Interpretation
Program Intervention	Previous Action Trader Commitment	.24	2.45	.016	Increase in compliance of 24% when action in the previous inspection involved Trader Commitment
Control	Retail	•22	2.42	.017	Average increase of 22% for retail establishments
	<pre># of Inspections in last 5 years with Written Warnings</pre>	12	1.86	•066	For each inspection with a written warning in the last 5 years, compliance rate decreased by 12%
	Constant	15			
					$C_p = 2$ $R^2 = 0.313$ N = 107
	,	1	i	1	

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## QUALITY COMPLIANCE

## PROGRAM INTERVENTION

CONTROL


### QUALITY: VARIABLES IN THE FINAL MODEL BY CHANGES IN PERCENTAGE COMPLIANCE

		CHANGE IN COMPLIANCE					
	VARIABLE	DECREASE	DECREASE	INCREASE 0-10%	INCREASE	TOTAL	NET <u>CHANGE</u>
Z OF ESTABLISHMENTS	Previous Action Trader Commitment - With - Without	3.7% 28.8	74.1% 36.3	0.0% 10.0	22.2% 25.0	100.0% 100.0	(13.5) (-0.8)
	Retail Manufacture/Import	26.0 14.7	32.9 73.5	11.0 0.0	30.1 11.8	100.0 100.0	(6.2) (-4.4)
MEAN #*	Number of Inspections with a Written Warning in the Last 5 Years	0.58	0.18	0.46	0.21	0.30	

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\* N.B. These values are the means of the variable for the four groups of establishments (based on change in compliance) and for all establishments in the quality subsample.

for those which did not have this action. These descriptive statistics support the model finding that when trader commitment occurs in an inspection, there is a higher tendency for an increased percentage quality compliance than when there is no trader commitment.

#### Effects of Other Variables

Descriptive results for some establishment and all program intervention variables are shown in Exhibits III-4, III-5 and III-6. In Exhibit III-4, we see that the majority of the establishments inspected for quality were large foodretailers. Also shown in Exhibit III-4 are findings which relate to variables not in the final model. These are:

- establishments which deal in food products increased compliance by 4.7%, whereas establishments which deal in textiles and non-food products decreased compliance by 14.3% and 4.4%, respectively
- large-size establishments had a lower increase in compliance (1.7%) than medium (3.6%) and small (7.1%) size establishments.

Exhibit III-5 shows the changes in compliance by number of past inspections and time between inspections. Some of the results are:

- as the number of inspections (in the last 3 years) increases, there is a reduction in the mean percentage increase
- there does not appear to be any definite trend with increase in percentage compliance and the number of inspections in the last 5 years
- similarly, for time between inspections there is no definite trend.

Described in Exhibit III-6 are changes in percentage compliance by the occurrence or non-occurrence of enforcement actions in the previous inspections. Some important findings for variables not included in the final model are:

- the mean percentage increase for establishments which had no previous action trader correction was 8.1%, while the establishments which had this previous action had a decrease of 0.3%
- oral warnings appear to have a negative affect on increase in quality compliance (-10.9% for establishments with oral warnings and 4.1% for those without)

III.2

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#### • 4 NET CHANGE IN QUALITY COMPLIANCE BY TYPE OF ESTABLISHMENT

% OF CASE	NET CHANGE**
12.1	-7.3
68.2	6.2
19.6	-2.6
85.0	4.7
6.5	-14.3
0.0	NA
7.5	-4.4
13.1	7.1
22.4	3.6
64.5	1.7
	% OF CASE       12.1       68.2       19.6       85.0       6.5       0.0       7.5       13.1       22.4       64.5

N = 107

Variable in the final model. \*

\*\* Mean percentage increase.

# NET CHANGE IN QUALITY COMPLIANCE BY NUMBER OF INSPECTIONS AND TIME BETWEEN INSPECTIONS

	% OF CASE	NET CHANGE*
Number of Inspections in Last 3 Years		
1	17.8	14.4
2-3	32.7	3.3
More than 3	49.5	-1.6
Number of Inspections in Last 5 Years		
1-3	21.5	13.7
4-5	24.3	0.3
6-9	40.2	2.6
More than 9	14.0	-7.8
Time Between Current and Previous Inspections	<u>.</u>	
0-3 Months	22.4	-0.2
3-6 Months	27.1	5.5
6-9 Months	27.1	-4.3
9-12 Months	10.3	8.7
More than 12 Monts	13.1	12.6

N = 107

\*\* Mean percentage increase.

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# NET CHANGE IN QUALITY COMPLIANCE BY ACTIONS IN THE PREVIOUS INSPECTION

ACTIONS IN THE PREVIOUS INSPECTION	% OF CASES WITH ACTION	NET CH WITH ACTION	ANGE** WITHOUT ACTION
Trader Education	7.5	5.6	2.6
Information Letter	13.1	-3.2	3.7
Trader Correction	62.6	-0.3	8.1
Oral Warning	8.4	-10.9	4.1
Written Warning	27.1	0.7	3.6
Seizure and Detention	16.8	-3.4	4.1
*Trader Commitment	25.2	13.5	-0.8
Voluntary Disposal/Return	22.4	11.6	0.3

N = 107

\* Variable in the final model.

\*\* Mean percentage increase.

- establishments which had products seized and detained in their previous inspection had a mean percentage increase in compliance of -3.4% compared to 4.1% for those which did not
- the mean percentage increase for establishments with previous action disposal/return was 11.6% compared to 0.3% for establishments without.

These relationships on their own are statistically significant, but these variables do not enter the model. The reasons for this are illustrated in Exhibit III-7. We see that:

- the number of inspections in the last 3 years is positively correlated with the number of inspections with written warnings in the last 5 years, indicating that establishments with many previous written warnings are inspected more frequently
- the effect of previous action trader correction disappears when both previous action trader commitment and number of written warnings are controlled for
- the effect of previous action oral warning is mainly due to its relationship to the retail trade level. Establishments which received oral warnings in their previous inspection tend not to be at the retail trade level
- the effect of previous action seizure and detention is mainly due to its relationship to the retail trade level. Establishments which received a seizure and detention in their previous inspection tend not to be in the retail trade level
- the effect of previous action disposal/return is also due to its relationship to the retail trade level.
  Establishments which voluntarily disposed or returned products in their previous inspection tend to be retailers.

#### OTHER DIFFERENCE MODELS

The models for the change in probability of an inspection with: all lots acceptable, a seizure and detention, and a written warning are each illustrated in Exhibits III-8, III-9 and III-10, respectively. (These models are summarized further in Appendix F.)

# EFFECTS OF OTHER INFLUENCES ON INCREASE IN QUALITY COMPLIANCE



### QUALITY: INSPECTIONS WITH ALL LOTS ACCEPTABLE



### CONTROL



#### QUALITY: INSPECTIONS WITH SEIZURES AND DETENTION

#### PROGRAM INTERVENTION



CONTROL

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#### QUALITY: INSPECTIONS WITH WRITTEN WARNINGS

### PROGRAM INTERVENTION

CONTROL





A number of variables which relate to program effectiveness were found to be significant in improving the probability of an inspection with a particular action. We found that:

- in Exhibit III-8, previous actions of trader education and trader correction are both effective instruments in increasing the probability of an inspection with all lots acceptable. Each of these actions increased the probability by 29% and 13%, respectively
- in Exhibit III-9, the probability of an inspection with a seizure and detention decreased by 7% when a written warning was given in the previous inspection
- in Exhibit III-10, the program intervention variable previous action trader commitment had an incremental effect in the decrease in probability of an inspection with a written warning model. This action decreased the probability of an inspection with a written warning by 22%. It should be noted that previous action trader commitment was also found to be incremental in the basic model discussed above. The other program intervention variables which were incremental in decreasing the probability of an inspection with a written warning were previous actions of an information letter and a seizure and detention. When an information letter is a part of the enforcement actions undertaken in the previous inspection, the probability of an inspection with a written warning decreased by 87%. Similarly, when a seizure and detention is an enforcement action, the probability decreased by 31%.

Descriptive statistics for these difference models are shown in Exhibits III-11, III-12 and III-13. The major findings are:

- in Exhibit III-11, we see that when trader education is an enforcement action there is a higher net change in compliance status than without this action. With this action there was a net change from the unacceptable to acceptable status of 38.9% and a net change from the unacceptable to the acceptable of only 10.6% without this action. A similar result is shown for previous action trader commitment. We can observe net changes of 30.0% with trader commitment compared to 6.7% without trader commitment

 in Exhibit III-12, 22.8% of establishments which had a written warning changed from the seizure to no seizure status compared to 4.3% of establishments which did not

### QUALITY: VARIABLES IN THE FINAL ALL LOTS ACCEPTABLE MODEL BY CHANGES IN COMPLIANCE STATUS FROM PREVIOUS TO CURRENT INSPECTION

### CHANGE IN COMPLIANCE STATUS

	VARIABLE	UNACCEPTABLE TO ACCEPTABLE	NO CHANGE	ACCEPTABLE TO UNACCEPTABLE	TOTAL	NET CHANGE
<b>%</b> OF ESTABLISHMENTS	Previous Action:					
	Trader Education - With	38.9%	61.1%	0.0%	100.0%	(38.9%)
	- Without	15.2	80.2	4.7	100.0	(10.6)
	Trader Commitment - With	30.0	70.0	0.0	100.0	(30.0)
	- Without	12.6	81.5	5.9	100.0	(6.7)
	Reason for Previous is					
	Complaint/Referral	13.2	81.1	5.7	100.0	(7.5)
	Planned/Sample/Other	19.8	76.7	3.4	100.0	(16.4)
	Food	10.7	87.6	1.7	100.0	(9.1)
	Non Food/Textile/Precious Metals	35.4	54.2	10.4	100.0	(25.0)
MEAN %	Percentage Quality Compliance					
	in the Previous Inspection	40.2%	55.8%	85.7%	54.3%	

\* N.B. These values are the means of the variable for the three groups of establishments (based on change in compliance status and for all establishments in the quality subsample.

### QUALITY: VARIABLES IN THE FINAL SEIZURE AND DETENTION MODEL BY CHANGES IN COMPLIANCE STATUS FROM PREVIOUS TO CURRENT INSPECTION

#### CHANGE IN COMPLINACE STATUS

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	VARIABLE	SEIZURE TO NO SEIZURE	NO CHANGE	NO SEIZURE TO SEIZURE*	TOTAL	NET CHANGE
% OF ESTABLISHMENTS	Previous Action Written					
	Warning - With	22 • 8%	77 • 2%	0.0%	100.0%	(22.8%)
	- Without	4.3	95.2	0.5	100.0	(3.7)
	Reason for Current is					
	- Complaint/Referral	11.3	88.7	0.0	100.0	(14.5)
	- Planned/Sample/Other	6.0	93.4	0.6	100.0	a (5.4)
<u>MEAN 2</u> **	Percentage of Past Inspections with:					
	- Written Warnings	11.9%	2.7%	0.0%	3.5%	
	- Seizures and Detentions	4.6	20.7	0.0	9.7	
MEAN #**	Number of Inspections with					
	a Written Warning in					
	the last 5 Years	0.46	0.25	0.00	0.27	
	Number of Referrals received					
	between inspections	2.05	0.51	0.00	0.65	

\* Small Sample Size

\*\* N.B. These values are the means of the variable for the three groups of establishments (based on change in compliance status) and for all establishments in the quality subsample.

### QUALITY: VARIABLES IN THE FINAL WRITTEN WARNING MODEL BY CHANGES IN COMPLIANCE STATUS FROM PREVIOUS TO CURRENT INSPECTION

#### CHANGE IN COMPLIANCE STATUS

	VARIABLE		WARNING TO NO WARNING	NO CHANGE	NO WARNING TO WARNING*	TOTAL	NET CHANGE
				- <u></u>	- <del>, <u>, , , , , , , , , , , , , , , , , , </u></del>		<b>&gt;</b>
<b>% OF ESTABLISHMENTS</b>	Previous Actions:						
	Information Letter	- With	70.4%	25.9%	3.7%	100.0%	(66.7%)
		- Without	17.1	82.5	0.5	100.0	(16.6)
	Trader Commitment	- With	42.4	57.6	0.0	100.0	(42.4)
		- Without	17.5	81.5	0.9	100.0	(15.7)
	Seizure & Detention	n - With	57.6	42.4	0.0	100.0	(57.6)
		- Without	16.8	82.1	1.1	100.0	(16.6)
	Food		33.6	65.8	0.6	100.0	(32.9)
	Non Food/Textile/Preci	Lous Metals	5.4	93.4	1.1	100.0	(4.3)
	· · · ·						
<u>MEAN %</u> **	Percentage of Past Ins	spections	7.2%	2.4%	5.6%	3.5%	
	with written warning	ngs	1.24	2.4%	J*• 06	3.3%	

\* Small Sample Size

\*\* N.B. These values are the means of the variable for the three groups of establishments (based on change in compliance status) and for all establishments in the quality subsample.

have this action. As indicated in an earlier chapter, a written warning generally precedes a seizure and detention, therefore the fact that no establishments which had a written warning changed from a no seizure to seizure situation, reflects the effectiveness of a written warning

in Exhibit III-13, we see that 70.4% of establishments which received an information letter changed from the warning to no warning status compared to only 17.1% of establishments which received no information letter. In terms of net change, there is an overall change from the warning to no warning status of 66.7% with versus 16.6% without previous action information letter. Similar findings are found with the other two program effectiveness variables -- previous action trader commitment and previous action seizure and detention.

A summary of the net change in compliance status for the three actions (all lots acceptable, seizure and detention and written warning) by various other enforcement actions in the previous inspection, is provided in Exhibit III-14. This Exhibit shows that some intervention variables which are not in the final model are related, on their own, to the change in compliance status. For example, in addition to written warnings, previous actions of -- information letter, oral warning and trade commitment are having an effect on changing the seizure and detention compliance status.

Another interesting result which is shown in this Exhibit is that although previous action trader commitment only entered the final model for a written warning, on its own, it has a statistically significant effect on all changes in compliance status. We see that in the case of an inspection with all lots acceptable, there is a net change of 30.0% with trader commitment versus 6.7%without trader commitment. The net change in status of an inspection with a seizure and detention is 16.9% with versus 5.4% without trader commitment. Thus, we can conclude that trader commitment is effective in improving the compliance status at different stages of an inspection. It is also interesting to note that trader commitment was also effective in bringing about an increase in percentage quality compliance.

# QUALITY: NET CHANGE IN COMPLIANCE STATUS BY ACTION

	ACCEPTABLE NET CHANGE		SEIZURE & DETENTION NET CHANGE		WRITTEN WARNING NET CHANGE	
ACTION IN THE PREVIOUS INSPECTION	WITH <u>Action</u>	WITHOUT ACTION	WITH ACTION	WITHOUT ACTION	WITH ACTION	WITHOUT ACTION
Trader Education	38.9*	10.6	6.5	8.5	22.6	22.1
Information Letter	9.1	14.3	29.6	5.5	66.7*	16.6
Trader Correction	17.3*	8.•5	5.6	10.9	22.4	21.8
Oral Warning	8.3	14.0	35.7	6.5	42.9	20.9
Written Warning	15.6	12.9	22.8*	3.7	NA	NA
Seizure and Detention	8.0	14.6	NA	NA	57.6*	16.6
Trader Commitment	30.0	6.7	16.9	5.4	42.4*	15.7
Voluntary Disposal/Return	3.6	15.6	8.6	8.1	25.7	21.5

\* Variables in the final model.

#### IV - QUANTITY

This chapter centres on compliance in the area of quantity. According to the Consumer Products MIS Manual, a quantity problem:

"Refers to a product of which the actual quantity is less than the declared quantity (below tolerance re: net contents)."

The models and descriptive tables that are shown in this chapter are only applicable to inspections in which products were examined for quantity reasons.

#### MODEL FOR INCREASE IN PERCENTAGE COMPLIANCE

The final model for the difference in percentage quantity compliance is shown in Exhibits IV-1 and IV-2. The only program intervention variable in this final model is time between current and previous inspections. Its coefficient of -.01 indicates that given two establishments that have been previously inspected, the establishment that has not been reinspected will decrease in quantity compliance by 1% per month more than the establishment that has been reinspected.

The results for the control variables indicate that:

- establishments which has a higher percentage of past inspections with written warnings tend to decrease in compliance by .54% for every 1% difference more than other establishments (everything else being equal)
- establishments which were previously inspected for complaint or referral reasons had an increase in compliance of 13% more than those which were not previously inspected for these reasons (everything else being equal)
- when all lots were acceptable in the previous inspection, an establishment decreased in compliance 1% more than a similar establishment which did not have all lots acceptable (i.e., regression towards the mean effect)
- for establishments which differ only on the basis of size, the small-size establishments increased in quantity compliance by 10% more than the large and medium size ones.

# MODEL FOR INCREASE IN COMPLIANCE PERCENTAGE: QUANTITY

Type of Variable	Variable	Coefficient	t-Value	Significance	Interpretation
Program Intervention	Time between inspections	01	2.00	.049	Compliance decreased 1% for each extra month between inspection
Control	Percentage of Inspections with written warnings in the past 5 years	0054	2.06	.042	For each 1% increase in percentage of past inspections with written warnings, compliance decreased .54%
	Reason for Previous Inspection was referral/complaint	.13	2.02	.047	Average increase of 13% when the reason for the previous inspction in referral/complaint
	Previous Action all lots acceptable	11	1.88	.064	Compliance decreased 11% when all lots were acceptable in the previous inspection
	Small	.10	1.10	.276	Average increase of 10% for small establishments
	Constant	.10			
					Cp = 6 $R^2 = 0.162$ N = 88
					ł





These results are shown further in the descriptive statistics provided in Exhibit IV-3 where we see:

- the average number of months between inspections for establishments which decreased in compliance is greater than for those which increased in compliance (8.17 and 8.63 versus 7.73 and 5.38). Thus, the longer the time between inspections, the greater the likelihood of decreased compliance
- similarly, for the mean percentage of past inspections with written warnings (the mean percentage for those which decreased in compliance was 10.7% and 3.3% versus 3.1% and 2.7% for those which increased in compliance)
- no establishments which were previously inspected for complaint or referral reasons decreased more than 10%. In comparison, 15.4% of establishments which were previously inspected for other than complaint or referral reasons decreased more than 10%
- of the establishments which had all lots acceptable in their previous inspection, none had large increases in percentage compliance, while of the establishments which did have all lots acceptable, 16.7% had large increases in compliance
- 40.0% of small-size establishments had major increases in compliance, compared to only 16.9% of large and medium size establishments.

#### Effects of Other Variables

Although some variables are not in the final model, they may have some statistically significant effects on their own. Exhibits IV-4, IV-5 and IV-6 show the mean percentage increase in quantity compliance for some control and program intervention variables. Some of the interesting relationships which involve variables not in the final model are described below:

- in Exhibit IV-4, the mean percentage increase for importers was 10.5, compared to -1.3 and 0.9 for manufacturers and retailers, respectively
- in Exhibit IV-5, the number of inspections occurring in the last 3 years appears to be negatively related to percentage increase in compliance. There is a mean percentage increase for establishments with no more than 3 inspections and a mean percentage decrease for those with more than 3 inspections

### QUANTITY: VARIABLES IN THE FINAL MODEL BY CHANGES IN PERCENTAGE COMPLIANCE

# CHANGE IN COMPLIANCE

	VARIABLE	DECREASE	DECREASE	INCREASE	INCREASE	TOTAL	NET <u>CHANGE</u>
% OF ESTABLISHMENTS	Reason for the Previous is						
	- Complaint/Referral	0.0%	40.0%	30.0%	30.0%	100.0%	(13.3%)
	- Planned/Sample/Other	15.4	43.6	24.4	16.7	100.0%	(-0.3)
	Previous Action All Lots						
	Acceptable - With	7.7	76.9	15.4	0.0	100.0	(-7.4)
	- Without	14.7	37.3	26.7	21.3	100.0	(2.8)
	Small	20.0	20.0	20.0	40.0	100.0	(8.2)
	Large/Medium	13.3	44.6	25.3	16.9	100.0	(0.8)
<u>MEAN 2*</u>	Percentage of Past Inspections with Written Warnings	10.7%	3.32	3.1%	2.7%	4.2%	2 
<u>MEAN #*</u>	Number of Months Between Current and Previous Inspections	8.17	8.63	7.73	5.38	7.75	
	- · · · ·						

\* N.B. These values are the means of the variable for the four groups of establishments (based on change in compliance) and for all establishments in the quantity subsample.

# NET CHANGE IN LABELLING COMPLIANCE BY TYPE OF ESTABLISHMENT

	Z OF CASE	NET CHANGE**
Trade Level		
Manufacture	20.5	-1.3
Retail	70.5	0.9
Wholesale/Import	9.1	10.5
Product Class		
Food	87.5	0.9
Textile	0.0	NA
Precious Metals	0.0	NA
Non-Food	12.5	3.8
Establishment Size		
*Small	5.7	8.2
Medium	25.0	2.2
Large	69.3	0.4

N = 88

\* Variable in the final model.

**\*\*** Mean percentage increase.

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## NET CHANGE IN QUANTITY COMPLIANCE BY NUMBER OF PAST INSPECTIONS AND TIME BETWEEN INSPECTIONS

	% OF CASE	NET CHANGE**
Number of Inspections in Last 3 Year	rs	
1	11.4	0.6
2-3	34.1	4.3
More than 3	54.5	-0.4
Number of Inspections in Last 5 Year	rs_	
1-3	12.5	2.4
4-5	23.9	2.9
6-9	44.3	-1.4
More than 9	19.3	4.7
*Time Between Current and Previous	Inspections	
0-3 Months	14.8	9.8
3-6 Months	29.5	4.2
6-9 Months	27.3	-4.5
9-12 MOnths	11.4	0.8
More than 12 Months	17.0	-1.4

N = 88

\* Variable in the final model

**\*\*** Mean percentage increase.

# NET CHANGE IN QUANTITY COMPLIANCE BY ACTIONS IN THE PREVIOUS INSPECTION

ACTION IN THE PREVIOUS INSPECTION	% OF CASES WITH ACTION	<u>NET CHANGE*</u> WITH ACTION WITHOUT ACTION		
Trader Education	3.4	2.0	1.3	
Information Letter	10.2	-0.7	1.5	
Trader Correction	70.5	2.8	-2.2	
Oral Warning	4.5	0.2	1.3	
Written Warning	19.3	-1.6	2.0	
Seizure & Detention	11.4	4.9	0.8	
Trader Commitment	22.7	1.8	1.1	
Voluntary Disposal/Return	8.0	3.8	1.1	

N = 88

\* Mean percentage increase.

in Exhibit IV-6, we find that three other previous actions -- trader correction, written warning and seizure and detention are effective, on their own, in increasing percentage compliance. Establishments with previous action trader correction had a mean increase of 2.8% compared to -2.2% for inspections without this action. Establishments which did not receive a written warning had a mean percentage increase of 2.0%, while those which received a warning had a percentage decrease of 1.6%. The mean increases in compliance for establishments which had products seized and detained was 4.9%, compared to only 0.8% increases for the other establishments.

To understand the exclusions of the variables -- import, number of inspections in the last 3 years and previous actions of trader correction, written warning and seizure and detention from the final model, we must study their interrelationship with the variables in the model. These interrelationships are illustrated in Exhibit IV-7. We see that:

- the import variable is positively related to small establishments, i.e., importers tend to be small establishments
- the number of inspections (in the last 3 years) effect disappears when time between inspections is controlled for. The more time between the current and the previous inspections, the less likely it is that an establishment will have had several inspections in the last 3 years
- the effect of previous action trader correction seems mainly due to the effect of time between inspections and small establishment variables. Establishments which corrected any non-compliance in the last inspection, tend to be small establishments which were reinspected sooner than they would have been, if they did not have to make any corrections
- when both the number of inspections (in the last 3 years) and time between inspections are controlled for, the effect of previous action written warning disappears
- establishments which had products seized and detained in their last inspection are small importers which have been reinspected sooner than they would have had they not had products seized and detained.



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\* These variables were in the final Time Between Inspections model (for quantity only) which is included in Appendix D.

Also shown in Exhibit IV-7 are variables which were not described above, but were included since they were variables in the model for time between inspections.\* The time between inspections model is summarized in Appendix G. Some of the major findings, other than those listed above, are:

- establishments are reinspected sooner when the reason for reinspection is because of complaints or referrals (everything else being equal)
- for establishments which are similar except with respect to size, the large-size establishments will not be reinspected as soon as small and medium size establishments
- establishments which make a commitment (everything else being equal) will be given more time to make a correction before they are reinspected.

#### OTHER DIFFERENCE MODELS

Additional models were developed for the difference in probability of an action having occurred in consecutive inspections. The three actions which were considered were -- all lots acceptable, a seizure and detention, and a written warning. These models are illustrated in Exhibits IV-8, IV-9 and IV-10. A more complete summary for each model is included in Appendix G.

The program intervention variables which have an incremental effect are:

- in the all lots acceptable model, previous action trader correction and previous action seizure and detention (Exhibit IV-8)
- in the seizure and detention model, time between inspections and previous action written warning (Exhibit IV-9)
- in the written warning model, number of inspections in the last 5 years and previous action information letter (Exhibit IV-10).

All of these intervention variables, except previous action information letter, also showed a statistically significant relationship, either through the model and/or on their own, with the increase in percentage compliance variable. ľ

<sup>\*</sup> This model was developed to further our understanding of the affects of the inspection process on the time between inspections.

# QUANTITY: INSPECTION WITH ALL LOTS ACCEPTABLE

#### PROGRAM INTERVENTION

CONTROL

.



# QUANTITY: INSPECTIONS WITH SEIZURES AND DETENTIONS

PROGRAM INTERVENTION

CONTROL



# QUANTITY: INSPECTIONS WITH WRITTEN WARNINGS

### PROGRAM INTERVENTION

CONTROL



The program intervention variable, time between inspections, was in the percentage compliance model as well as in the model for the probability of an inspection with a seizure and detention. In the latter model, its coefficient, -.01, implies that if one establishment is reinspected before the other, then the probability of a seizure and detention for the reinspected establishment will be lower, by 1% per month, than for the non-reinspected establishment (everything else being equal).

The results for all the difference models in this section are highlighted further in the descriptive statistics shown in Exhibit IV-11, IV-12 and IV-13. For example, in Exhibit IV-11, we find that none of the establishments which had previous action trader correction changed from the acceptable to unacceptable status, while 33.9% of establishments which had no previous action trader correction changed from the acceptable to unacceptable status. In terms of net change, establishments which had previous action trader correction had a net change from the unacceptable to acceptable status whereas the establishments which did not have previous action trader correction had a net change from the acceptable to unacceptable status. This indicates that trader correction is an effective tool in improving compliance status with respect to all lots acceptable. Similar findings depicting the other enforcement actions which were found to be effective in each model are evident in Exhibit IV-11, IV-12 and IV-13.

A summary of the net change in compliance status by enforcement actions in the previous inspection is provided in Exhibit IV-14. In addition to those actions which are in the final models, we see that some actions, on their own, have a statistically significant effect in changing compliance status. For example, in addition to trader correction and seizure and detention, we find that trader education, oral warning, and trader commitment are having an effect on changing compliance status with respect to all lots acceptable.

Exhibit IV-15 provides descriptive statistics of the time between inspections and net change in compliance. In this Exhibit, we see that there appears to be a relationship with all three actions even though time between inspections is a variable in the seizure and detention model only. The findings indicate that:

- as the number of months increase from under 9 months to over 9 months, the net change in compliance status of an inspection with all lots acceptable increased substantially from the unacceptable to acceptable status
- the net change in compliance status of an inspection with a seizure and detention was 20.6% for 0 to 3 months and 9.5% for more than 12 months
- as time increased from less than 3 months to more than 12 months, the net change in compliance status of an inspection with a written warning is reduced from 38.2% to 4.8%.

IV-5

### QUANTITY: VARIABLES IN THE FINAL ALL LOTS ACCEPTABLE MODEL BY CHANGES IN COMPLIANCE STATUS FROM PREVIOUS TO CURRENT INSPECTION

### CHANGE IN COMPLIANCE STATUS

	, t	UNACCEPTABLE		ACCEPTABLE TO		NET	
	VARIABLE	TO ACCEPTABLE	NO CHANGE	UNACCEPTABLE	TOTAL	CHANGE	
% OF ESTABLISHMENTS	Previous Actions:						
	Trader Correction - with	15.3%	84.7%	0.0%	100.0%	(15.3%)	
	- without	12.5	53.5	33.9	100.0	(-21.4)	
	Seizure & Detention - with	26.3	68.4	5.3	100.0	(21.1)	
	- without	ut 12.6	74.1	13.3	100.0	(-0.7)	
	Reason for Previous is					У. 17	
	- Other	50.0	50.0	0.0	100.0	(50.0)	
	- Planned/Complaint/Referral/						
	Sample	13.8	73.7	12.5	100.0	(1.3)	
	Retail	4.7	87.2	8.1	100.0	(-3.5)	
	Manufacture/Import	26.5	55.8	17.7	100.0	(8.8)	
	~						
MEAN X*	Percentage of Past Inspections	5				<u>, 1</u> -	
	with All Lots Acceptable	23.3%	20.1%	58.6%	25.3%		

\* N.B. These values are the means of the variable for the three groups of establishments (based on change in compliance status) and for all establishments in the quantity subsample.

### QUANTITY: VARIABLES IN THE FINAL SEIZURE AND DETENTION MODEL BY CHANGES IN COMPLIANCE STATUS FROM PREVIOUS TO CURRENT INSPECTION

		CHANGE IN COMPLIANCE STATUS				
	VARIABLE	SEIZURE TO NO SEIZURE	NO CHANGE	NO SEIZURE TO SEIZURE*	TOTAL	NET CHANGE
<b>% OF ESTABLISHMENTS</b>	Previous Action Written Warning - With - Without	20.0% 7.6	77.1% 91.5	2.9% 0.8	100.0% 100.0	(17.1%) (6.7)
	Retail Manufacture/Import	5.8 16.2	93.0 82.4	1.2 1.4	100.0 100.0	(4.7) (14.7)
<u>MEAN 2</u> **	Percentage of Past Inspections with Seizures & Detentions	14.4%	4.6%	14.3%	5.7%	
<u>MEAN #</u> **	Number of Months Between Current & Previous Inspections	5.13	7.27	6.00	7.03	

\* Small Sample Size.

**\*\*** N.B. These values are the means of the variable for the three groups of establishments (based on change in compliance status) and for all establishments in the quantity subsample.

# QUANTITY: VARIABLES IN THE FINAL WRITTEN WARNING MODEL BY CHANGES IN COMPLIANCE STATUS FROM PREVIOUS TO CURRENT

#### CHANGE IN COMPLIANCE STATUS

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	VARIABLE	WARNING TO NO WARNING	NO CHANGE	NO WARNING TO WARNING	* TOTAL	NET <u>CHANGE</u>	
2 OF ESTABLISHMENTS	Previous Action Information Letter - With - Without	61.5% 18.4	30.8% 81.5	7.7% 0.0	100.0% 100.0	(53.8%) (18.4)	
<u>MEAN #**</u>	Number of Inspections in the Last 5 Years Number of Inspections	8.30	5,93	9.00	6.47		
	with Trader Correction in the Last 3 Years	2.09	2.11	3.00	2.11		
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\* Small Sample Size

\*\* N.B. These values are the means of the variable for the three groups of establishments (based on change in compliance status) and for all establishments in the quantity subsample.

### QUANTITY: NET CHANGE IN COMPLIANCE STATUS BY ACTIONS IN THE PREVIOUS INSPECTION

	ACCEP NET C	TABLE HANGE	SEIZURE &	DETENTION HANGE	WRITTEN <u>NET C</u>	WARNING HANGE
ACTION IN THE PREVIOUS INSPECTION	WITH <u>ACTION</u>	WITHOUT ACTION	WITH <u>ACTION</u>	WITHOUT ACTION	WITH <u>ACTION</u>	WITHOUT ACTION
Trader Education	33.3	0.0	22.2	8.3	22.2	21.4
Information Letter	0.0	2.1	15.4	8.5	53.8*	18.4
Trader Correction	15.3*	-21.4	8.2	10.7	19.4	25.0
Oral Warning	42.9	0.0	28.6	8.2	28.6	21.1
Written Warning	2.9	1.7	17.1*	6.7	NA	NA
Seizure and Detention	21.1*	-0.7	NA	NA	42.1*	18.5
Trader Commitment	45.5	-5.3	13.6	8.3	36.4*	18.9
Voluntary Disposal/Return	4.5	1.5	9.1	9.1	13.6	22.7

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\* Variables in the final model.

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# QUANTITY: NET CHANGE IN COMPLIANCE STATUS BY TIME BETWEEN INSPECTIONS

TIME BETWEEN CURRENT AND PREVIOUS INSPECTION	ACCEPTABLE NET CHANGE	SEIZURE & DETENTION NET CHANGE	WRITTEN WARNING NET CHANGE
0-3 months	5.9	20.6*	38.2
3-6 months	0.0	2.3*	25.6
6-9 months	-17.5	10.0*	15.0
9-12 months	18.8	0.0*	12.5
more than 12 months	23.8	9.5*	4.8

\* Variable in the final model.

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Although the time between inspections variable is not in the all lots acceptable and written warning probability models, its effect was probably controlled for by certain variable(s) in these models. For the all lots acceptable model, these variables would probably be previous action seizure and detention, and previous action trader correction. For the written warning model, the effect of time would probably disappear as a result of the number of inspections in the last 5 years. These variables — previous action seizure and detention, previous action trader correction and number of inspections in the last 5 years, are suspected because of their interrelationship with the time between inspections variable, shown in Exhibit IV-7. (Although the number of inspections, shown in Exhibit IV-7, was for the last 3 years, we know from our analysis that this in itself, is highly correlated with the number of inspections was also effective in increasing percentage compliance in our basic model.

#### V - MEAN COMPLIANCE

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This chapter focuses on mean compliance. The mean compliance was derived by calculating the mean of any or all percentage compliance values for labelling, quality and/or quantity. Therefore, this new compliance measure is a summary of an establishment's overall performance.

#### MODEL FOR INCREASE IN MEAN COMPLIANCE

The basic difference model for this chapter is summarized in Exhibit V-1 and illustrated in Exhibit V-2. In this model, we looked at the difference in mean compliance between consecutive inspections and related this to a number of explanatory factors.

With respect to program effectiveness, the findings are:

- given an establishment which made a commitment in its last inspection and an establishment which made no commitment, the former increased in compliance by 19% more than the later (everything else being equal)
- an establishment which was given some education in the last inspection increased in compliance by 16% over the increases of a similar establishment which was not given some education.

These results tell us that trader commitment and trader education, as part of actions taken in an inspection, are effective in bringing about an increase in mean compliance.

The results with respect to the control variables (i.e., variables which are not related to program effectiveness) show that:

- when reinspection occurred because of a complaint or referral, the establishment had a decrease in compliance of 14% more than a similar establishment which was not reinspected for a complaint or referral
- each extra percent of past inspections which had all lots acceptable, decreased mean compliance by .17%
- an establishment which was previously inspected because of a complaint(s) or a referral(s) will have an increase in percentage compliance of 9% over the increases of a similar establishment which was not inspected for a complaint or referral

# MODEL FOR INCREASE IN COMPLIANCE PERCENTAGE: MEAN COMPLIANCE\*

Type of Variable	Variable	Coefficient	t-Value	Significance	Interpretation
Program Intervention	Previous Action Trader Commitment	.19	3.67	.000	Increase in compliance of 19% when action in the previous inspection involved Trader Commitment
	Previous Action Trader Education	.16	2.70	.007	Increase in compliance of 16% when action in the previous inspection involved Trader Education
Control	Reason for Current Inspection is Referral/Complaint	14	3.16	.002	Average decrease of 14% when the reason for the current inspection was a referral(s) or complaint(s)
	Percentage of Inspections will all lots Acceptable in last 5 years	0017	2.97	.003	For each 1% increase in the percentage of past inspections with all lots Acceptable compliance decreased .17%
	Reason for Previous Inspection is Referral/Complaint	.09	2.04	.042	Average increase of 9% when the reason for the previous inspection is referral(s) or complaint(s)
	Food	07	1.51	.131	Average decrease of 7% for food establishments
	Constant	.07			
					$C_{p} = 5$ $R^{2} = 0.122$ N = 403
	1	1	1	1	l l

\* This is the mean of any or all percentage compliance values for labelling, quality and/or quantity.



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food establishments, overall, decreased in compliance by 7% more than textile, precious metals and non-food establishments.

Note that the effects of the percentage of past inspections with all lots acceptable, the reason for current inspection is complaint/referral and the reason for previous inspection is complaint/referral variables are a result of a regression towards the mean effect.\*

These results are highlighted further in the descriptive statistics shown in Exhibit V-3. For example, in terms of program effectiveness, we see that:

- of those establishments which had previous action trader commitment, a larger percentage had major increases in compliance than major decreases in compliance (percentages of 50.7 versus 9.9). In comparison, of those establishments which had no previous action trader commitment, about equal percentages had major increases and decreases in compliance (percentages of 25.3 versus 26.5)
- 50.9% of establishments which were given some education had a large increase in compliance, while only 26.6% of establishments which were not given some education also had large increases in compliance.

Overall, in terms of net change, the Exhibit shows that:

- the mean increases for establishments with and without previous action trader commitment were 22.6% and -1.7%, respectively
- establishments which had previous action trader education had a mean increase of 22.5%, while establishments which did not have this previous action had a mean decrease of 0.4%.

These descriptive statistics clearly support the findings of the model. That is, when trader commitment and trader education occur in an inspection, there is a greater tendency for an overall increase in percentage compliance than when these actions do not occur.

<sup>\*</sup> Regression toward the mean signifies that particular high values in one inspection will tend to be lower in the next (and vice-versa) due to normal statistical variability.

## MEAN COMPLIANCE: VARIABLES IN THE FINAL MODEL BY CHANGES IN PERCENTAGE COMPLIANCE

CHANGE IN COMPLIANCE

	VARIABLE	DECREASE	DECREASE	INCREASE	INCREASE	TOTAL	NET CHANGE
% OF ESTABLISHMENTS	Previous Actions:						
	Trader Commitment - with	9.9%	29.5%	9.9%	507%	100.0%	(22.6%)
	- without	26.5	38.9	9.3	25.3	100.0	(-1.7)
	Trader Education - with	13.2	17.0	18.9	50.9	100.0	(22.5)
	- without	25.1	40.3	8.0	26.6	100.0	(-0.4)
	Reason for Current is						
	<ul> <li>Complaint/Referral</li> </ul>	27.7	<b>29.7</b>	10.9	31.7	100.0	(-3.5)
	- Planned/Sample/Other	22.2	39.7	8.9	29.1	100.0	(4.6)
	Reason for Previous is						
	- Complete/Referral	17.7	39.8	8.0	34.5	100.0	(10.3)
	- Planned/Sample/Other	25.8	36.2	10.0	279	100.0	(-0.4)
	Food Non Food/Textile/Precious	26.2	28.0	12.2	33.5	100.0	(3.0)
	Metals	21.7	43.5	7.5	27.2	100.0	(2.3)
MEAN 2*	Percentage of Past Inspections with						
	All Lots Acceptable	35.0%	55.9%	20.5%	19.1%	36.7%	

\* N.B. These values are the means of the variable for the four groups of establishments (based on change in compliance) and for all establishments in the mean compliance subsample.

#### Effects of Other Variables

The mean percentage increases in compliance for some variables which were in the final model and some variables which were excluded are shown in Exhibits V-4, V-5 and V-6. For variables which were excluded from the final model, we see that:

- in V-4, importers had an average increase of 6.3%, compared to no increase for manufacturers and 1.8% for retailers. Also, establishments which were classified as large had a mean percentage decrease in compliance (-0.9%), whereas those classified as small and medium had mean percentage increases in compliance (4.6% and 7.1%, respectively)
- in V-5, the number of inspections (in the last 3 years) appears to be negatively related to mean percentage increase. As the number of inspections increased, there was a decrease in the mean percentage increase (increases of 3.9%, 3.2% and 0.9% for 1, 2 to 3 and more than 3 inspections, respectively). However, there does not appear to be any relationship between mean percentage increase and the other two variables -- number of inspections
- in V-6, establishments which corrected some noncompliance in their last inspection had a mean increase in compliance of 9.2%, compared with an increase of -4.0% for those which made no corrections. Also, the mean increase for establishments with and without previous action oral warning were 20.5% and 1.8%, respectively.

Each of these relationships on its own is statistically significant. However, in order to understand why some variables were excluded from the final model their interrelationships with variables in the model must be examined. For this reason, we created the picture shown in Exhibit V-7. In this Exhibit, we see the following:

- the effect of importers seems mainly due to the effect of food, i.e., importers tend not to deal in food products
- similarly, the effect of large establishments disappears when food is controlled for. Establishments which have been classified as large are generally food stores (probably because size is based on square footage and impact on the marketplace)

v.3

	NET	CHANGE	IN	MEAN COMPLIANCE ESTABLISHMENT	BY	TYPE OF
				% OF CASES		NET CHANGE**
Trade Level						
Manufacture Retail				37.5 30.3		0.0 1.8
Wholesale/Import				32.3		6.3
Product Class						
*Food	•			40.7		3.0
Textile				28.0		4.7
Precious Metals				6.9		-4.4
Non-Food			•	24.3		1.5
Establishment Size						
Small				26.3		4.6
Medium				25.3		7.1
Large				48.4		-0.9

N = 403

\* Variable in the final model.

**\*\*** Mean percentage increase.

## NET CHANGE IN MEAN COMPLIANCE BY NUMBER OF PAST INSPECTIONS AND TIME BETWEEN INSPECTIONS

	% OF CASE	NET CHANGE*
Number of Inspections in Last 3 Years		
1	20.8	3.9
2-3	44.4	3.2
More than 3	34.7	0.9
Number of Inspections in Last 5 Years		
1-3	28.5	2.4
4-5	34.2	4.1
6-9	26.0	3.4
More than 9	10.9	-3.1
Time Between Current and Previous Inspections		
0-3 Months	21.6	1.8
3-6 Months	22.1	2.9
6-9 Months	19.6	1.5
9-12 MOnths	17.1	6.2
More than 12 Months	19.6	1.0

N = 403

\* Mean percentage increase.

## NET CHANGE IN MEAN COMPLIANCE BY ACTIONS IN THE PREVIOUS INSPECTION

ACTION IN THE PREVIOUS INSPECTION	% OF CASES WITH ACTION	NET CHANGE** WITH ACTION WITHOUT ACTIO		
*Trader Education	13.2	22.5	-0.4	
Information Letter	7.4	2.3	2.6	
Trader Correction	50.1	9.2	-4.0	
Oral Warning	4.0	20.5	1.8	
Written Warning	14.9	5.7	2.0	
Seizure & Detention	8.2	1.0	2.7	
*Trader Commitment	7.9	22.6	-1.7	
Voluntary Disposal/Return	17.6	3.4	2.5	

N = 403

\* Variable in the final model.

**\*\*** Mean Percentage increase.



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#### EFFECTS OF OTHER INFLUENCES ON INCREASE IN MEAN COMPLIANCE

- the effect of the number of inspections (in the last 3 years) disappears when food is controlled for. Food establishments are inspected more often than establishments in other product classes
- when both previous action trader education and the percentage acceptable are controlled for, the effect of previous action trader correction disappears. Establishments which made some correction in their last inspection were also given some education and tended to have a low percentage of past inspections which were acceptable
- the effect of previous action oral warning seems mainly due to its relationship with three variables: previous reason complaint/referral, percentage acceptable and previous action trader commitment.
   Establishments which were given an oral warning also committed to future compliance and were inspected for complaint or referral reasons, in their last inspection. These establishments also tended to have a low percentage of past inspections with all lots acceptable

#### OTHER DIFFERENCE MODELS

The difference models for the probability of an inspection with with actions of: all lots acceptable, a seizure and detention, and a written warning are shown in Exhibits V-8, V-9 and V-10. (Detailed summaries for these models are included in Appendix H.) In these models, we find that the variables which indicated program effectiveness in the percentage compliance model are also having an incremental effect for the all lots acceptable and written warning models. For example:

- in Exhibit V-8, an establishment which committed to future compliance will increase in probability of an acceptable inspection by 30% compared with a similar establishment which made no such commitment. This is also true for previous action trader education which shows an increase of 26%
- in Exhibit V-10, we see that when given two similar establishments except one had previous action trader commitment, then this establishment will have a decrease in probability of an inspection with a written warning by 7% more than the other. Also a trader who was educated in his last inspection will have a decrease in probability of an inspection with a written warning by 5% more than a trader who was not educated (everything else being equal).



MEAN COMPLIANCE: INSPECTION WITH ALL LOTS ACCEPTABLE

### PROGRAM INTERVENTION

CONTROL





EXHIBIT V - 9

#### EXHBIIT V - 10





CONTROL

Some of the other interesting results relating to variables not in the percentage compliance model are:

- In Exhibit V-8, we find that two other enforcement actions besides trader commitment and trader education are effective in increasing the probability of all lots acceptable. These actions are -- trader correction, and voluntary disposal or return
- in Exhibit V-9, we find that previous actions of an oral warning and a written warning are effective in decreasing the probability of an inspection with a seizure and detention. Each of these reduced the probability by 25% and 8%, respectively
- in Exhibit V-10, we find that in decreasing the probability of an inspection with a written warning, both previous action information letter and previous action seizure and detention are effective variables. Each of these previous actions reduced the probability by 14%.

All the above results are highlighted further in the descriptive statistics shown in Exhibits V-11 to V-14. The following features are described:

- Exhibit V-11 shows that of the establishments with previous action trader correction, 29.7% changed from the unaceptable to the acceptable status, while only 12.8% of the establishments without previous action trader correction had a similar change in status. In terms of net change, establishments with previous action trader correction had an overall change from the unacceptable to acceptable status of 29.7%, while those without previous action trader correction had an overall change from the acceptable to unacceptable status of 11.0%. Although the descriptive statistics for the other previous action variables (i.e., trader commitment, trader education, and voluntary disposal or return) do not show such a clear difference between those establishments with and without the action, there is enough of a difference to see their effect
- Exhibit V-12 shows that a higher percentage of establishments which had previous action oral warning changed from the seizure to no seizure status then establishments which did not have this action (i.e., 29.4% versus 5.2%). Similar results are shown for previous action written warning

#### MEAN COMPLIANCE: VARIABLES IN THE FINAL ALL LOTS ACCEPTABLE MODEL BY CHANGES IN COMPLIANCE STATUS FROM PREVIOUS TO CURRENT INSPECTION

### CHANGE IN COMPLIANCE STATUS

		UNACCEPTABLE		ACCEPTABLE TO	)	NET
	VARIABLE	TO ACCEPTABLE	NO CHANGE	UNACCEPTABLE	TOTAL	CHANGE
Z OF ESTABLISHMENTS	Previous Actions:					
	Trader Correction - With	29.7%	70.3%	0.0%	100.0%	(29.7%)
	- Without	12.8	63.3	23.9	100.0	(-11.0)
	Trader Commitment - With	39.0	61.0	0.0	100.0	(39.0)
	- Without	17.3	68.2	14.5	100.0	(2.8)
	Trader Education - With	45.0	55.0	0.0	100.0	(45.0)
	- Without	17.6	68.7	13.7	100.0	• (3.9)
	Voluntary Disposal/Return - With	11.8	88.2	0.0	100.0	(11.8)
	- Without	22.2	65.0	12.8	100.0	(9.4)
	Reason for Current is					
	- Complaint/Referral	22.7	62.7	14.6	100.0	(8.2)
	- Planned/Sample/Other	20.9	68.2	10.9	100.0	(10.0)
	Food	14.7	76.8	8.5	100.0	(6.2)
•	Non Food/Textile/Precious					
	Metals	25.8	60.1	14.1	100.0	(11.8)
	Large	17.6	66.7	15.7	100.0	(1.9)
	Medium	25.7	69.0	5.3	100.0	(20.4)
	Small	23.9	65.0	11.1	100.0	(12.8)
MDAN VO	Dreutous Dercentace Nean					
MEAN A	Comultance	52.0%	68.62	96.7%	68.42	
	Percentage of Past Inspections	52.00	00104		00110	
	with:	<u></u>	24.0	(7.5	24.0	
	- All Lots Acceptable	25.5	34.0	0/+3	30.4	
	- Trader Correction	42.8	40.0	1/•1	70+7	
MEAN #*	Number of Inspections with					
	Trader Education in the					
	Last 3 Years	0.80	0.64	0.67	0.68	

\* N.B. These values are the means of the variable for the three groups of establishments (based on change in

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### MEAN COMPLIANCE: VARIABLES IN THE FINAL SEIZURE AND DETENTION MODEL BY CHANGES IN COMPLIANCE STATUS FROM PREVIOUS TO CURRENT INSPECTION

### CHANGE IN COMPLIANCE STATUS

	VARIABLE	SEIZURE TO NO SEIZURE	NO CHANGE	NO SEIZURE TO SEIZURE*	TOTAL	NET CHANGE
<b>%</b> OF ESTABLISHMENTS	Previous Actions:					
	Oral Warning - With	29.4%	70.6%	0.0%	100.0%	(29.4%)
	- Without	5.2	94.3	0.4	100.0	(4.8)
	Written Warning - With	24.3	74.3	1.4	100.0	(22.9)
	- Without	3.0	96.8	0.2	100.0	(2.7)
<u>MEAN %</u> **	Percentage of Past Inspections with:					
	- Written Warnings	9.9%	1.7%	7.1%	2.2%	
	- Seizures and Detentions	33.8	3.8	14.3	5.7	
<u>MEAN #</u> **	Number of Inspections with:					
	the last 3 Years	1.31	0.16	0.00	0.23	
	last 5 Years - Oral Warnings in the last	0.43	0.15	0.50	0.16	
	3 Years - Trader Education in the	0.31	0.24	0.00	0.28	
	last 5 Years	1.78	1.25	1.50	1.29	

\* Small Sample Size.

\*\* N.B. These values are the means of the variable for the three groups of establishments (based on change in compliance status) and for all establishments in the mean compliance subsample.

### MEAN COMPLIANCE: VARIABLES IN THE FINAL WRITTEN WARNING MODEL BY CHANGES IN COMPLIANCE STATUS FROM PREVIOUS TO CURRENT INSPECTION

		CHANGE IN COMPLIANCE STATUS				
	VARIABLE	WARNING TO NO WARNING	NO CHANGE	NO WARNING TO WARNING	TOTAL	NET CHANGE
<b>Z</b> OF ESTABLISHMENTS	Previous Actions:					
	Information Letter - With	56.4%	41.0%	2.6%	100.0%	(53.8%)
	- Without	10.8	88.7	0.5	100.0	(10.3)
	Seizure & Detention - With	54.5	45.5	0.0	100.0	(54.5)
	- Without	t 10.5	88.8	0.7	100.0	(9.7)
	Trader Commitment - With	30.1	69.9	0.0	100.0	(30.1)
	- Without	11.2	88.0	0.8	100.0	(13.6)
	Trader Education - With	16.1	83.9	0.0	100.0	(16.1)
	- Without	14.3	85.0	0.7	100.0	(2.8)
	Food Non Food/Textile/Precious	31.6	67.9	0.5	100.0	(31.0)
	Metals	3.5	95.8	0.7	100.0	(2.8)
	Retail	14.0	85.3	0.7	100.0	(13.2)
	Manufacture	8.3	90.6	1.1	100.0	(7.2)
	Import	22.0	78.0	0.0	100.0	(22.0)
MEAN Z**	Percentage of Past Inspections					
	with Written Warnings	6.5%	1.5%	3.7%	2.2%	
MEAN #**	Number of Inspections with: - Seizures & Detentions in					
	the last 5 Years - Information Letters in	1.59	0.16	0.33	0.37	
	the last 3 Years - Trader Education in the	0.12	0.03	0.00	0.04	
	last 3 Years - All Lots Acceptable in	1.65	1.22	1.33	1.29	
	the last 3 Years	1.00	1.11	0.68	1.09	

\* Small Sample Size.

\*\* N.B. These values are the means of the variable for the three groups of establishments (based on change in compliance status) and for all establishments in the mean compliance outsa~line and for all establishments

# MEAN COMPLIANCE: NET CHANGE IN COMPLIANCE STATUS BY ACTIONS

	ACCEP NET C	TABLE HANGE	SEIZURE & NET C	DETENTION HANGE	WRITTEN <u>NET</u>	WARNING CHANGE
ACTION IN THE PREVIOUS INSPECTION	WITH <u>ACTION</u>	WITHOUT ACTION	WITH ACTION	WITHOUT ACTION	WITH <u>ACTION</u>	WITHOUT ACTION
Trader Education	45.0*	3.9	6.5	5.6	16.1*	13.6
Information Letter	8.8	9.6	23.1	4.1	53.8*	10.3
Trader Correction	29.7*	-11.0	5.4	6.0	14.3	13.5
Oral Warning	17.6	9.2	29.4*	4.8	35.3	13.1
Written Warning	7.8	9.8	22.9*	2.7	NA	NA.
Seizure and Detention	10.5	9.5	NA	NA	54.5*	9.7
Trader Commitment	39.0*	2.8	12.0	4.3	30.1*	10.5
Voluntary Disposal/Return	11.8*	9.4	7.7	5.5	25.6	12.8

\* Variables in the final model.

- Exhibit V-13 shows that an overall higher percentage of establishments with each action (i.e., information letter, seizure and detention, trader commitment and trader education) are changing from the warning to no warning status than without the action
- Exhibit V-14 shows the net change in compliance status by the occurrence or non-occurrence of enforcement actions. We can observe that several actions have a statistically significant effect on their own, even though they are excluded from the final model. For example, in changing the compliance status with respect to a seizure and detention, information letter and trader commitment are having an effect in addition to the variables in the final model.

Although, previous action trader commitment was only in the final probability models for inspections with all lots acceptable and a written warning, a statistically significant relationship was also evident with the decrease in probability of an inspection with a seizure and detention. This relationship probably disappeared because of an interrelationship with a variable in the seizure and detention model. Since, we found a positive relationship between previous action oral warning and previous action trader commitment, earlier, we can assume that the effect of trader commitment disappeared when controlling for previous action oral warning. As trader commitment was also found to be effective in increasing the percentage mean compliance, we can infer that trader commitment is leaving an effect on compliance at various stages in the inspection process.

The other enforcement action which was found to be effective in increasing the percentage compliance was trader education. This action was also found to be effective in changing the compliance status for the all lots acceptable and written warning models. However, no relationship was evident on changing compliance status with respect to a seizure and detention. Our methodology, on its own, cannot explain why this is occurring (i.e., more detailed review of files and case studies would have to be conducted).

VI - SUMMARY

This study was concerned first, with identifying whether it was feasible to determine the effectiveness of different compliance activities and second (given that this was feasible), to determine the effectiveness of the compliance activities undertaken by the Consumer Products Sub-activity. Chapter VI summarizes our findings in relation to these two study objectives.

### FEASIBILITY

With respect to the feasibility objective, we were concerned with identifying the characteristics of the Sub-activity database and determining a suitable design for measuring the relative effectiveness of compliance activities. We were also interested in assessing the feasibility of extending this pilot study to the rest of Canada and to other program areas. These topics are described below.

## Types of Data on Establishments and Compliance Activities

Data on establishment characteristics, inspections and enforcement and complaints and referrals are kept in an establishment file. The data on establishment characteristics are basic facts, such as the establishment's trade level, product class, size and location. With respect to data about inspections and enforcement, copies of establishment reports which were filled out during an inspection, letters written to the trader for information and warning purposes, seizure and detention forms and sample record forms are kept on file. Copies of any complaints and referrals from another region or government agency are also kept in the establishment file. The establishment files are arranged by trade level, product class (and sub-classes) and then alphabetically by the name of the establishment. Some files are kept separate, for example, closed files, files for zones outside the Metropolitan Toronto area, and files of the head office of chain stores. In the district office used as the pilot site (Toronto), there is no information kept on formal trader education activities (e.g., seminars).

The MIS retains all basic establishment characteristics and all data from the establishment reports (such as, the number of items sampled and accepted and enforcement actions by product). This system began as a pilot in Toronto on July 1, 1983 and was nationalized on April 1, 1984.

#### Number of Years of Data Retained

The number of years of compliance activity data which are kept on file will depend on the district office. We found that the Toronto district office generally keeps all information from the date of first contact with an establishment. This may not be true of all district offices. For example, in the Ottawa office, the information on compliance activities only goes back three years.



With respect to the MIS, information on establishments which have been inspected only since its implementation are contained in the system. Program staff informed us that establishments are added to the system when they are inspected for the first time under the MIS recording format.

#### Availability of Lists for Sampling Purposes

Both the Ottawa and Toronto district offices have establishment lists. These lists are used as a tool for scheduling future inspections and as a record of when an establishment was inspected last. As inspections occur and plans are made for the next inspection, this list is updated.

The establishment list is not a complete list of all establishments in a district, especially at the retail level. This is because formal notice of an opening or closing of an establishment is not given to the Consumer Products Branch. Additions or deletions are made to the list on an ad hoc basis -- when an opening or closing is noticed by an inspector, when a new establishment applies for a CCA number, when a complaint is made about a new establishment, etc.

# Analytical Design Used to Determine Effectiveness of Compliance Activities

At the beginning of the study we investigated the possibility of using a quasiexperimental design involving a control and treatment group. This could only be done if we could find establishments which had never been inspected, i.e., a control group. We determined that it would have been possible to find such establishments but there would be no guarantees that the control establishments would represent all trade levels and product classes. According to program personnel, establishments which have never been inspected are few in number and primarily in the retail trade level. Therefore, we selected a more feasible and practial approach -- a historical design (quasi-experimental) with differing levels/types of treatments. With this approach, a random sample of inspected establishments representing all trade levels and product classes was chosen. With different types of compliance activities being performed on establishments at different points in time and with different frequencies (i.e., significantly different treatments), we were able to determine the effects of these varying treatments on compliance.

#### Feasibility of Extension of Study Nationally and Into Other Program Areas

As long as comparable data can be found in other district offices (which we expect will be the case), there should be no problem in extending this pilot into a national study. If a national study were undertaken, it would be necessary to add some variables into the models to allow for regional differences, such as province, community size and rural/urban variables.

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We recommend that before this pilot becomes a national study, enough time should be given so that most (if not all) establishments will have been inspected under the new MIS system. For modelling purposes we believe that a large number of establishments should have at least two inspections under the MIS method of inspection. In our sample, we found that about 43% of the establishments had undergone at least two inspections under the new MIS.

요즘 나는 사람들은 같은

As mentioned previously, the new MIS has been in place in Toronto for 2 years and in other parts of the country for just over one year. Thus, in order to meet the criterion of at least two inspections under the new MIS, we believe the national study should commence no earlier than April, 1986, at which time it would have been in place 2 years on a national level. This time lapse would ensure that there will be a sufficient number of establishments which have been inspected and that the required data on the inspections are available.

Before a national study is undertaken, consideration should be made as to whether the present form of the analysis is adequate for the Consumer Products Sub-activity or whether further refinement to the analysis should be undertaken. This refinement may involve more analysis of the present database or an augmentation of the present database. Our approach and methodology to determine the effectiveness of compliance activities, to the best of our understanding, has been the first of its kind. We have by no means, however, exhausted the types of analysis which may be performed, but we have illustrated how the effectiveness of the program can be determined.

With respect to the extension of this pilot to other programs, we believe our approach is completely generalizable, as long as files are available which contain information regarding compliance activities for these programs. Modification would have to be made to compensate for program differences, such as product classes inspected, inspection processes used and enforcement actions undertaken.

In summary, it is possible to determine the relative effectiveness of various compliance activities. A national study would enhance the results found in this study and further the understanding about effects of the Sub-activity. Since our modelling included the indicators of compliance currently used by inspectors, comparison with extant data can be validly made.

#### EFFECTIVENESS OF COMPLIANCE ACTIVITIES

Using a historical quasi-experimental design and statistical modelling, as described above, we were able to determine the relative effectiveness of different compliance activities. Our analyses were quite extensive and only major findings are included here.

# Effect of Compliance Activities on Compliance

In order to determine the relative effectiveness of different compliance activities on compliance, we developed a basic model which related increases in percentage compliance (between consecutive inspections) to a number of explanatory variables. The major findings which relate to program effectiveness are summarized in Exhibit VI-1 and described below:

# INCREMENTAL EFFECTS OF PROGRAM INTERVENTION VARIABLES FOR LABELLING, QUALITY, QUANTITY AND MEAN PERCENTAGE COMPLIANCE

PROGRAM INTERVENTION VARIABLES	Labelling	Quality	Quantity	Mean
Time Between Inspections	-	-	-1%	-
Previous Actions:				
- Trader Education	+19%	-	-	+16%
- Written Warning	+10%	-	-	-
- Trader Commitment	+10%	+24%	-	+19%

- Trader education, written warnings and trader commitment as part of inspections are all effective instruments in bringing about increases in <u>labelling</u> compliance.
- The one enforcement action which is effective in bringing about an increase in <u>quality</u> compliance is trader commitment.
- Both trader education and trader commitment as part of inspections are effective in bringing about an increase in mean\* compliance for all regulatory areas.

These results indicate that what occurs in an inspection, rather than the fact of an inspection itself, is usually the most important factor in determining increases compliance. In relation to the area of <u>quantity</u> compliance, however, we found that the time between inspections was an important factor in determining increases in compliance. The positive effects of an inspection in quantity compliance are less if the time between inspections is large.

In terms of increasing percentage compliance, enforcement actions -- trader education, written warnings and/or trader commitment -- all have incremental effects. However, this is not to say that other mechanisms are not having any effect. The reason why other actions do not appear in the models is because enforcement actions do not occur at random, but generally in steps or groups. Therefore, interrelationships between enforcement actions can cause the effects of some actions to disappear. Some of the interrelationships which we found in the models are described below:

- Oral warnings are related to trader commitment. When a trader is given an oral warning, he usually also commits to future compliance.
- Trader correction, on the other hand, is negatively related to trader commitment. Traders which correct any noncompliance, do not necessarily make a commitment to future correction.
- Trader correction was also found to be related to trader education. When a trader was provided with some guidance as to the regulations, the trader tended to correct the violative product.

<sup>\*</sup> The mean compliance was derived by calculating the mean of any or all percentage compliance values for labelling, quality and/or quantity. The mean compliance is, therefore, a summary of an establishment's overall performance.

#### Effect of Compliance Activities on Probability of an Action Occurring

We also developed models which looked at differences in the probability of an action occurring in the current versus the previous inspection. These difference models were created for actions in which all lots or items were found acceptable, or in which either a seizure and detention or a written warning occurred. Our findings are summarized in Exhibit VI-2. The models describe the effect of various program intervention variables (i.e., previous actions, time between inspections and number of past inspections) on each of the three specific actions. These models demonstrate the relationship among enforcement actions, as highlighted below:

- The program intervention variables which are effective in increasing the probability of having an inspection with all lots acceptable (in all regulatory areas) tend to be enforcement actions which are not too severe, such as trader education and trader correction.
- A written or oral warning indicating that more severe action could be taken if a violation is repeated, is effective in decreasing the probability of products being seized and detained in a subsequent inspection.
- The two main enforcement actions which are effective in decreasing the probability of a written warning are an information letter and a seizure and detention.

It is interesting to note that in each regulatory area, the descriptive statistics for these difference models (shown in the preceeding chapters) indicated that most of the variables in the basic model also showed an effect on the occurrence or non-occurrence of each action.

### Effect of Complaints and Referrals on Mean Compliance

The impact of complaints and referrals was shown in the model for the increase in mean percentage compliance. In this model, we found that when a complaint or referral was the reason for the current inspection, there was a decrease in compliance. Thus, inspections which occur as a result of complaints or referrals tend to have a lower percentage compliance than inspections for other than complaint or referral reasons (everything else being equal). We can therefore surmise that referrals and complaints are aiding inspectors in identifying problems. When a complaint or a referral was the reason for the previous inspection, we found there was an increase in compliance in the current inspection, indicating a positive effect on subsequent compliance.

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## PROGRAM EFFECTIVENESS SHOWN IN THE OTHER DIFFERENCE MODELS

# 1) Increase in Probability of An Inspection with all Lots Acceptable

PROGRAM INTERVENTION VARIABLES	Labelling	Quality	Quantity	Mean
Previous Actions:				
- Trader Education	+19%	+29%	-	+26%
- Trader Correction	+41%	+13%	+30%	+49%
- Seizure and Detention	-	-	+22%	-
- Volantary Disposal/Return	+22%	-	-	+16%
- Trader Commitment	+36%	-	-	+30%

# 2) Decrease in Probability of An Inspection with a Seizure and Detention

PROGRAM INTERVENTION VARIABLES	Labelling	Quality	Quantity	Mean
Time Between Inspections	-	-	-1%	-
Previous Actions:				
- Oral Warning		-	-	+25%
- Written Warning	+38%	+7%	+4%	+8%

# 3) Decrease in Probability of An Inspection with a Written Warning

PROGRAM		_		
INTERVENTION VARIABLES	Labelling	Quality	Quantity	Mean
Number of Inspections in Last 5 Years	-	-	+5%	-
Previous Actions:				
- Information Letter	+35%	+87%	+75%	+18%
- Trader Education	-	-	-	+4%
- Seizure and Detention	+29%	+31%	-	+6%
- Trader Commitment	-	+22%	-	+8%

### Summary: Effectiveness of Compliance Activities

In summary, we were able to uncover a number of important findings relating to the effectiveness of compliance activities. From a very broad perspective, we were able to demonstrate that the inspection fraction is having an impact on increasing compliance. Specifically, we were the to identify that certain inspection/enforcement actions are having a start effect than others on compliance. We were able to quantify the extent of this effect and, further, to reveal substantial differences in effectiveness among compliance activities. Also, we were able to identify that there are differences in the type of actions which are effective in increasing compliance among the regulatory areas of quality, quantity and labelling.

We can also infer that the inspection activities are having an effect on deterring non-compliance. In collecting the information on past inspection histories, we observed that many traders who had taken action on the specific problems detected in the previous inspection and had done so for the full range of products inspected in the current inspection. This implies that there is a deterrence effect on individual traders resulting from the activities undertaken in the previous inspection. The quantification of this effect would require more detailed file examination respecting the products which were inspected in a sequence of inspections within each establishment. In order to understand more fully the deterrence effect of inspections, it would also be necessary to conduct an awareness and behaviour survey of traders to determine their awareness of the Sub-activity and the actions they take toward compliance without the impetus of an inspection or knowledge of an impending inspection.

#### IMPLICATIONS OF THE FINDINGS

The findings of this study provide the first (to our knowledge) quantification of the effect that compliance activities are having on compliance levels. Thus, these findings are important in their own right. They indicate that the inspection activity is having an incremental impact on compliance levels and that certain actions are substantially more effective than others in achieving increased compliance. These findings imply that the inspection function has significant and valuable results from the perspective of the Sub-activity objective of protecting against product misrepresentation through detection, deterrence and control (monitoring).

The findings are also important in light of current strategies being considered to enhance the inspection function. We believe that the results of the study have various applications to improving the cost-effectiveness of inspections.

It should be noted that we are referring here to the general applicability of the findings if they were derived from a national sample of establishments rather than a sample of establishments from the Toronto District Office. If such a national study were to be undertaken and results such as those found in the pilot study were revealed, then the following types of applications to inspection improvement are feasible. These applications are described in relation to the objectives of the inspection function.

#### Deterrence

This study was able to identify which inspection/enforcement activities are most effective in contributing to the achievement of the deterrence objective (if this is measured in terms of improved compliance). The effect of these activities on deterrence was measured at the level of the individual trader. We were not able to determine the overall effect of the inspection activities on bringing about deterrence in the marketplace. In order to measure the latter effect, it would be necessary to employ a different methodological approach to the one used here (e.g., a survey of traders, inspection of never-inspected establishments, etc.).

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The study results clearly indicate that less stringent activities (such as trader education) and negotiating activities (such as trader commitment and written warning) are having a greater impact on compliance levels than other, more stringent activities. This implies that some shift to educational and negotiation activities from more stringent compliance activities may actually reduce risk. Assuming these activities are less costly as well, the overall cost effectiveness of compliance activities will be greatly increased. Some of the resources freed up could be used for, among other things, undertaking more stringent and costly actions against establishments where compliance is known to be problematic.

If the database included a larger sample of establishments from across Canada, there are a number of further refinements which could be made in terms of how best to expand the education and negotiating activities described above:

- A database which is expanded nationally could be used to determine whether there are geographic (provincial, urban/ rural) differences in the effectiveness of compliance activities. This information could then be used to make decisions regarding inspection resources and activities on a district-specific basis, if differences resulting from the geographic factor were identified.
- An expanded database could identify whether certain inspection activities would be more effective in increasing compliance in particular trade levels, industry types, sizes of establishments, product classes (and any combination of the above). Should such an analysis determine differences in the effectiveness of compliance activities, then the information could be used to make decisions regarding inspection resources and activities on the basis of particular types of establishments, product classes, etc.



#### Detection

The inspection function serves as a means of identifying or detecting the level of marketplace non-compliance. The Sub-activity already uses two mechanisms (the dollars at risk and a tiered priority system) to determine how best (costeffectively) to allocate resources toward the detection objective.

Another mechanism of resource allocation for the purposes of detection brought forth in this study, is the use of complaints and referrals.\* The findings clearly show that when an inspection is the result of a complaint or referral, there is an increased tendency for non-compliance to be detected. As well, when a subsequent inspection is carried out, compliance levels tend to improve (a deterrence effect).

We are not suggesting that all inspection resources be devoted to following-up on complaints and referrals nor that all complaints and referrals be followedup. Clearly this is impractical and not feasible. However, we are suggesting that using complaints and referrals as another method of priority setting could bring desirable results both from a detection and deterrence perspective. Of course, the selection of complaints and referrals which are to be acted upon would require some assessment of the factors which would truly warrant the expenditure of resources on an inspection (e.g., the estimated degree of non-compliance, the severity of the non-compliance, the segment size implicated). The fact that consumers have been able to detect the noncompliance would certainly be another important factor to consider in these decisions.

Another approach to resource allocation for the purposes of detection which could be developed from the data collected in a national study would be an establishment risk index. The risk index could be developed for each establishment which has been inspected or for a number of prototype establishments (e.g., large retail food stores in urban British Columbia, small retail food stores in urban British Columbia, etc.). The index would be created on the basis of various known characteristics of low and high compliance establishments.\*\* Inspection resources could then be allocated according to known probabilities of identifying non-compliance, with low-compliance (high-risk) establishments being inspected more frequently than high-compliance (low-risk) establishments.\*\*\* The beauty of such an indicator is that the data needed to develop it are currently being collected as part of the MIS.

- \* The Sub-activity currently uses complaints and referrals as a tool to isolate problems and change inspection emphasis.
- \*\* Such a risk index has been successfully applied to over 30,000 highway-railway crossings in Canada as a means of determining inspection and upgrading requirements.
- \*\*\*The risk index could, in fact, be strengthened by using seriousness of noncompliance as well, i.e., incorporating into the definition of risk the probability of non-compliance multiplied by expected severity of non-compliance.

It should be noted that our methodology was not directed toward making a judgment on the effectiveness of compliance activities in <u>detecting</u> non-compliance across the full spectrum of establishments. It would be necessary to employ a much different range of methodologies, such as the conduct of shadow inspections to determine what has been missed in inspected establishments and the conduct of inspections outside the regular schedule of establishments to determine the extent of non-compliance where there is presently no inspection.

#### Monitoring

Another component of the inspection function is a monitoring element or the identification of the overall state of compliance or non-compliance in the marketplace. The risk index which was described above can be used as an indicator for monitoring purposes. A risk index developed for all the establishments which have been inspected across Canada would provide one measure of the overall current risk in the marketplace. This is because most establishments, according to program personnel are inspected, therefore, a fairly complete picture of the level of risk in the marketplace could now be determined.

It is not advisable, however, to alter inspection strategies to respond only to the risk indices since the following scenario would likely result. More inspection resources would be concentrated on the high risk establishments (low-compliance) and low risk (high-compliance) establishments would be inspected much less frequently or never at all. The level of risk of non-compliance for formerly high risk establishments would continue to be recorded whereas the level of risk in low-risk establishments would not. Thus, if there was increasing non-compliance in formerly low risk establishments, it would not be recorded in the Sub-activity database. If these low-risk establishments became higher-risk (at least relative to others), the inspection process would not be maximizing detection any longer with these establishments being excluded nor be obtaining an accurate assessment of overall risk in the system.

In order to avoid such a scenario, inspections would have to be conducted, at least in part, on a random basis, so that both high and low risk establishments could be inspected. This would allow for:

- continuous updating of the priority allocations based on detection (i.e., continuous assessment of which establishments are high-risk)
- a continuous monitoring of the overall level of risk in the system (a form of performance measurement)
- a deterrent effect on all establishments (since they all have a chance of being inspected).



### Summary of Implications

In summary, the results of the study point to several strategies which can be used for the improved cost-effectiveness of the inspection function:

- expansion of known effective, less costly inspection actions for purposes of deterrence
- expansion of the use of complaints and referrals as priority setting and resource allocation mechanisms for purposes of detection
- use of a risk index in combination with random sampling as priority setting and resource allocation mechanisms for the purposes of detection, monitoring and deterrence.

# APPENDIX A

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# DEFINITIONS

- . Enforcement Actions
- . Reason for Visit
- . Establishment Size



#### APPENDIX A

## DEFINITIONS

The definitions in this Appendix were taken from the Consumer Products Management Information System - Definiton and Instructions Manual, New System 1984. Definitions for enforcement actions, reason for inspection and establishment size are shown in Exhibit A-1, A-2 and A-3, respectively.

#### EXHIBIT A-1

#### ENFORCEMENT ACTIONS

<u>Trader Education</u> - only to be used when guidance and/or direction through the use of the Act, Regulations or departmental guidelines is provided and where <u>no</u> other action is taken.

<u>Information Letter</u> - a letter directed to the trade noting specific requirements of legislation, but making no warnings to the trade implying the possibility of more stringent action.

<u>Trader Correction</u> - the correction of violative product prior to resale by the trader. (Includes instore advertising, - e.g., sale product not permitted until correct made - see action trader commitment.)

<u>Recall</u> - the <u>supplier</u> has instituted a removal from the market of contravening stock or where the trader has agreed to correct a national problem by going out and removing items.

<u>Voluntary Disposal/Removal</u> - the dealer, in the presence of the inspector, has removed the violative items for sale and has disposed of them, (e.g., exported, sent to charitable organization, destroyed, - agricultural product culls not included).

Forfeiture - the act by the dealer of releasing possession of seized goods to the Crown.

<u>Oral Warning</u> - a verbal notice to a dealer which specifies the nature of the violation in question, the specific legislation and sections violated, and explicitly advises the trader that more stringent action may be considered if the situation is repeated or is not rectified.

<u>Written Warning</u> - a formal written notice to a dealer which specifies the nature of the violation in question, the specific legislation and sections violated, and explicitly advises the trader that more stringent action may be considered if the situation is repeated or is not rectified.

Seizure and Detention - action taken to ensure control of the product and/or where alternative actions have failed to maintain control.

<u>Refusal at Entry</u> - the act of disallowing the entry into Canada of goods found to be in contravention of federal legislation.
#### EXHIBIT A-1

#### ENFORCEMENT ACTIONS (Cont'd)

<u>Referral to another Region/District</u> - the act of forwarding information regarding the goods and noted violations to some other region, district or within a district/zone for their notification and possible follow-up action.

<u>Referral to Another Government Agency</u> - the act of forwarding information regarding goods and the noted violations to another government agency for their notification and possible follow-up.

<u>Return to Supplier</u> - the voluntary act by the dealer of transferring his possession of the violative product to another party, (e.g., return to supplier or responsible party).

<u>Prosecution Recommended</u> - a recommendation by the inspector that prosecution action be initiated.

<u>Inspector Correction</u> - the act by the inspector of correcting noted violations with or without trader assistance (e.g., as in grading shell eggs found to be undergrade).

<u>Show Cause Hearing</u> - a recommendation by the inspector that a meeting within the district office between the Trader, Inspector and District and/or Regional Management be held to discuss trader's record of compliance, and his intentions regarding future compliance, with a record of the proceedings kept on file.

<u>Trader Commitment</u> - a dealer has agreed to eventual correction of all future productions or shipments of goods, based on a mutually agreed period of time with the inspector. This would include next label printing, next importation or any other period of time agreed upon, including newspaper and magazine ads, while allowing continued sale of existing product, (i.e., sale of product is permitted to continue without corrections made - see action trader correction).

<u>Results Pending</u> - indicates an incomplete inspection for a particular product. Completion of inspection data is dependent on submission of further documentation to substantiate performance claims.

#### EXHIBIT A-2

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#### REASONS FOR VISIT

<u>Planned</u> - the primary reason for the visit is to meet district scheduling requirements, regardless of whether referrals or complaints were also handled.

<u>Complaint</u> - the primary reason for the visit is to investigate a complaint, regardless of whether referrals were handled or a full inspection took place.

<u>Referral</u> - the primary reason for the visit is to follow-up referral(s) from other districts/regions, other government agencies, regardless of whether complaints were also handled or a full inspection took place.

<u>Sample Pick-Up</u> - sample has been obtained as part of the national sample program.

<u>Regional/Local Sample Pick-Up</u> - sample has been obtained as part of the regional or district sample program.

Other - survey, problem-product blitz, sample other then the reasons indicated above (these would include: ad hoc samples, complaint samples, developmental samples, samples picked up as the result of an inspection), etc.

## EXHIBIT A-3

#### ESTABLISHMENT SIZE

<u>Small</u> - a small establishment that has a very limited distribution area primarily supplies own municipality and possibly those adjacent to it, (e.g., 7,000 square feet or metric equivalent).

<u>Medium</u> - a medium establishment that has a somewhat larger distribution area and impacts onto marketplace more than the small establishment but is not a major part of the industry.

Large - a large establishment that has a very definite impact on the marketplace - supplies an extensive area and is considered a major participant of that industry, (e.g., 15,000 square feet or metric equivalent).

## APPENDIX B

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## EXAMPLES OF FORMS

- Establishment Report
- Notice of Seizure and Detention
- Sample Record

## EXHIBIT B-1

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APPENDIX C

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# THE FINAL SAMPLE - DESCRIPTION OF ITS CHARACTERISTICS

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#### APPENDIX C

#### THE FINAL SAMPLE - DESCRIPTION OF ITS CHARACTERISTICS

Exhibits C-1 to C-4 display the characteristics of the establishments in the final sample. Highlights are described below:

- the sample was comprised of 302 manufacturers, 295 retailers, and 301 importers (Exhibit C-1)
- as shown in Exhibit C-2, the precious metals product class had the smallest number of establishments represented in the sample, while textiles was the largest product class represented (11% and 34.3%, respectively)
- 32.1% of the final sample was made up of large establishments (Exhibit C-3)
- the sample was mainly comprised of large food retailers, small textile manufacturers and retailers, and large non-food manufacturers and importers (Exhibit C-4).

The types of compliance activities undertaken in these establishments (since January, 1980) are shown in Exhibits C-5 to C-8. In these Exhibits, we see that:

- an inspection is the compliance activity which was used most often. Ninety-nine percent of the establishments had been inspected at least once, compared to 36% to 0.4% for other compliance activities (Exhibit C-5)
- 88% of all establishments have been inspected at least once, since the implementation of the MIS and only 43% have been inspected two or more times since the MIS (Exhibit C-6)
- 79% of all inspections were planned and the remaining 21% were for referral, complaint, sample pick-up or other reasons (Exhibit C-7)
- 43% of all inspections had no enforcement actions.
   The enforcement actions which were most often taken in an inspection were trader correction and trader education (Exhibit C-8).

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## EXHIBIT C-1

## ESTABLISHMENTS BY PRODUCT CLASS AND TRADE LEVEL

PRODUCT CLASS

TRADE LEVEL

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### FREQUENCY TABLE

	Manufacture	Retail	Import	TOTAL
Food	71	115	51	237
Textiles	115	104	89	308
Precious Metals	28	44	27	99
Non-Food	88	32	134	254
TOTAL	302	295	301	

### PERCENTAGE TABLE

	Manufacture	Retail	Import	TOTAL
Food	7.9	12.8	5.7	26.4
Textiles	12.8	11.6	9.9	34.3
Precious Metals	3.1	4.9	3.0 j	11.0
Non-Food	9.8	3.6	14.9	28.3
TOTAL.	33.6	32.9	33.5	100.0

## ESTABLISHMENTS BY SIZE AND PRODUCT CLASS

#### ESTABLISHMENT

SIZE

### PRODUCT CLASS

## FREQUENCY TABLE

	Food	Textiles	Precious Metals	Non- Food	TOTAL
Small	82	151	54	72	359
Medium	64	84	29	67	244
Large	88	71	15	114	288
Missing	3	2	1	1	7
TOTAL	237	308	99	254	898

### PERCENTAGE TABLE

	Food	Textiles	Precious Metals	Non- Food	TOTAL
Small	9.1	16.8	6.0	8.0	40.0
Medium	7.1	9.4	3.2	7.5	27.2
Large	9.8	7.9	1.7	12.7	j 32.1
Missing	0.3	0.2	0.1	0.1	0.8
TOTAL	26.4	34.3	11.0	28.3	100.0

## ESTABLISHMENTS BY SIZE AND TRADE LEVEL

## ESTABLISHMENT

SIZE

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## TRADE LEVEL

### FREQUENCY TABLE

	Manufacture	Retail	Import	TOTAL
Small	115	133	111	359
Medium	82	67	95	244
Large	101	94	93	288
Missing	4	1	2	7
TOTAL	302	295	301	898

## PERCENTAGE TABLE

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	Manufacture	Retail	Import	TOTAL
Small	12.8	14.8	12.4	40.0
Medium	9.1	7.5	10.6	27.2
Large	11.2	10.5	10.4	32.1
Missing	0.4	0.1	0.2	0.8
TOTAL	33.6	32.9	33.5	100.0

## ESTABLISHMENTS BY PRODUCT CLASS, SIZE AND TRADE LEVEL

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PRODUCT CLASS	ESTABLISH- MENT SIZE	SIZE TRADE LEVEL					
****		Manufacture	Retail	Import	TOTAL		
Food	Small	28	33	21 1	82		
Food	Modium	20	28	15	64		
	Larce	19	54	15	88		
	Missing	3	0	0	3		
	TOTAL	71	115	51	237		
Textiles	Small	52	56	43	151		
	Medium	33	25	26	84		
	Large	30	23	18	71		
	Missing	0	0	2	2		
	TOTAL	115	104	89	308		
Precious	Small	18	27	9	54		
Metals	Medium	8	10	11	29		
	Large	2	6	7	15		
	Missing	0	1	0	1		
	TOTAL	28	44	27	99		
Non-Food	Small	17	17	38	72		
	Medium	20	4	43	67		
	Large	50	11	<b>53</b>	114		
	Missing	1	0	0	1		
	TOTAL	88	32	134	254		

### COMPLIANCE ACTIVITIES

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ACTION*	ESTAL WHI LEAST	BLISHMENTS CH HAD AT ONE ACTION	NUMBER OF TIMES ACTION OCCURRED			
	Number	Percentage	Per Est.	Total		
Inspection	891	99.2	3.45	3,089		
Referral	323	36.0	1.27	1,140		
Complaint	169	18.8	0.33	299		
Sample Pick-up	140	16.9	0.33	300		
Warning Letter	121	13.5	0.29	257		
Information Letter	89	9.9	0.17	150		
Seizure and Detention	83	9.2	0.18	160		
Prosecution**	4	0.4	0.004	4		

\*These are forms and letters which were found in the establishment files, dated after 1979.

\*\*This information was obtained from the prosecution files.

## NUMBER OF INSPECTIONS

Total Number of Inspections Since 1980	Number of Establishments	Percentage With At Least One Post-MIS*	Percentage With At Least Two Post-MIS*	PERCENTAGE OF TOTAL
0	7	0.0	0.0	0.8
1	278	86.3	0.0	31.0
2	139	84.0	36.7	15.5
3	118	86.4	34.7	13.1
4	94	86.2	31.9	10.5
5	91	94.5	53.8	10.1
6	59	98.3	71.2	6.6
7	31	100.0	77.4	3.5
8	24	95.8	75.0	2.7
9	17	100.0	88.2	1.9
10	14	85.7	85.7	1.6
11	11	100.0	100.0	1.2
12	15	100.0	100.0	1.7
TOTAL	898	88.4	43.2	100.0**

\* This percentage is not of the total number of establishments, but a percentage of the number of establishments which have been inspected x number of times.

\*\* This column adds up to 100.2 rather than 100.0 because the computer rounds off each percentage to the nearest whole percent.

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## REASON FOR INSPECTIONS AND INSPECTIONS PRE VERSUS POST MIS

REASON FOR INSPECTION*	NUMBER	PERCENTAGE
Planned	2,448	79.0
Referral	282	9.1
Complaint	152	4.9
Sample Pick-up	9	0.3
Other	207	6.7
TOTAL	3,098	100.0

PRE/POST MIS INSPECTIONS	NUMBER	PERCENTAGE	
Pre	1,812	58.5	
Post	1,286	41.5	

\*Inspections are assumed to be planned, unless otherwise stated.

## ACTIONS TAKEN IN AN INSPECTION\*\*\*

ACTION	NUMBER	PERCENTAGE OF TOTAL*
All Lots Accepted**	1,332	43.0
Trader Education	706	22.8
Information Letter	31	1.0
Trader Correction	1,000	32.3
Recall	3	0.1
Voluntary Disposal/Removal	125	4.0
Forfeiture	0	0.0
Oral Warning	245	7.9
Written Warning	51	1.6
Seizure and Detention	128	4.1
Sample Pick-Up	6	0.2
Refusal at Entry	13	0.4
Referral to Another Region/District	548	17.7
Referral to Another Government Agency	48	1.5
Return to Supplier	93	3.0
Prosecution Recommended	1	0.0
Inspector Correction	34	1.1
Show Cause Hearing	1	0.0
Trader Commitment	191	6.2
Results Pending	24	0.8

\* Percentage out of a total of 3,098 inspections.

\*\* All lots accepted, only if no other actions were taken in the inspection.
\*\*\* These are actions which were recorded as part of an inspection.

Exhibit C-9, describes the number of consecutive post-MIS inspections which have been examined under each regulatory area. We found that labelling was the area in which compliance was measured the most frequently (357 times) and quantity the least frequently (88 times). Overall, there were 403 consecutive inspections in which an establishment was measured for compliance in at least one regulatory area since the initiation of the MIS.

Also included in the Exhibit is a description of the enforcement actions which can be undertaken during the previous inspection or in between the current and the previous inspections. The actions were most frequently used by the inspectors are trader correction, all lots acceptable, (i.e., no enforcement actions), trader commitment, written warning and trader education.

### NUMBER OF CONSECUTIVE POST-MIS INSPECTIONS AND NUMBER WITH ENFORCEMENT ACTIONS IN THE PREVIOUS INSPECTION BY REGULATORY AREA

	LABELLING	REGULATO	QUANTITY	MEAN
Number of Consecutive Inspections*	357	107	88	403
Number with Actions in the Previous Inspection**				
All lots acceptable	115	. 6	13	128
Trader Education	50	8	3	.53
Information Letter	23	14	9	30
Trader Correction	181	67	62	202
Oral Warning	12	9	4	16
Written Warning	42	29	17	60
Seizure and Detention	25	18	10	33
Trader Commitment	60	27	7	71
Voluntary Disposal	31	24	20	32

\* This includes consecutive (Post-MIS) inspections which had a percentage compliance value in both inspections, only.

\*\* These actions could either have been recorded as an action taken in an inspection or information, in terms of a letter or an official report form, found in the establishment file. 

## APPENDIX D

## MODELLING

. DATABASE FOR MODELLING

. MODEL SELECTION AND C  $_{\rm p}$  Statistic

#### APPENDIX D

#### MODELLING

Contained in this Appendix are descriptions of the database and the variable selection criteria which were used in the modelling phase of the study.

#### Database for Modelling

The database was created from information collected from the establishment files of the Toronto district office. In particular, data items were recorded from:

- establishment report forms
- letters addressed to the establishment
- complaint forms
- seizure and detention forms
- sample record forms
- photocopies of establishment report forms from another district (for referral purposes).

Information was also collected from prosecution files, but was not used in the modelling due to the small numbers. A listing of the data items is shown in Exhibit D-1.\* Only forms and letters dated January 1, 1980 and later were considered in this study.

It should be noted that not all forms and letters dated January 1, 1980 and later were recorded, and that some action codes, per inspection, were also not recorded. The maximum number of actions recorded for each data item is shown in the Exhibit D-1. This limitation should not affect the results greatly since only 15 establishments had the maximum of 12 inspections, 27.5% of all inspections had the maximum of 3 actions, and for each of the enforcement actions with separate forms or letters, up to 6 establishments had the maximum number. Because of this, some variables have been added to the database and others have been modified. Details are provided in a later section.

<sup>\*</sup> A show cause hearing was also considered as an enforcement action but it does not appear on this list, since no evidence of a show cause hearing was found in the establishment files sampled. If a show cause hearing occurred, a record of the proceedings would have been kept on file.

#### EXHIBIT D-1

#### DATA ITEMS

### 1. Establishment Identification

- identification number
- establishment type
- establishment size
- establishment zone.

### 2. Inspections Since January, 1980 (maximum: 12)

- pre vs post MIS inspection
- date of inspection
- inspection rating
- reason for the inspection
- quantity number sampled
   number acceptable
   number marginal
- quality number sampled - number acceptable
- labelling number sampled
   number acceptable
- action codes (maximum: 3 per inspection)
- date of the next scheduled inspection.

### EXHIBIT D-1 (Cont'd)

### DATA ITEMS

### 3. Enforcement Actions since January 1, 1980

Dates and under which area (quality/quantity/labeling) the action applies to:

- information letter (maximum: 8)
- warning letter (maximum: 8)
- sample (maximum: 8)
- referrals (maximum: 24)
- complaints (maximum: 8)
- seizure/detention (maximum: 15)
- prosecution (maximum: 2).

#### Quality Control

The data were inputed with 100% (manual) verification and checks were made by computer. Such checks included:

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- that dates for all forms and letters were between January, 1980 and June, 1985
- that the date of the next scheduled inspection was not before the date of the present inspection
- that the number sampled was greater than or equal to the number acceptable (plus number marginal, if applicable)
- that the codes for all data items were valid.

#### Variables

The following is a description of dependent and independent variables in the database used for modelling. This database considers each inspection of an establishment as one case. Since an establishment in our sample may be inspected a maximum of twelve times, therefore an establishment may be represented from zero to twelve times.\*

#### Dependent Variables

One of the main objectives of this study was to determine how inspections affect establishments in terms of compliance. Compliance can be measured in several different ways. The measures we considered in the models were:

Percentage Compliance:

% quantity = <u>number acceptable + number marginal</u> number sampled

- % quality = <u>number acceptable</u> number sampled

mean % =  $\frac{\%}{2}$  quantity + % quality + % labeling 3

\* The database for modelling was created from another data file which had one case for each establishment in the sample.

Establishment Ratings:

```
good = 1.0
average = 0.5
poor = 0.0
```

• Dummy Variables for the following action codes:

- all sampled lots were acceptable

- seizure and detention
- written warning.
- Differences from the current and the previous inspections in all the above measures.

Due to the different methods of measuring compliance pre- and post-MIS, some of the above measures may not apply. For example, there were no establishment ratings for inspections post-MIS, and for pre-MIS inspections the units of sampled items were in lots rather than individual items and in many cases this information was not available.

A fifth type of compliance measure was also used -- an imputed establishment rating. This new establishment rating was based upon the relationship between the pre-MIS establishment rating and the amount of time before the next scheduled inspection. As shown in Exhibit D-2, 83% of establishments which received a good rating were scheduled to have their next inspection at least 9 months from the time of the current inspection. Also, 48% of establishments which received an average rating were scheduled to have their next inspection between 4 and 8 months from the time of the current inspection, and 61% of poorly rated establishments were scheduled for an inspection within 2 months time. For establishments which were scheduled for inspections in three months time, about equal percentages had ratings of average or poor. Using these qualitative inspection ratings (i.e., poor, average and good), we developed quantitative ratings, (on a scale from 1 to 0), as follows:

Rating	Value
Poor	0.00
Average	0.50
Good	1.00

For inspections without ratings we knew the number of months until the next inspection. Thus, we used the information about establishments with ratings to assign qualitative ratings and quantitative values, as follows:

# EXHIBIT D-2

1999 - 1999 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 -1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 -1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 -

## CURRENT INSPECTION RATING VERSUS TIME UNTIL NEXT SCHEDULED INSPECTION

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Number of Months Until Next			Inspe	ction Rat	ing	
Scheduled Inspection	Good		Average		Poor	
0-2	48	(4.4%)	63	(23.3%)	157	(61.3%)
3	14	(1.3%)	35	(13.0%)	34	(13.3%)
4-8	123	(11.2%)	1 <b>3</b> 0	(48.1%)	43	(16.8%)
9+	912	(83.1%)	42	(15.6%)	22	(8.6%)
Total	1,097	(100.0%)	270	(100.0%)	256	(100.0%)

Until Next Inspection	Rating	Value
0-2	Poor	0.00
3.	Average-Poor	0.25
4-8	Average	0.50
9+	Good	1.00

The names of all variables used as dependent variables are listed in Exhibit D-3.

#### Independent Variables

There were some independent variables which were included in all the modelling and some which were only used in certain situations. The variables which were common to all analyses are listed in Exhibit D-4 and described below:

- establishment characteristics
- reason for present or previous inspections
- previous inspection action codes of actions which were not used as a dependent variable
- what happened in between inspections
- history of the number of inspections and the number of inspections with certain enforcement actions
- overall performance of the establishment in the last 5 years.

The independent variables which were not common to all analyses are shown in Exhibit D-5. The inclusion of these variables in the development of a model depended upon three factors. These factors take into account the regulatory area, the scenario and the dependent variable being modelled.

With respect to the first factor, models were developed for each regulatory area, i.e., labelling, quality and quantity. Thus, if we were creating models for one particular area, the percentage compliance in the other areas were excluded as independent variables. For example, if we were modelling percentage labelling compliance, the previous percentage quantity and quality compliance could not be included as independent variables.

The scenario factor had to be considered since some differences exist in the compliance measures which were recorded before and after the introduction of the MIS. In particular, this applies to the percentage compliance and the establishment ratings. The percentage compliance measure was recorded for the three regulatory areas in all inspections after the initiation of the MIS,

## EXHIBIT D-3

## DEPENDENT VARIABLES

VARIABLE NAME	DESCRIPTION
QTE_AC1	Current Percentage Quantity Compliance
QLE_AC1	Current Percentage Quality Compliance
LAB_AC1	Current Percentage Label- ling Compliance
MN_AC1	Current Mean Percentage Compliance
RATE1	Current Establishment Rating
	Actions in Present Inspection:
A_AC	All lots acceptable
A_SD A_WW	Seizure and detention Written warning
NEWRATE	New Rating for Current Inspection
	Current Previous*
DIFF_QTE	$= QTE AC1 - P_QT_A1$
DIFF_QLE	= QLE AC1 - P QL A1
DIFF_LAB DIFF_MN	$= MN \overline{AC1} - P \overline{M} \overline{AC1}$
DIFF_RT	= RATE1 - PRATE1
DIFFAC	= A AC - PA AC $= A SD - PA SD$
DIFF_UW	= A WW $-$ PA WW
DIFF_NRT	= NEWRATE - NEWPRATE
	VARIABLE NAME QTE_AC1 QLE_AC1 LAB_AC1 MN_AC1 RATE1 A_AC A_SD A_WW NEWRATE DIFF_QTE DIFF_QLE DIFF_LAB DIFF_LAB DIFF_MN DIFF_RT DIFF_SD DIFF_WW DIFF_NRT

\* The description of the variables is shown in Exhibit D-6.

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## EXHIBIT D-4

### COMMON INDEPENDENT VARIABLES

Type	Variable Name	Description
Establishment Characteristics*	MANUFACT RETAIL FOOD TEXTILE P_METAL LARGE SMALL METRO	Manufacture trade level Retail trade level Product class food Product class textile Product precious metal Size of establishment - large Size of establishment - small Establishment within the metropolitan Toronto Area
Reason for Present and Previous Inspections	R_CM_RF R_SAMPLE R_OTHER PR_CM_RF PR_SAMPL PR_OTHER	Reason for current is complaint/referral Reason for current is sample pick-up Reason for current other than planned Reason for previous is complaint referral Reason for previous is sample pick-up Reason for previous is other than planned
Previous Inspection Action Codes*	PA_ED PA_TC PA_IL PA_OW PA_DR PA_CM PA_N_ED	Trader education Trader correction Information letter Oral warning Destroy/return Trader Commitment New trader education

\* These dummy variables were used to indicate the presence or absence of each independent variable (i.e., 1 or 0).

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# EXHIBIT D-4 (Cont'd)

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## COMMON INDEPENDENT VARIABLES

Variable Name	Description
N_TIME N_COMPLN N_REFER N_SAMPLE	Time in between inspections: Number of months Number of complaint forms Number of referrals from other regions/departments Number of sample pick-up forms
Last 3 Last 5 Years Years	Number of increations
AC 3 1 AC 5 1 ED 3 1 ED 5 1 TC 3 1 TC 5 1 IL 3 1 IL 5 1 OW 3 1 OW 5 1 WW 3 1 WW 5 1 DR 3 1 DR 5 1 SD 3 1 SD 5 1 CM 3 1 CM 5 1 N ED3 1 N ED5 1	Number of inspections Number of inspections with: All lots acceptable Trader education Trader correction Information letters Oral warnings Written warnings Destroy/return to supplier Seizure and detention Trader commitment New trader education
PER_AC PER_ED PER_TC PER_IL PER_OW PER_WW PER_DR PER_SD PER_CM PER_RF PER_RF	What percentage of the inspections in the last 5 years which had: All acceptable lots Trader education Trader correction Information letter Oral warnings Written warnings Destroy/return Seizure and detention Trader commitment Referrable to another region/ department New trader education
	Variable Name N TIME N COMPLN N REFER N SAMPLE Last 3 Last 5 Years Years INSP3_1 INSP5_1 AC 3 1 AC 5 1 ED 3 1 ED 5 1 TC 3 1 TC 5 1 IL 3 1 IL 5 1 OW 3 1 OW 5 1 WW 3 1 WW 5 1 DR 3 1 DR 5 1 SD 3 1 SD 5 1 CM 3 1 CM 5 1 N ED3_1 N ED5_1 PER AC PER ED PER TC PER IL PER OW PER WW PER WW PER MW PER CM PER CM PER CM PER RF PER N ED

## EXHIBIT D-5

## COMPLIANCE MEASURES AS INDEPENDENT VARIABLES

Variable Name	Description
P_QT_A1	previous percentage quantity compliance
P_QL_A1	previous percentage quality compliance
P_LB_A1	previous percentage labeling compliance
P_M_AC1	previous mean percentage compliance
GOOD	previous rating was good
POOR	previous rating was poor
P_RATE1	previous rating 1=good, .5=average, 0=poor
NEWPRATE	new establishment rating from the previous inspection
PA_AC	previous action acceptable
PA_WW	previous action written warning
PA_SD	previous action seizure and detention

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while before the initiation of the MIS, an overall percentage compliance was recorded for only some inspections. Establishment ratings were only recorded prior to the initiation of the MIS. Therefore, percentage compliance measures and establishment ratings could only be included on the basis of the current and previous inspections being considered. For example, if post-MIS inspections were being used for the current and previous inspections, then we were only able to include percentage compliance data. The four scenarios considered were:

Post-MIS		
Pre-MIS		
Pre-MIS		
Pre/Post-MIS		

Exhibit D-6 shows the compliance measures for both the independent and dependent variables which could be used in each of the above scenarios.

With respect to the third factor, an independent compliance measure variable was only included in the modelling if it was not used to create the dependent variable. This applies to the basic and other difference models. For example, in the model for the difference in percentage labelling compliance, since the difference variable was created using the percentage labelling compliance for the current and previous inspections, then the percentage labelling compliance for the previous inspection could not be used as independent variable. However, the other compliance measures which could be included as independent variable are previous actions - all lots acceptable, written warning and seizure and detention.

Finally, a few of notes should be made about the modifications made to some of the independent variables in the database:

- the new trader education variable was created because generally when there were more than 3 action codes in an inspection, the least severe actions were not recorded. Since trader education was considered the least severe of all actions, it was left out if there were 3 or more action codes which were more severe. This new trader education variable shows trader education as an action when it is recorded on its own or when there are three other more severe actions recorded
- for actions in the previous inspection if there were information letters, seizure and detention forms or written warnings in the establishment file, dated between inspection dates, then they were considered as actions of the previous inspection regardless of whether or not the actions were recorded as part of the previous inspection.

### EXHIBIT D-6

Compliance Measure	Post vs Post	Post vs Pre**	Pre vs** Pre	Pre/Post vs Pre/Post
Percentage Compliance	I&D	D	-	I&D
Establishment Rating	-	I*	I&D	-
Action Codes	I&D	I&D	I&D	I&D
New Establishment Rating	I&D	İ&D	I&D	I&D
Difference: - Percentage Compliance - Establishment Rating - Action Codes	D - D	- - D	– D D	D - D
- New rating	D	D	D	D

### COMPLIANCE MEASURES AS INDÉPENDENT AND DEPENDENT VARIABLES

I = independent (previous inspection)

D = dependent (current inspection only or current-previous inspection)

\* In this situation dummy variables were created for each establishment rating

\*\* Percentage compliance could be used for Pre-MIS, but this data was only available for some inspections.

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### Model Selection and C<sub>D</sub> Statistic

The major technique for final model selection was based on selecting, via "the best of all possible subsets algorithm, "the model which minimizes Mallow's C<sub>p</sub> statistic. The best of all possible subsets routine looks at all combinations of variables for each size subset, and selects the one which is best according to some criterion (in one case, the C<sub>p</sub> statistic). Thus unlike stepwise regression, which often does not converge to the optimal model, our algorithm guarantees selection of the best model.

The C<sub>p</sub> statistic is an estimate of standardized total squared error. Its use is based on the premise that total squared error is the appropriate criterion for model selection, rather than residual sum of squares. By allowing the use of "biased" estimates, we can get better predictive and explanatory models. Unlike R<sup>2</sup>, C<sub>p</sub> does not always go up with extra estimated parameters, and unlike adjusted R<sup>2</sup>, it is an estimate of meaningful parameters.

The  $C_{\rm p}$  statistic is derived as follows:

- $v_i$  = the expected value of the true model for the j'th observation
- u<sub>j</sub> = the expected value of a particular fitted model for the j'th
   observation

 $Y_i$  = estimated value for j'th observation

Total Square Error = 
$$\sum_{j=1}^{N} (v_j - Y_j)^2$$
  
=  $\sum_{j=1}^{N} (v_j - u_j)^2 + \sum_{j=1}^{N} Var Y_j$ 

Since bias =  $v_i - u_j$ , we have

Total Square Error = 
$$\sum (bias)^2 + \sum Var Y_j$$

Let  $\sum (bias)^2 = SSB$ 

 $\Gamma_{p}$  = standardized total squared error with p parameters in model

$$\Gamma_{p} = \frac{SSB_{p}}{\nabla^{2}} + \frac{1}{\nabla^{2}} \sum Var Y_{j} = \frac{SSB_{p}}{\nabla^{2}} + P$$
  
Since  $\sum Var Y_{j} = p \nabla^{2}$ 

If RRS<sub>p</sub> is residual sum of squares,  $E(RSS_p) = SSB_p + (N-p) \sqrt{2}$ 



The 
$$\Gamma p = E (RSSp) + (N-p) \sqrt{2}$$
  
=  $\frac{\nabla^2}{E(RSSp) + (N-2p)\sqrt{2}}$   
 $\sqrt{2}$   
 $\sqrt{2}$ 

$$= \frac{E (RSSp)}{\sqrt{2}} - (N-2p)$$

Now define  $C_p$  as an estimator of  $\int_p$ 

$$C_{p} = \frac{RSS}{S^{2}} - (N-2p)$$

When there is no bias, E (C<sub>p</sub>) = p, since E (RSS) = (N-p)  $\nabla^2$ .

# APPENDIX E

## LABELLING: PROBABILITY MODELS
#### APPENDIX E

#### LABELLING PROBABILITY MODELS

Contained in this Appendix are the difference in probability models of an inspection with:

- all lots acceptable
- a seizure and detention
- a written warning.

#### All Lots Acceptable

The final model for the increase in probability of an inspection with all lots acceptable is shown in Exhibit E-1. The results which reflect program effectiveness are:

- when trader correction was a part of the previous inspection, the probability of an inspection with no enforcement actions, increased by 41% (everything else being equal)
- given two similar establishments, the establishment which committed to future compliance will have an increase in probability of 36% over the increases of the other establishment, that the next inspection will have all lots acceptable
- when a trader was given some education in the previous inspection, there was an increase in probability that the current inspection had all lots acceptable. There was an increase of 22% more than for a similar establishment which was given no education
- an establishment which voluntarily dispose or returns to the supplier the non-compliant product(s), has a probability increase of 19%, more than other establishments, that it will have all lots acceptable in the next inspection (everything else being equal).

#### Seizure and Detention

Exhibit E-2, summarizes the final model for decrease in probability of an inspection with a seizure and detention. The only program intervention variable in this model is previous action written warning. Its coefficient of

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## MODEL FOR INCREASE IN PROBABILITY OF AN INSPECTION WITH ALL LOTS ACCEPTABLE: LABELLING

Type of Variable	Variable	Coefficient	t-Value	Significance	Interpretation
Program Intervention	Previous Action Trader Correction	.41	6.95	•000	Increase in probability of 41% when action in the previous inspection involved Trader Correction
	Previous Action Trader Commitment	•36	5.15	•000	Increase in probability of 36%, when action in the previous inspection involved Trader Commitment
	Previous Action Trader Education	•22	3.14	.002	Increase in probability of 22% when action with previous inspection involved Trader Education
	Previous Action Voluntary Disposal/Return to Supplier	.19	2.00	•046	Increase in probability of 19% when action in the previous inspection involved Voluntary Disposal or returning goods to the supplier
Control	Food	28	4.07	•000	Average decrease of 28% for food establishments
	Large	19	3.23	.001	Average decrease of 19% for large establishments
	Small	14	2.13	.034	Average decrease ofl4% for small establishments
	Previous Percentage Compliance: Labelling	0014	1.77	•078	For each 1% in previous compliance: labelling, the probability increased by .14%

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## EXHIBIT E-1 (Cont'd)

### MODEL FOR INCREASE IN PROBABILITY OF AN INSPECTION WITH ALL LOTS ACCEPTABLE: LABELLING (Cont'd)

Type of Variable	Variable	Coefficient	t-Value	Significance	Interpretation
Control (Cont'd)	Percentage of Inspections, with all lots Acceptable in last 5 Years	0010	1.09	.277	For each 1% increase in the percentage of past inspections with all lots acceptable, probability decreased .10%
	Reta11	03	0.39	.700	Average decrease for retail establishments of 3%
	Constant	.13			$C_p = 10$
					$R^2 = 0.319$
					N = 409
			}		
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## MODEL FOR DECREASE IN PROBABILITY OF AN INSPECTION WITH A SEIZURE AND DETENTION: LABELLING

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Type of Variable	Variable	Coefficient	t-Value	Significance	Interpretation
Program Intervention	Previous Action Written Warning	•38	4.63	.000	Decrease in probability of 38% when action in the previous inspection involved a written warning
Control	Percentage of Inspections in last 5 years with seizures and detentions	.0042	7.32	.000	For each 1% increase in the percentage of past inspections with seizures and detentions, probability decreases .42%
	<pre># of Inspections with Written Warnings in the last 5 years</pre>	04	1.66	.097	For each inspection with a written warning in the last 5 years, probability increased 4%
	Constant	01			$C_{p} = 7$
					$R^2 = 0.156$
					N = 459
			}		

.38 implies that, given an establishment which received a written warning prior to the current inspection and another establishment which did not receive such a warning, the establishment with the warning will have a decrease in probability that products will be seized and detained in the current inspection, a decrease of 38% over the decreases of the other (everything else being equal).

#### Written Warning

The model for decrease in probability of an inspection with a written warning is shown in Exhibit E-3. The major findings reflecting program effectiveness are:

- when an establishment receives an information letter prior to its current inspection, then this establishment will have a decrease in probability that a written warning will be an enforcement action in the current inspection. It will have a decrease of 35% more than that of a similar establishment which did not receive such an information letter
- an establishment which had a product(s) seized and detained in its previous inspection will have a decrease in probability that a written warning will result from the current inspection. Everything else being equal, this will be a decrease of 29% more than that of similar establishments which did not have products seized and detained.

E.2

## MODEL FOR DECREASE IN PROBABILITY OF AN INSPECTION WITH A WRITTEN WARNING: LABELLING

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Type of Variable	Variable	Coefficient	t-Value	Significance	Interpretation
Program Intervention	Previous Action Information Letter	• 35	2.33	.020	Decrease in probability of 35% when action in the previous inspection involved an information letter
	Previous Action Seizure and Detention	.29	5.33	•000	Decrease in Probability of 29% when action in the previous inspection involved a seizure and detention
Control	Food	•32	8.47	•000	Average decrease of 32% for food establishments
	Retail	18	4.79	•000	Average increase of 18% for retail establishments
	<pre># of Inspections in last 3 years with information letters</pre>	.20	2.05	.041	Each inspection with an information letter in the past 3 years, decreased probability by 20%
	Percentage of Inspections with Written Warnings in Past 5 Years	.0037	2.00	.046	For each 1% increase in the percentage of past inspection with a written warning, probability decreased by .37%
	Constant	•02			$C_p = 7$
					$R^2 = 0.305$
					N = 457
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## APPENDIX F

# QUALITY: PROBABILITY MODELS

#### APPENDIX F

#### QUALITY: PROBABILITY MODELS

The other difference in probability models for establishments which have been inspected in the regulatory area of quality are described in this Appendix.

#### All Lots Acceptable

A summary of the model for increases in probability of an inspection with all lots acceptable is shown in Exhibit F-1. The findings related to program effectiveness tell us that trader education and trader correction as part of an inspection are effective instruments in bringing about an increase in the probability of an inspection with all lots acceptable. The probability increases with these actions were 29% for trader education and 13% for trader correction (everything else being equal).

#### Seizure and Detention

The program intervention variable which was incremental in decreasing the probability of an inspection with a seizure and detention, shown in Exhibit F-2, is previous action written warning. Its coefficient of .07 implies that when an establishment receives a written warning prior to an inspection, the probability it will have products seized and detained will decrease by 7% over the decreases of a similar establishment which received no such warning.

#### Written Warning

The major results in the model for decrease in probability of an inspection with a written warning, shown in Exhibit F-3, are:

- when an establishment receives an information letter in the previous inspection, there is an 87% decrease in probability that a written warning will result from the current inspection compared to a similar establishment which did not receive an information letter
- given two similar establishments, the establishment which has committed to future compliance, will have a decrease in probability of 22% more than the other establishment
- an establishment will have a decrease in probability of receiving a written warning if it had products seized and detained in its previous inspection. It will have of a decrease of 31% over the decreases of another establishment which did not have products seized and detained in its previous inspection (everything else being equal).

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## EXHIBIT F-1

## MODEL FOR INCREASE IN PROBABILITY OF AN INSPECTION WITH ALL LOTS ACCEPTABLE: QUALITY

Type of Variable	Variable	Coefficient	t-Value	Significance	Interpretation
Program Intervention	Previous Action Trader Education	.29	2.68	.008	Increase in probability of 29% when action in the previous inspection involved trader education
	Previous Action Trader Correction	•13	1.87	.063	Increase in probability of 13% when action in the previous inspection involved trader correction
Control	Reason for Previous Inspection is Complaint/Referral	19	2.52	.013	Average decrease of 19% when the reason for the previous inspection was a complaint/ referral
	Previous Percentage Compliance: Quality	0025	3.20	.002	For each 1% increase in the previous percentage compliance: quality, probability decreased .25%
	Food	22	2.96	.004	Average decrease of 22% for food establishments
	Constant	.38			$C_p = 5$ $R^2 = 0.154$
					N ⇒ 168

## MODEL FOR DECREASE IN PROBABILITY OF AN INSPECTION WITH A SEIZURE AND DETENTION: QUALITY

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Type of Variable	Variable	Coefficient	t-Value	Significance	Interpretation
Program Intervention	Previous Action Written Warning	•07	1.79	•075	Decrease in probability of 7% when action in the previous inspection involved a written warning
Control	Percentage of Inspections with Seizures and Detentions in the last 5 years	.0045	5.25	•000	For each 1% increase in the percentage of past inspections with seizures and detentions, probability decreased .45%
	Percentage of Inspections with Written Warnings in the last 5 years	.0085	3.37	•001	For each 1% increase in the percentage of past inspections with written warnings, probability decreased .85%
	<pre># of Inspections with Written Warnings in the last 5 years</pre>	07	1.78	.077	For each inspection with a written warning in the last 5 years, there was an increase in probability of 7%
	Reason for Current Inspection is complaint/referral	06	1.70	.091	Average increase of 6% when the reason for the current inspection is complaint/ referral
	<pre># of Referrals between Inspections</pre>	.02	2.37	.018	For each referral received between inpsection, probability decreased 2%
	Constant	.02			$C_p = 4$
					$R^2 = 0.272$
		1			N = 274

## EXHIBIT F-3

## MODEL FOR DECREASE IN PROBABILITY OF AN INSPECTION WITH A WRITTEN WARNING: QUALITY

Type of Variable	Variable	Coefficient	t-Value	Significance	Interpretation
Program Intervention	Previous Action Information Letter	.87	4.59	.000	Decrease in probability of 87% when action in the previous inspection involved an Information Letter
	Previous Action Trader Commitment	.22	3.79	.000	Decrease in probability of 22% when action in the previous inspection involved trader commitment
	Previous Action Seizure and Detention	.31	4.30	.000	Decrease in probability of 31% when action in the previous inspection involved seizure and detention
Control	Food	.20	3.94	.000	Average decrease of 20% for food establishment
	Percentage of Inspections with Written Warnings in the last 5 years	.0045	1.83	•068	For each 1% increase in the percentage of past inspections with a written warning, probability decreased by .45%
	Constant	.09			$C_{p} = 4$ $R^{2} = 0.285$
					N = 244

## APPENDIX G

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# QUANTITY: OTHER MODELS

#### APPENDIX G

#### QUANTITY OTHER MODELS

Included in this Appendix is a summary of the models for quantity compliance. These models include:

- the time between the current and the previous inspections
- an increase in probability of an inspection with all lots acceptable
- a decrease in probability of an inspection with a seizure and detention
- a decrease in probabilty of an inspection with a written warning.

The results for each model are described below.

#### Time Between Inspection

The model for the time between the current and the previous inspections for establishments with compliance activities in the regulatory area of quantity is shown in Exhibit G-1. The program intervention results imply that:

- an establishment which had been inspected more often tended to be reinspected sooner, by .78 of a month per inspection which occurred in the last 3 years, than a similar establishment which had been inspected less often
- establishments with previous action trader correction were reinspected 1.37 months sooner than an establishment without this action (everything else being equal)
- when a seizure and detention occurred in the previous inspection, the time until reinspection decreased by 1.85 months (everything else being equal)
- when a commitment for future compliance was made by the trader, he was allowed more time (1.73 months) to comply until he is reinspected than was another trader who made no such commitment.

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Type of Vąriable	Variable	Coefficient	t-Value	Significance	Interpretation
Program Intervention	Number of Inspec- tions in the Last 3 Years	78	4.05	.000	For each inspection in the last 3 years, the number of months decreased by .78
	Previous Action Trader Correction	-1.37	1.76	.081	Decrease in the number of months by 1.37 when action in the previous inspection involved trader correction
	Previous Action Seizures and Detentions	-1.85	1.68	.095	Decrease in the number of months by 1.85 when action in the previous inspection involved a seizure and detention
	Previous Action Trader Commitment	1.73	1.53	.128	Increase in the number of months by 1.73 when action in the previous inspection involved trader commitment
Control	Reason for Current Inspection is Complaint/Referral	-3.51	4.28	.000	Decrease in the number of months when the reason for the current inspection is a complaint/referral by 3.51
	Percentage of Inspections with Trader Education in the last 5 years	0.0613	3.47	.001	For each percentage of past inspections with trader education, the number of months increased .0613
	Previous Percentage Compliance: Quantity	0.0507	2.44	.016	For each percentage of quantity compliance in the previous inspection, compliance in the number of months increased by .0507

## EXHIBIT G-1 (Cont'd)

### MODEL FOR THE TIME BETWEEN THE CURRENT AND THE PREVIOUS INSPECTIONS: QUANTITY

Variable	Coefficient	t-Value	Significance	Interpretation
Large	1.55	2.22	.029	Average increase of 1.55 months for large establishments
<pre># of Inspections with Oral Warnings in the last 3 years</pre>	.79	1.20	.232	For each inspection with an oral warning in the past 3 years, the number of months increased by .79
Constant	4.96			$C_p = 10$ $R^2 = 0.380$ N = 124
	Variable Large # of Inspections with Oral Warnings in the last 3 years Constant	VariableCoefficientLarge1.55# of Inspections with Oral Warnings in the last 3 years.79Constant4.96	VariableCoefficientt-ValueLarge1.552.22# of Inspections with Oral Warnings in the last 3 years.791.20Constant4.964.96	Variable       Coefficient       t-Value       Significance         Large       1.55       2.22       .029         # of Inspections with Oral Warnings in the last 3 years       .79       1.20       .232         Constant       4.96

Some of the other results are:

- establishments are reinspected 3.51 months sooner when the reason for reinspection is because of a complaint or referral (everything else being equal)
- for establishments which are similar except with respect to size, the large size establishments will not be reinspected as soon as small and medium size establishments. Small and medium size establishments will be reinspected 1.55 months sooner than large ones.

#### All Lots Acceptable

Exhibit G-2 describes the results of the final model for increase in probability of an inspection with all lots acceptable. The major findings which provide an indication of program effectiveness are:

- when trader correction is a part of the actions taken in an inspection, there is a 30% increase in probability that all lots will be acceptable in the next inspection (everything else being equal)
- an establishment which had products seized and detained will have an increase in probability that the next inspection will have all lots acceptable. This increase will be 22% more than the increase of a similar establishment which did not have products seized and detained.

#### Seizure and Detention

The results in the model for decrease in probability of an inspection with a seizure and detention, shown in Exhibit G-3 indicate:

- given two similar establishments which have previously been inspected, if one establishment is re-inspected before the other, the establishment which is reinspected last will have a 1% increase per month, in probability of having products seized and detained in the reinspection
- establishments with previous action written warning will have a decrease in probability of a seizure and detention in their next inspection of 4% more than the decrease of establishments without previous action written warning (everything else being equal).

## EXHIBIT G-2

## MODEL FOR INCREASE IN PROBABILITY OF AN INSPECTION WITH ALL LOTS ACCEPTABLE: QUANTITY

Type of Variable	Variable	Coefficient	t-Value	Significance	Interpretation
Program Intervention	Previous Action Trader Correction	.30	3.15	.002	Increase in probability of 30% when action in the previous inspection involved trader correction
	Previous Action Seizure and Detention	.22	1.88	.063	Increase in probability of 22% when action in the previous inspection involved seizure and detention
Control	Retail	29	3.25	.002	Average decrease of 29% for retail establishments
	Percentage of Inspections with all lots Acceptable in the last 5 years	0046	3.08	.003	For each 1% increase in percentage of past inspections with all lots acceptable, decreased probability by .46%
	Reason for Previous Inspection is Other Reasons	1.21	2.98	.003	Average increase of 121% when reason for the previous inspection is other reasons
	Constant	.10			$C_{n} = 3$
					$R^2 = 0.296$
					N = 124

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## MODEL FOR DECREASE IN PROBABILITY OF AN INSPECTION WITH A SEIZURE AND DETENTION: QUANTITY

ZXHIBIT G-3

Type of Variable	Variable	Coefficient	t-Value	Significance	Interpretation
Program Intervention	Time between inspections	01	1.54	.125	For each extra month between inspection, probability increased 1%
	Previous Action Written Warning	.04	0.65	.514	Decrease in probability of 4% when action in the previous inspection involved a written warning
Cont rol	Percentage of Inspection with Seizures and Detentions in the last 5 years	.0044	2.01	.047	For each 1% increase in percentage of past inspections with a seizure and detention, probability decreased .44%
	Retail	07	1.37	.173	average increase of 7% for retail establishments
	Constant	.16			$C_{p} = 4$ $R^{2} = 0.072$ N = 154

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#### Written Warning

The summary of the model for decrease in probability of an inspection with a written warning is shown in Exhibit G-4. The results indicate that both the number of inspections in the last five years and previous action information letter are effective in decreasing the probability of a written warning. The coefficient of .05 for the number of inspections variable implies that for each additional time an establishment is inspected, there is a decrease in probability of 5% over the decrease of a similar establishment which has not been inspected as often. For previous action information letter, the coefficient of .75 indicates that an establishment which receives an information letter prior to an inspection will have a 75% decrease in probability of having a written warning in the inspection, compared to another establishment which does not receive an information letter (everything else being equal).

## EXHIBIT G-4

### MODEL FOR DECREASE IN PROBABILITY OF AN INSPECTION WITH A WRITTEN WARNING: QUANTITY

Type of Variable	Variable	Coefficient	t-Value	Significance	Interpretation
Program Intervention	<pre># of Inspections in the last 5 years</pre>	.05	4.46	.000	For each inspection in the past 5 years, probability decreased 5%
•	Previous Action Information Letter	.75	3.81	.000	Decrease in probability of 75% when action in the previous inspection involved an information letter
Control	<pre># of Inspections in last 3 years with Trader Correction</pre>	06	2.81	.006	For each inspection with trader correction in the last 3 years, probability increased 6%
	Constant	.02			$C_{\rm p} = 4$ $R^2 = 0.198$ N = 154

# APPENDIX H

# MEAN COMPLIANCE: PROBABILITY MODELS

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#### APPENDIX H

#### MEAN COMPLIANCE: PROBABILITY MODELS

Contained in this Appendix are the other difference in probability models relating to mean compliance.

#### All Lots Acceptable

In the model for increases in probability of an inspection with all lots acceptable, shown in Exhibit H-l, the results indicate that:

- when a trader corrects any non-compliance in the previous inspection, the probability that his next inspection will have all lots acceptable increases by 49% over the increases of a similar trader
- traders who commit to future compliance will have an increase in probability of an acceptable inspection by 30% more than traders who make no commitment (everything else being equal)
- given two similar traders, one which receives some education and the other which does not receive some education, the former will have an increase of 26% in probability of an acceptable inspection
- traders who voluntarily dispose or return to the supplier the violative product have higher increases in probability that the next inspection will have all lots acceptable. They have an increase of 16% over the increase in probability of traders who take no such action (everything else being equal).

#### Seizure and Detention

Exhibit H-2 describes the model for the decrease in probability of an inspection with a seizure and detention. The results indicate that both an oral warning and a written warning are effective in decreasing the probability of a seizure and detention. The difference in the decreases in probability of a seizure and detention for those traders which received an oral warning compared to those traders which did not receive such a warning was 25% (everything else being equal). Traders which received a written warning prior to being inspected, had a decrease in probability of a seizure of 8% more than a similar establishment which received no written warning prior to being inspected.

### MODEL FOR INCREASE IN PROBABILITY OF AN INSPECTION WITH ALL LOTS ACCEPTABLE: MEAN COMPLIANCE

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Type of Variable	Variable	Coefficient	t-Value	Significance	Interpretation
Program Intervention	Previous Action Trader Correction	.49	6.92	.000	Increase in probability of 49% when action in the pre- vious inspection involved trader correction
	Previous Action Trader Commitment	.30	4.38	•000	Increase in probability of 30% when action in the pre- vious inspection involved trader commitment
	Previous Action Trader Education	•26	3.46	.001	Increase in probability of 26% when action in the pre- vious inspection involved trader education
	Previous Action Voluntary Disposal/ Return to Supplier	.16	1.73	.084	Increase in probability of 16% when action in the pre- vious inspection involved voluntary disposal/returning goods to supplier
Control	Food	26	4.71	•000	Average decrease of 26% for food establishments
	Large	17	2.95	.003	Average decrease of 17% for large establishments
	Previous Percentage Mean Compliance	0016	2.01	.045	Each 1% of mean compliance in the previous inspection, decreased probability by .16%
	Small	12	1.92	.055	Average decrease of 12% for small establishments

## EXHIBIT H-1 (Cont'd)

### MODEL FOR INCREASE IN PROBABILITY OF AN INSPECTION WITH ALL LOTS ACCEPTABLE: MEAN COMPLIANCE

ignificance Interpretation	lue S	t-V	Coefficient	Variable	f Variable	Type of
.059 For each 1% increase in percentage of past inspections with trader correction, probability decreased by .21%	9	1.	0021	Percentage of Inspections with Trader Correction in the last 5 years	l (Cont'd)	Control (Cont'd)
.060 For each 1% increase in percentage of past inspections with all lots acceptable probability decreased by .20%	9	1.	0020	Percentage of Inspections with all lots Acceptable in the last 5 years		
.043 Average decrease of 11% when reason for current inspection is complaint or referral	3	2.	11	Reason for Current Inspection is Complaint/Referral		
.080 For each inspection in the last 3 years which involved trader education, probability decreased 5%	5	1.	~.05	# of Inspections with Trader Education in the last 3 years		
$C_{p} = 12$ $R^{2} = 0.314$			.29	Constant		
N = 440						
N = 440						

MODEL FOR DECREASE IN PROBABILITY OF AN INSPECTION WITH A SEIZURE AND DETENTION: MEAN COMPLIANCE

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Type of Variable	Variable	Coefficient	t-Value	Significance	Interpretation
Program Intervention	Previous Action Oral Warning	.25	3.91	•000	Decrease in probability of 25% when action in the previous inspection involved an oral warning
	Previous Action Written Warning	.08	2.57	.010	Decrease in probability of 8% when action in the previous inspection involved a written warning.
Control	<pre># of Inspections with Seizures and Detentions in the last 3 years</pre>	.14	4.45	•000	For each inspection with a seizure and detention in the last 3 years, probability decreased by 14%
	Percentage of Inspections with Written Warnings in the last 5 years	.0089	3.95	.000	For each 1% increase in percentage of past inspections with a written warning, probability decreased .89%
	<pre># of Inspections with Oral Warnings in the last 3 years</pre>	<b>~.</b> 06 ·	2.91	.004	For each inspection with an oral warning in the last 3 years, increased probability by 6%
	# of Inspections with Written Warn- ings in the last 5 years	10	2.64	.009	For each inspection with written warning, in the last 5 years, there was a decrease in probability of 10%
	# of Inspections with Trader Education in the last 5 years	.01	1.83	•068	For each inspection with trader education in the last 5 years there was a decrease in proabability of 1%

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## EXHIBIT H-2 (Cont'd)

### MODEL FOR DECREASE IN PROBABILITY OF AN INSPECTION WITH A SEIZURE AND DETENTION: MEAN COMPLIANCE

Type of Variable	Variable	Coefficient	t-Value	Significance	Interpretation
Control (Cont'd)	Percentage of Inspections with Seizures and Detentions in the last 5 years	.0008	0.69	.491	For each 1% increase in percentage of inspections with a seizure and detention, probability decreased .08%
	Constant	.00			$C_p = 8$ $R^2 = 0.243$ N = 475
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#### Written Warning

The final decrease in probability of an inspection with a written warning model is shown in Exhibit H-3. In this model, we find that the program intervention variables which have an incremental effect are previous action information letter, seizure and detention, trader commitment, and trader education. Establishments which had these actions had greater decreases in probability of a written warning than establishments which did not have these actions (everything else being equal). The decrease in probability was greater by 18% for an information letter, 6% for a seizure and detention, 8% for trader commitment and 4% for trader education.

## EXHIBIT H-3

### MODEL FOR DECREASE IN PROBABILITY OF AN INSPECTION WITH A WRITTEN WARNING: MEAN COMPLIANCE

Type of Variable	Variable	Coefficient	t-Value	Significance	Interpretation
Program Intervention	Previous Action Information Letter	.14	2.36	.019	Decrease in probability of 14% when action in the previous inspection involved an information letter
	Previous Action Seizure and Detention	.14	2.42	.016	Decrease in probability of 14% when action in the previous inspection involved a seizure and detention
	Previous Action Trader Commitment	.07	1.78	.076	Decrease in probability of 7% when action in the previous inspection involved trader commitment
	Previous Action Trader Education	•05	1.06	.290	Decrease in probability of 5% when action in the previous inspection involved trader education
Control	Food	.24	6.38	.000	Average decrease of 24% for food establishments
	<pre># of Inspections with Information Letters in the last 3 years</pre>	. 29	3.76	.000	For each inspection with an information letter in the last 3 years there was a decrease in probability of 29%
	<pre># of Inspections with Seizures and Detentions in the last 5 years</pre>	•06	3.77	.000	Average increase of 6% for retail establishments
	Retail	12	2.64	.009	Average increase of 12% for retail establishments

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MODEL FOR DECREASE IN PROBABILITY OF AN INSPECTION WITH A WRITTEN WARNING: MEAN COMPLIANCE

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Type of Variable	Variable	Coefficient	t-Value	Significance	Interpretation
Control (Cont'd)	Percentage of Inspections with Written Warnings in last 5 Years	.0043	2.42	.016	For each 1% increase in percentage of past inspections with written warnings, probability decrease .43%
	<pre># of Inspections with all lots Acceptable in last 3 years</pre>	.03	2.39	.017	For each inspection with all lots acceptable in the last 3 years, probability decresed by 3%
	Manufacture	07	2.16	.032	Average increase of 7% for manufacture establishments
	<pre># of Inspectors with Trader Education in the last 3 years</pre>	03	1.98	.049	For each inspection with trader education in the last 3 years tere was an increase in probability of 3%
	Constant	.01			$C_p = 16$
					$R^2 = 0.355$ N = 475

Appendix I

# Comments received on the draft final report



255 Albert Street, Suite 500 Ottawa, Ontario K1P 6A9 (613) 238-8200 Telex: 053-3620

November 13, 1985

Mr. Kenneth Tiedemann Senior Program Evaluation Manager Program Evaluation Audit, Evaluation and Control Consumer and Corporate Affairs Canada Place du Portage, Phase I 17th Floor, Zone 2 50 Victoria Street Hull, Quebec KIA 0C9

Dear Mr. Tiedemann:

We are pleased to submit our comments on the draft report of a Feasibility Study on the Effectiveness of Compliance Activities prepared by Peat, Marwick and Partners.

Overall, we found it to be an interesting approach to the measurement of effectiveness of a complex set of program activities. Further clarification in the report is, however, needed on the following points:

1. The relevant sample sizes for analyses of quality, quantity and labelling violations are not stated. While the overall sample size of 3,098 inspections is large, the report states that only post MIS inspections were used, which reduces the sample size to 1,286 inspections. It would also be helpful to the reader to state number of points where missing data on predictors were estimated, and the



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number of instances of certain predictor variables.

This information would assist in the interpretation of the models, which frequently contain as predictors inspection actions which occur fairly infrequently. For example, previous action of written warning is identified in Exhibit II-2 as a program intervention related to increased labelling compliance. Written warnings are given in only 1.6% inspections (Table C-8). Thus, of the 1,286 post MIS inspections (Exhibit C-7) which might be used in the analysis, only about 21 would involve the issuance of a written warning. This is a relatively small number on which to judge effectiveness.

- 2. In order to judge the ability of the models presented to explain changes in compliance, information concerning the strength of association between the factors identified in the model and compliance changes is needed. This might take any or all of the forms described below:
  - examination of the proportion of variation in compliance change scores accounted for by the model (i.e.  $R^2$ );
  - predictive ability of a model developed on a split half of the data and then tested on the remaining half of the data;
  - ability of the model to correctly classify establishments into the compliance change groups indicated in tables II-3, III-3, IV-3, and V-3;
  - ability of the model based to correctly classify establishments using a jack-knifed classification technique (Tabachnick and Fidell, 1983).
- 3. We agree that a quasi-experimental design is the only appropriate approach. However, a description of the limitations of this design and of the available data is in order, along with a discussion of the types of causal inferences which can be drawn.

Without such a discussion, there is a tendency to conclude that compliance could be improved by more frequently using those actions identified as effective in the models. This is not necessarily the case. An action such as trader commitment may currently be used when the inspector believes the manager of the establishment to be sincerely cooperative. More widespread use of the action with less cooperative individuals will not necessarily result in improved compliance rates.



4. The criteria used to select variables for the models require further clarification.

Recognizing that this was a feasibility study, we suggest that the following points be considered in designing any future full scale study:

- 1. Some experimental manipulation of actions might be incorporated in a future study to examine more fully the effectiveness of specific actions and ensure sufficient occurances of actions for examination.
- 2. The history of inspection actions and trends in compliance should be considered in a full scale study, instead of relating changes in compliance rates between individual inspections to individual previous actions. For example, fluctuating compliance levels due to seasonal factors may make some actions appear effective. Certain other actions may only be effective when preceded by other actions.
- 3. Careful attention should be given to the selection of a representative sample of establishments and to identifying the level of trade of establishments. Actions which are most effective in dealing with manufacturing establishments may be ineffective when applied to retail establishments.

In conclusion, thank you for the opportunity to comment on this ground breaking study. Please do not hesitate to contact me or Nancy Staisey if you have any questions.

Yours very truly, PRICE WATERHOUSE

T

Oliver Kent Partner

## Thorne Stevenson & Kellogg

Management Consultants

2300 Yonge Street Toronto, Ontario, Canada M4P 1G2 (416) 483-4313 Cable Stevkell Telex 065-24347

November 4, 1985

Mr. K. Tiedemann Program Evaluation Division Consumer & Corporate Affairs Canada Place du Portage Tower I 50 Victoria Street Hull, Quebec K1A 0C9

Dear Ken:

I have reviewed the draft report, "Feasibility Study on the Effectiveness of Compliance Activities" that you sent me October 24.

Overall, it appears to be a thorough piece of work with sound methodology. First, I will list a few detail comments and then make some general observations.

### **Detail Comments**

- Exhibit I-1 Instead of "number sample," it should say "number sampled."
- P. I.9 4th line from bottom: typo
- P. I.11 I don't understand this entry in the table toward the bottom of the page:

Current	Previous				
<b>Inspection</b>	Inspection				
	- /				

Pre/post MIS Pre/post MIS

- P. I.13 "had a higher upon increase." ??
- P. I.14 I don't understand: "When food is controlled for, the import effect disappears, i.e. importers tend to deal in products other than food."

First of all, I think that instead of saying, "When food is controlled for .." it would be clearer to say when "food is introduced as a control variable." But it seems to me that if both food and import have a negative impact <u>and</u> stepwise regression retains food as a significant independent variable, it is an indication of a high degree of positive correlation between food and import and therefore import and food would tend to occur simultaneously. Obviously, if I am missing something, perhaps more explanation is required for the average reader. Mr. K. Tiedemann November 4, 1985 Page 2.

- P. I.14 "Cp statistical" should probably read "Cp statistic." Even so, what is Cp -- a measure of residual variance?
- P. II.2 It would be interesting to know the details of the subsample for which "labelling was an area in which compliance was measured" e.g. how many pairs of consecutive inspections were there in each segment for which labelling was examined at each inspection. The same applies to other elements of compliance.
- Exhibit II-7 Instead of showing just pluses and minuses, would it be worthwhile to show magnitude of effect also?

\* \* \*

I have no other detail comments until Appendix C. In this Appendix, I think it would be worthwhile to relate the sample to the universe on the data base and also indicate how the data base relates to the estimated universe of establishments.

In Exhibit C-8, what are columns 1, 2, and 3?

Lastly, perhaps some reference should be made to the fact that when stepwise regression is used -- even on a randomly selected sample -- some purists might ask for a verification using a second randomly drawn sample; the argument being that the trial and error nature of stepwise regression, if carried on repeatedly, could result in the detection of significant relationships that are the properties of the sample and not of the universe. On the other hand, I have always found that conducting such verification merely confirms the results of the stepwise regression when the model is reasonable.

#### General Comments

- 1. One conclusion drawn from the analysis is that inspections and inspector actions increase compliance. Questions that I had in mind throughout the report were:
  - Are traders correcting the specific problems identified for the products/brand/packages that were examined during the inspection; or
  - Are traders taking action on other products/brands/packages that were not examined in the first inspection as a result of increased awareness of regulations generated by the first inspection (i.e. deterrence effect within traders)?

I believe that the data could yield answers to these questions.

Mr. K. Tiedemann November 4, 1985 Page 3.

2. Under Study Purpose, the ultimate objective of the study is described as "determining the effectiveness of different compliance activities." Yet, it is evident that the question that the models are designed to answer is:

and a second second second

If a particular compliance activity takes place in a particular establishment with respect to a particular product class, how likely is it to upgrade compliance at the next inspection of this establishment?

But that is not the only objective of compliance activities. Compliance activities are aimed at:

- Detecting non-compliance, and
- Deterring non-compliance.

One should therefore ask two additional questions:

- a) How effective is the program in uncovering infractions across the full spectrum of establishments and products?
- b) How effective is the program in deterring non-compliance?

I am not sure that one could use actual past inspection histories to yield an answer to these questions. To answer question a) one would have to conduct shadow inspections to determine what has been missed in inspected establishments. Also, one should inspect establishments outside the regular schedule of inspections to determine the proportion of non-compliance that is missed by the present system.

To answer question b) one would have to conduct an awareness and behaviour survey of traders to determine:

- Their knowledge of the program.
- Actions taken toward compliance without the impetus of an inspection or knowledge of an impending inspection.

I trust these comments are useful.

Yours very truly,

### THORNE STEVENSON & KELLOGG

Encler

Leon Rucker Principal
Government Gouvernement of Canada du Canada

SUBJECT

OBJET

MEMORANDUM

NOTE DE SERVICE

	C. Car	mpbell/SPRB/7-4242/1p
	K.H. Tiedemann Senior Program Evaluation Manager	SECURITY - CLASSIFICATION - DE SECURITE
u <b>y</b> L_	Audit, Evaluation & Control Branch	OUR FILE/NOTRE REFERENCE
FROM	Craig Campbell Senior Policy Analyst	YOUR FILE/VOTRE RÉFERENCE
L	Strategic Policy Research Branch	November 15, 1985

Feasibility Study on the Effectiveness of Compliance Activities by Peat Marwick

I am very impressed by this report. It represents the results of a thoughtful application of rigorous analytical techniques to the measurement of effects which are difficult to ascertain. Under the circumstances, it would seem important to ensure that a suitable data base is maintained in order that an analysis of this type can be repeated periodically.

As is generally the case, one must be concerned that the selection among alternative model specifications can in itself be an important determinant of the results. The statistical techniques used by Peat Marwick imposes a certain amount of discipline in this respect. In addition, one might assess whether the various aspects of the results are plausible in qualitative terms. Obviously, the Consumer Products Branch is in the best position to make such a determination.

One aspect of the model, which I would suggest would benefit from further refinement, is the relationship between the various compliance/enforcement actions (i.e. the program intervention variables). The assumption embodied in the model is that these are alternative actions. This assumption does not reflect the strategy employed in the period for which the data has been collected. It is my understanding that the tougher enforcement actions would generally not take place unless other enforcement actions had failed to produce compliance. In this situation, the resulting estimates of the effects of the tougher actions should be interpreted as an increment to the effects of preceding actions - not as an alternative. It may also be

.../2

that certain enforcement actions tend to be performed together (i.e. occur in combination) in which cases it is not possible to distinguish the separate effects that the model attempts to isolate. These considerations would seem important in terms of the selection of the final model and the subsequent interpretation of the results.

and

Craig Campbell

c.c. B. Laurin C. LaBelle

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## CONSUMER AND CORPORATE AFFAIRS CANADA

EVALUATION OF THE EFFECTIVENESS OF CONSUMER PRODUCTS COMPLIANCE ACTIVITIES ON FOOD ESTABLISHMENTS

AN ANALYSIS BASED ON TORONTO DISTRICT OFFICE FILES



Peat, Marwick and Partners Management Consultants 21st Floot, Tower B Place de Ville 112 Kent Street Ottawa, Ontario K1P 5P2 (613) 237-6402

March 20, 1986

Mr. K. Tiedemann Audit Evaluation and Control Bureau of Policy Coordination Consumer and Corporate Affairs Canada 17th Floor, Place du Portage, Phase I 50 Victoria Street HULL, Quebec K1A 0C9

Dear Mr. Tiedemann:

We are pleased to submit our final report for the Evaluation of the Effectiveness of Consumer Products Compliance Activities on Food Establishments - An Analysis Based on Toronto District Office Files.

We have enjoyed working on this project, and appreciate the help of yourself and the officers of the Consumer Products Branch.

Yours very truly,

PEAT, MARWICK and PARTNERS

Peat, Manuch and Partney



## EVALUATION OF THE EFFECTIVENESS OF CONSUMER PRODUCTS COMPLIANCE ACTIVITIES ON FOOD ESTABLISHMENTS AN ANALYSIS BASED ON TORONTO DISTRICT OFFICE FILES

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#### EXECUTIVE SUMMARY

### STUDY OBJECTIVE

This study had two objectives. The first objective was to determine the relative effectiveness of the compliance activities undertaken by the Consumer Products Sub-activity on food establishment. The second objective was to compare the effectiveness results of food establishments with those of all types of establishments. The latter results were derived from an earlier evaluation conducted by Peat, Marwick and Partners.

The reason for looking at food establishments, in particular, is that they do not comply with the regulations to the same extent as establishments of other product classes. Descriptive statistics show that food establishments have an overall lower mean compliance\* than establishments of other products classes (i.e., average mean compliance of 56.9% for food compared to 82.8% for textile, 85.6% for precious metals and 79.4% for non-food product classes). Food establishments also have a lower percentage compliance in all regulatory areas, but the largest difference is found in the labelling area.

### METHODOLOGY

The database and the analytical methodology used in the earlier evaluation were also used in this study. The database consists of compliance activity information on 898 establishments. The establishments were selected at random from the Toronto District Office files. Of these 898 establishments, 237 deal in food products and were the focus of our analyses. In our analyses we developed statistical models\*\* which looked at the change or increase in percentage compliance in all regulatory areas and for mean compliance. These models related the increase in compliance to a number explanatory factors.

<sup>\*</sup> The mean compliance was derived by calculating the mean of any or all percentage compliance in the labelling, quality and/or quantity regulatory areas. The mean compliance is, therefore, a summary of an establishment's overall performance.

<sup>\*\*</sup> All models used in the analysis were ultimately put in linear regression format. The final models were created using a long series of exploratory analyses, using, as principal tools, stepwise regression (forward selection), all possible subsets regression, basic residual analysis and general logical reasoning. Final model specification, after data reduction, rested primarily on the best of all possible subset routine, which looks at all combinations of variables, and chooses as best, the one with the lowest C<sub>D</sub> statistic.

### FINDINGS

With respect to the first objective of the study, the major findings which related to program effectiveness are shown in the table below.

2.

	INCREMENTAL EFFECTS						
PROGRAM INTERVENTION VARIABLES	LABELLING	QUALITY	QUANTITY	MEAN			
Time Between Inspections	-	-	-1%	-			
Previous Action:							
- Trader Education	+16%	-	-	+12%			
- Written Warning	+12%	-	-	-			
- Trader Commitment	+11%	+43	-	+51%			

The table shows that what happens in an inspection, rather than the occurrence of an inspection, is the most important factor in determining increases in compliance. Trader commitment is effective in increasing compliance in the regulatory areas of labelling and quality, as well as in the mean. Trader education appears as an important factor in determining increases in compliance in the regulatory area of labelling and in the mean of all regulatory areas. The time between inspections is the most important factor influencing quantity compliance.

In comparing the major program effectiveness findings of this study and of earlier study, we found that there was no difference in terms of which inspection/enforcement actions are effective, but that there was a difference in the magnitude of effectiveness. The difference in the magnitude of the increase was found in the effectiveness of trader commitment on both quality and mean compliance. Trader commitment is more effective in increasing quality and mean compliance in food establishments than it is in establishments of all product classes. The models showed quality compliance increases of 43% in food establishments compared to 24% in establishments of all product classes. With respect to mean compliance, the models showed compliance increases of 51% in food establishments, while increases of 19% were found in establishments of all product classes. Since mean compliance is derived by calculating the average for all regulatory areas, the effect of trader commitment on mean compliance is mainly a result of its influence on quality compliance.

We also found that complaints and referrals have almost the same effect on food establishments as they did on establishments of all product classes. That is, when an inspection is the result of a complaint or referral, there is an increased tendency for non-compliance to be detected. When a subsequent inspection is carried out, compliance levels tend to improve. In the former case, the effect on food establishments is slightly greater than it is on establishments of all types.

The results of this study are very similar to those found in our earlier study. The implications of the foregoing results, therefore, reflect much of what was discussed in our earlier study.\* Most important, we feel is the fact that less stringent or negotiating activities, again, have been found to be effective in improving compliance levels. What this means is that some shift from the more stringent activities (such as a seizure and detention) to the use of less stringent measures could be made without a great risk to compliance levels. Moreover, should these less stringent measures also prove to be less costly, the cost-effectiveness of carrying out these measures would be greatly increased.

Finally, the use of complaints and referrals as one tool for prioritizing inspections appears to be as important in food establishments as it does in establishments of all product classes. The selection of complaints and referrals to be acted upon would, of course, require some assessment of the factors which would truly warrant the expenditure of resources on an inspection.

\* It should be noted that the results of both studies are based on a sample of establishments from the Toronto District Office. Any extrapolation of the findings to the rest of Canada would have to be made on the basis of a country-wide sample.

### I - INTRODUCTION

### STUDY OBJECTIVES

The main objective of this study was to determine the relative effectiveness of the compliance activities undertaken by the Consumer Products Sub-activity on food establishments. This study was an expansion of an earlier evaluation study which was undertaken by Peat, Marwick and Partners\*. The latter study was broader in scope and was concerned with measuring the effectiveness of compliance activities in establishments of all product classes (i.e., food, textiles, precious metals and non-food).

Another objective of this study was to compare the effectiveness results of food establishments with those of all types of establishments.

### BACKGROUND

The reason for looking at food establishments, in particular, is that they do not comply with the regulations to the same extent as establishments of other product classes (i.e., textile, precious metals and non-food). The descriptive statistics shown in Exhibit I-1 provide a clear indication of how food establishments do vis-à-vis other types of establishments.

The Exhibit demonstrates the average percentage compliance in each regulatory area by product class for the most recent inspection of an establishment in our sample. Food establishments fare worse in their percentage compliance in the labelling, quality, and quantity regulatory areas compared to establishments in other product classes. Food establishments had an average labelling compliance of 49.1%, while establishments of other classes had averages of over 80%. In the regulatory areas of quality and quantity, food establishments also did not comply as well as other establishments, but the differences are not quite as great. The average quality compliance in food establishments was 54.7%, while textile and non-food establishments had an average quality compliance of 59.9% and 58.5%, respectively. Establishments which deal in precious metals products had an average quality compliance of 100.0%, but there were only 11 such establishments in our sample. In terms of quantity compliance, we find that food establishments had an average of 89.5%, compared to 93.2% for non-food establishments.

<sup>\*</sup> This report was entitled "Evaluation of the Effectiveness of Consumer Products Compliance Activities - An Analysis Based on Toronto District Office Files", December 1985. It provides a full description of the various compliance activities undertaken by the Consumer Products Sub-activity.

## EXHIBIT I-1

- . **-** .

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## AVERAGE PERCENTAGE COMPLIANCE IN EACH REGULATORY AREA BY PRODUCT CLASS FOR THE MOST RECENT INSPECTION OF AN ESTABLISHMENT

	Lab	elling	Qua	lity	Quan	itity	Me	an
Product <u>Class</u>	<pre># of Cases</pre>	Average % Compliance	<pre># of Cases</pre>	Average % Compliance	∦ of <u>Cases</u>	Average % Compliance	# of Cases	Average % Compliance
Food	172	49.1%	136	54.7%	86	89.5%	193	56.9%
Textile	275	84.1	32	59.9	0	N/A	277	82.8
Precious Metals	88	83.8	11	100.0	0	N/A	88	85.6
Non-Food	221	81.7	41	58.5	16	93.2	230	79.4
Total	756	75.4	220	58.4	102	90.1	788*	75.4

\* N.B. This total indicates that of the 891 establishments which had been inspected in the last 5 years, only 788 establishments had the number of products/lots sampled and accepted recorded on the inspection report form. The Exhibit also shows that the overall mean compliance\* of food establishments is lower than other establishments (i.e., average mean compliance of 50.9% for food compared to 82.8% for textile, 85.6% for precious metals and 79.4% for non-food product classes). Food establishments have an overall lower mean compliance mainly because of the substantial difference in their labelling compliance compared to establishments of other product classes.

### METHODOLOGY AND DATA COLLECTION

The data and the analytical methodology used in the earlier evaluation were also used in this study focusing on the food sector. Brief summaries of the data collection approach and analytical methodology are provided below; however, for more detail, one should refer to the earlier report.

Our original study was based on data from the files of the Toronto District Office. We used a listing of establishments from which to select a random sample of 898 establishments. Of the 898 establishments, 237 dealt with food products. We focused on these 237 establishments in this study.

In the earlier study, we developed a database detailing the history of compliance about establishments in the Toronto district. Data on inspections, enforcement actions and complaints which occurred since January, 1980 were collected from establishment files. The data extracted from the establishment files were recorded as data items for inclusion in a database and the analyses in the current study were based on these items. A list of these data items are shown in Exhibit I-2.

The analytic design used was a historical design with differing levels/types of treatments. Since compliance activities are performed on establishments at different points in time and encompass different actions, the use of such a design coupled with a statistical modelling approach allowed us to determine the effects of these varying treatments (actions) on compliance. All models used in our analyses were ultimately put in linear regression format. The final models created were the result of a long series of exploratory analyses, using, as principal tools, stepwise regression (forward selection), all possible subsets regression, basic residual analysis and general logical reasoning. Final model specification, after data reduction, rested primarily on the best of all subsets routine, which looks at all combinations of variables, and chooses as best, the one with the lowest  $C_p$  statistic. The models were constructed as a series of iterations based on logical thinking and various kinds of exploratory analytical techniques.

<sup>\*</sup> This is the mean of any or all percentage compliance values for labelling, quantity and quality regulatory areas.

## EXHIBIT 1-2

化防装置机器 机装置机 网络人名阿费希尔姓氏

### DATA ITEMS

### 1. Establishment Identification

- identification number
- establishment type
- establishment size
- establishment zone.

### 2. Inspections Since January, 1980

- pre vs. post MIS inspection
- date of inspection
- inspection rating
- reason for the inspection

quantity - number sampled
 number acceptable
 number marginal

- quality number sampled
   number acceptable
- labelling- number sampled
   number acceptable
- action codes
- date of the next scheduled inspection.

### 3. Enforcement Actions Since January 1, 1980

Dates and regulatory area (quality/quantity/labelling) for each action below:

- information letter
- warning letter
- sample
- referrals
- complaints
- seizure/detention
- prosecution.

The basic model looked at the increase in percentage compliance between consecutive inspections of food establishments inspected for labelling, quantity and quality regulatory areas. As well, we developed a basic model for mean compliance.

It should be noted that, in the regulatory areas of quality and quantity, food establishments were examined more often for compliance than establishments of other product classes. Since the basic model for this and the earlier study centered on differences in compliance for consecutive inspections, it is not surprising, therefore, that the majority of consecutive inspections examined for quality and quantity were food establishments. Exhibit I-3 shows that close to 90% of all consecutive inspections for quantity and quality compliance were food establishments.

The basic model related the increase in percentage compliance to a number of explanatory variables. These variables were created from the data items shown in Exhibit I-2. Two types of variables were created — program intervention and control variables. Program intervention variables were related to program effectiveness; control variables, on the other hand, were not measures of effectiveness, but were included in the model to allow for better estimation of the incremental factors of the program. Thus, variables which indicated what occurred in the previous inspection or between inspections were program intervention variables, and variables which described an establishment's history of compliance or its characteristics were control variables.

In addition to the basic model, other difference models were developed for each regulatory area and for mean compliance. These other difference models looked at the changes in probability of the occurrence or non-occurrence of an inspection with one of three actions -- all lots acceptable, a seizure and detention and a written warning.

It should be noted that only consecutive inspections which were conducted since the initiation of the MIS reporting format were included in the models and descriptive statistics in this report.

### Significance Levels

All significance levels in this report are based on regression models. In modelling, the significance level is an indication of how strong a relationship exists between two variables when other conditions are controlled. Thus, if the apparent effect of a variable can be explained by these other conditions, it would not be reported as significant. To illustrate this, consider the example discussed below, which involves the increase in compliance between consecutive inspections.

# EXHIBIT 1-3

- -

## NUMBER OF CONSECUTIVE INSPECTIONS IN EACH REGULATORY AREA BY PRODUCT CLASS

	Labe	lling	Qua	lity	Quan	tity	Me	an
Product Class	# of Cases	% of <u>Ca</u> ses	# of Cases	% of Cases	# of Cases	% of Cases	# of Cases	% of Cases
Food	132	37.0%	92	86.0%	77	87.5%	164	40.7%
Textile	106	29.7%	7	6.5%	0	0.0%	113	28.0%
Precious Metals	28	7.8%	0	0.0%	0	0.0%	28	7.0%
Non-Food	91	25.5%	8	7 • 5%	11	12.5%	98	24.3%
Total	357	100.0%	107	100.0%	88	100.0%	403	100.0%

Initially, in analyzing descriptive statistics of the mean increase in compliance, we find that:

- Traders which previously committed to eventual correction of the violative product(s) had a higher mean increase in compliance than traders which made no such previous commitment.
- Large-size establishments had a lower mean increase in compliance than medium- and small-size establishments. However, there was no significant difference in the increases of medium and small size establishments.
- Establishments which were given an oral warning in their previous inspection had a higher mean increase in compliance than establishments which had no such warning.
- Importers had a higher mean increase in compliance than retailers and manufacturers. However, there was no significant difference in the increases of retailers and manufacturers.
- Establishments with previous action voluntary disposal or return had a lower mean increase in compliance than establishments without this previous action.

Each of these relationships, on their own, is statistically significant. However in analyzing the interrelationships, we come up with the picture shown in Exhibit I-4. Analyzing this Exhibit, we see the following:

- The incremental effects of previous action oral warning seems mainly due to the effect of previous action trader commitment. Traders which are given oral warnings also tend to commit to correcting the non-compliance.
- When large (size) is introduced as a control variable, the import effect disappears. There is a negative relationship between large traders and import which indicates that importers tend not to be large-size establishments. There is also a negative relationship between large-size and increase in compliance i.e, large-size establishments tend to have a lower mean increase in compliance. These two negative relationships produce a positive effect between import and increase in compliance (i.e., a negative multiplied by a negative produces a positive). Therefore, the model shows that importers tend to have a higher increase in compliance than all other trade levels, primarily because of their negative relationship with large-size traders.

# EXHIBIT I-4

## EXAMPLE



Alah ang balang sa sakita tang sa sa si tata

• The effect of previous action disposal/return seems mainly due to the effect of large-size establishments. When large is taken into account, there is no difference in the increase in compliance.

Thus, in reporting differences in the increases in compliance, only the previous action trader commitment and large-size variables are described as significant.

Significance levels are reported in the p notation. For example, p=.0324 implies a level of significance of .0324, i.e., we are 96.76% confident that the observed differences were not due to chance. Final models were based on the  $C_p$  statistic, so there was no necessary significant cut-off. However, almost all variables were significant at p=.2000. In reporting the regression models, t-values are also shown in order to illustrate the strength of relationships. The absolute value of the t-score, like the significance level, indicates the strength of the relationship. A t-score of 14 indicates a stronger relationship than one of 9, even though both have significance levels of .0000.

### LIMITATIONS

Given the restricted scope of the original evaluation, there are certain limitations of this study which are referred to below:

- First, the original evaluation was a pilot, conducted at the Toronto district office. Thus, the results of this study apply to that district office and to the food establishments in its catchment area only. Extrapolation of the findings to Canada as a whole cannot be made without a broader study involving district offices across Canada. Such a broader study may reveal distinctions among particular districts with respect to the effectiveness of compliance activities.
- Second, although the original evaluation involved an extensive data collection and analytical effort, we were not able to exhaust the type of data which could be collected and the analyses which could be undertaken. We believe that both the original and this study provide an excellent indication of the type of analyses that can be performed, but certainly, further work is possible, using either the existing database only or supplementing it with other data.

I.5

• Third, this evaluation was limited to undertaking an analyses on the data collected on food establishments in the earlier evaluation. However, a more in-depth study (e.g., interviews with traders, inspectors, etc.), which would provide a deeper understanding of the study results, could not be undertaken. We believe this type of work should be conducted as part of the ongoing evaluation of the Sub-activity.

사람 것

These limitations should be kept in mind when reviewing this report. We do not, however, believe any of these limitations compromise the validity or usefulness of the findings.

#### REPORT ORGANIZATION

The next three chapters describe the results of our analyses of food establishments in each category of inspection, namely, labelling, quality and quantity. A subsequent chapter describes our findings in relation to the mean compliance.

All these four chapters are organized in essentially the same manner and include:

- the final increase in percentage compliance models (i.e., the basic models)
- descriptive statistics for some variables.

The final chapter of the report summarizes the overall results of the study.

There are several appendices to the report. The appendices are introduced in the report in relation to the sections to which they pertain. Appendix A contains a summary of the other difference models which were developed for the regulatory area of labelling. Appendices B, C and D are similar to Appendix A, but these three appendices contain the other difference models which apply to the areas of quality, quantity and mean compliance, respectively.

### II - LABELLING

The regulatory area of labelling is the focus of this chapter.\* Thus, our analyses are based on consecutive inspections of food establishments in which products were examined for labelling compliance. The basic model for increase in percentage compliance and related descriptive statistics are presented in this chapter, while the other difference models which have been developed for the regulatory area of labelling are included in Appendix A.

MODEL FOR INCREASE IN PERCENTAGE COMPLIANCE

As was indicated in the preceding chapter, the basic model in this study looked at the change or increase in percentage compliance between consecutive inspections. The change was modelled to determine which program intervention and control variables are effective in bringing about an increase in compliance.

The final model for the increase in percentage labelling compliance is shown in Exhibits II-1 and II-2. In terms of program intervention, we find that three enforcement actions are effective in increasing compliance. These actions are: trader education, a written warning and trader commitment. No control variables are included in this final model.

The coefficient for trader education, .17, indicates that given two establishments similar in every respect except that the first one was given some trader education in the previous inspection, the first establishment is expected to have a 17% higher increase in compliance than the other establishment. Similarly, establishments which had a written warning in the previous inspection had an expected increase in compliance of 11% more than other establishments which had no such warning (everything else being equal) and establishments which had trader commitment in the previous inspection had an expected increase of 12% more than other establishments which had no such action (everything else being equal).

Descriptive statistics for the variables included in the final model are shown in Exhibit II-3. We observe that:

> - of the establishments which had previous action trader education, 50.0% had major increases in compliance, while only 6.3% had major decreases in compliance. In

II.I

<sup>\*</sup> Included under the labelling regulatory area are advertising and packaging regulations.

# EXHIBIT II-1

## MODEL FOR INCREASE IN PERCENTAGE COMPLIANCE: LABELLING

TYPE OF VARIABLE	VARIABLE	COEFFICIENT	t-VALUE	SIGNIFICANCE	INTERPRETATION
Program Intervention	Previous Action Trader Education	.17	1.86	•065	Increase in compliance of 17% when action in the previous inspection involved trader education
	Previous Action Written Warning	.11	1.63	•106	Increase in compliance of 11% when action in the previous inspection involved a written warning
	Previous Action Trader Commitment	.12	1.58	.117	Increase in compliance of 12% when action in the previous inspection involved trader commitment
	Constant	03	2		$C_p = 4$ $R^2 = 0.094$ N = 132
	i				

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# EXHIBIT II-2

## LABELLING COMPLIANCE

## PROGRAM INTERVENTION



# EXHIBIT 11-3

# LABELLING: VARIABLES IN THE FINAL MODEL BY CHANGES IN PERCENTAGE COMPLIANCE

Change in Compliance

	Variable	Decrease	Decrease 0-10%	Increase 0-10%	Increase 10%+	Total	Net Change*
% of Establishments	Previous Actions:						
	Trader Education - With	6.3%	37.4%	6.3%	50.0%	100.0%	(21.7%)
	- Without	28.4	26.8	19.8	25.0	100.0	(2.0)
	Written Warning - With	10.8	35.2	16.2	37.8	100.0	(15.6)
	- Without	31.6	25.3	18.9	24.2	100.0	(0.1)
	Trader Commitment - With	9.7	48.4	9.7	32.3	100.0	(18.4)
	- Without	30.7	21.8	20.8	26.7	100.0	(0.1)

\* Mean percentage increase

comparison, about equal percentages of establishments which did not have previous action trader education had major increases and decreases in compliance (25.5% and 28.4%, respectively)

- a lower percentage of establishments with previous action written warning decreased more than 10% in compliance than establishments without this action, i.e., 10.8% of those with a written warning compared to 31.6% of those without such a warning
- the percentage of establishments which decreased more than 10% in compliance was 9.7% for those with previous action trader commitment compared to 30.7% for those without this action.

In terms of net change (here net change refers to the overall mean percentage increase in compliance), the Exhibit shows that:

- establishments which had previous action trader education had a mean increase of 21.7%, while establishments which did not have previous action trader education had a mean increase of only 2.0%
- the mean increases for establishments with and without previous action written warning were 15.6% and 0.1%, respectively
- establishments with previous action trader commitment had a mean increase of 18.4%, whereas establishments without this action had a mean increase of only 0.1%.

These descriptive statistics clearly support the results of the model. That is, trader education, a written warning and trader commitment are effective in bringing about higher increases in percentage compliance than other enforcement actions.

### EFFECTS OF OTHER VARIABLES

In this section we look at the influence of other variables which are not in the final model. Exhibits II-4 and II-5 present the overall mean increase in compliance for all program intervention variables. Also included in the latter Exhibit is the mean increase by trade level and establishment size.

# EXHIBIT II-4

## LABELLING: NET CHANGE IN PERCENTAGE COMPLIANCE BY ACTIONS IN THE PREVIOUS INSPECTION

Actions in the	% of Cases	<u>Net</u> C	hange**
Previous Inspection	With Action	With Action	Without Action
*Trader Education	12.1%	21.7%	2.0%
Information Letter	11.4	13.7	3.2
Trader Correction	68.2	1.9	9.8
Oral Warning	6.8	12.8	3.8
*Written Warning	28.0	15.6	0.1
Seizure and Detention	14.4	7.2	3.9
Voluntary Disposal/Return	20.5	-2.1	6.1
*Trader Commitment	23.5	18.4	0.1

N = 132

\* Variables in the final model\*\* Mean percentage increase

## EXHIBIT II-5

LABELLING: NET CHANGE IN PERCENTAGE COMPLIANCE BY TRADE LEVEL, ESTABLISHMENT SIZE, NUMBER OF PAST INSPECTIONS AND TIME BETWEEN INSPECTIONS

	% of Cases	Net Change*
Trade Level		
Manufacture	11.4%	15.0%
Retail	75.8	1.7
Wholesale/Import	12.8	10.9
Establishment Size		
Small	17.4%	8.2%
Medium	25.0	7.5
Large	57.6	2.0
Number of Inspections		
in the Last 3 Years		
1	20.5%	-7.5%
2 to 3	30.3	16.3
4 to 5	31.8	0.6
more than 5	17.4	4.8
Number of Inspections		
in the Last 5 Years		
1 to 3	27.3%	2.4%
4 to 5	18.9	5.9
6 to 7	16.7	5.3
8 to 9	22.0	1.1
more than 9	15.1	10.2
Time Between Inspections		
1 to 3 months	22.7%	8.8%
3 to 6 months	28.0	6.1
6 to 9 months	28.8	0.0
9 to 12 months	7.6	0.8
more than 12 months	12.9	4.9

N = 132

\* Mean percentage increase

Exhibit II-4 shows that there are some enforcement actions, on their own, which have a statistically significant relationship to the increase in percentage compliance. For variables not in the model, we see that:

- establishments which received an information letter prior to being inspected had a mean increase of 21.7%, while establishments which did not receive such a letter had a mean increase of only 3.2%
- previous action trader correction appears to have a negative effect on increase in percentage compliance, i.e., those establishments which had this action had a lower mean increase (1.9%) than those which did not have this action (9.8%)
- establishments with and without previous action oral warning had mean increases of 12.8% and 3.8%, respectively
- establishments which had previous action voluntary disposal or return had a mean decrease in compliance, whereas establishments which did not have this action had a mean increase in compliance.

The mean increase in compliance by trade level, establishment size, number of past inspections and time between inspections is described in Exhibit II-5. Here we observe that:

- retail establishments do not increase in compliance as much as manufacturing and import establishments. We see increases of 1.7% for retail establishments, compared to 15.0% and 10.9% for manufacturing and import establishments, respectively
- small- and medium-size establishments have higher increases in compliance than do large-size establishments
- no apparent relationship is found with the number of inspections in either the last 3 or the last 5 years
- there does not appear to be as high an increase in compliance for establishments which were reinspected later than six months compared to those which were reinspected within six months.

In order to understand the exclusion of these variables from the final model, we have examined the interrelationships between variables, as shown in Exhibit II-6. We note that:

- the positive effect of previous action information letter disappears when controlling for both previous action written warning and previous action trader commitment. Establishments which received an information letter also received a written warning and committed to future compliance
- the negative relationship between trader correction and trader commitment, and the positive relationship between trader commitment and increase in compliance, produces a negative effect between trader correction and the increase in compliance. Thus, the negative effect of trader correction on compliance is mainly due to its relationship with trader commitment, i.e., establishments which corrected a violative product tended not to commit to future correction
- the effect of previous action oral warning disappears when controlling for previous action written warning. In other words, establishments which received an oral warning also tended to receive a written warning
- establishments which had previous action voluntary disposal or return were establishments which tended not to have previous action trader education
- retail establishments appeared not to increase in compliance as much as manufacturing and import establishments, since the retail establishments tended to have less trader education, written warning and trader commitment in their previous inspection
- the effect of establishment size on the increase in compliance disappears when controlling for previous action trader commitment. Large-size establishments tended not to commit to future compliance more than small- and medium-size establishments
- establishments which were reinspected sooner tended to have had previous action trader education and previous action trader commitment.

These interrelationships help explain why trader education, a written warning and trader commitment are the only enforcement actions which are incremental in increasing labelling compliance.

## EXHIBIT 11-6

### LABELLING: EFFECTS OF OTHER VARIABLES



III - QUALITY

This chapter deals with the regulatory area of quality compliance.\* All the analyses in this chapter are based on consecutive inspections in which quality compliance was measured. The basic model and its related descriptive statistics are discussed below, while the other difference models are included in Appendix B.

MODEL FOR INCREASE IN PERCENTAGE COMPLIANCE

The model for increase in percentage compliance is the basic model for this study. The program intervention and control variables which affect the change or increase in percentage quality compliance are illustrated in Exhibits III-1 and III-2.

Here, we find that only one program intervention variable, previous action trader commitment, is included in the model. Its coefficient of .43 indicates that an establishment which committed to future compliance in the previous inspection is expected to increase in compliance by 43% more than a similar establishment which made no such commitment. Thus, when trader commitment is an enforcement action taken in an inspection, it is very effective in increasing percentage quality compliance.

The other results shown in the model do not relate to program effectiveness, but are included for matching or control purposes. The interpretation of the control results, however, is interesting in terms of general patterns:

- given two establishments, similar expect one has had more inspections with a written warning in the last 5 years, then the establishment with more inspection is expected to have a 15% greater decrease in compliance than the other establishment for each extra inspection with a written warning
- an establishment which has had more inspections with a seizure and detention in the last 5 years is expected to have 6% decrease in compliance compared to the decrease of another establishment (everything else being equal) for each extra inspection with a seizure and detention

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<sup>\*</sup> This includes compliance with respect to grades (permanent and condition defects), composition/substitution, package misrepresentation and claims/ performance (misrepresentation and care of textiles).

# EXHIBIT III-1

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## MODEL FOR INCREASE IN PERCENTAGE COMPLIANCE: QUALITY

TYPE OF VARIABLE	VARIABLE	COEFFICIENT	t-VALUE	SIGNIFICANCE	INTERPRETATION
Program Intervention	Previous Action Trader Commitment	.43	2.59	.011	Increase in compliance of 43% when action in the previous inspection involved trader commitment
Control	Number of Inspections with a Written Warning in the Last 5 Years	15	2.57	.012	For each inspection with a written warning in the last 5 years, there was a decrease in compliance of 15%
	Number of Inspections with a Seizure and Detention in the Last 5 Years	06	1.65	.103	For each inspection with a seizure and detention in the last 5 years, there was a decrease in compliance of 6%
	Reason for Previous is Complaint/ Referral	15	1.54	.126	Average decrease of 15% when the reason for the previous inspection is complaint/referral
	Percentage of Past Inspections with Trader Commitment	0036	1.50	.138	For each 1% increase in percentage of past inspections with trader commitment, compliance decrease .36%
	Constant	.11			$C_{p} = 2$ $R^{2} = 0.145$
					N = 92

## EXHIBIT H11-2

## QUALITY COMPLIANCE







## EXHIBIT III-3

## QUALITY: VARIABLES IN THE FINAL MODEL BY CHANGES IN PERCENTAGE COMPLIANCE

		Change in Compliance						
	Variable	Decrease 10%+	Decrease 0-10%	Increase 0-10%	Increase 10%+	<u>Total</u>	Net Change**	
% of Establishments	Previous Action Trader							
	Commitment - With	4.0%	72.0%	0.0%	24.0%	100.0%	(14.5%)	
	- Without	29.9	31.3	11.9	26.9	100.0	(1.1)	
	Reason for Previous is:							
	- Complaint/Referral	13.0	82.6	0.0	4.4	100.0	(0.0)	
	- Planned/Sample/Other	26.1	29.0	11.6	33.3	100.0	(6.3)	
Mean %*	Percentage of Past Inspections							
	with Trader Commitment	0.7%	27.4%	0.0%	9.2%	14.1%		
Mean #*	Number of Inspections with: - a Written Warning in the							
	last 5 years	0.67	0.23	0.46	0.18	0.34		
	in the last 5 years	0.43	1.11	0.00	0.26	0.64		

\* These values are the means of the variable for the four groups of establishments (based on change in compliance) and for establishments in the quality subsample

**\*\*** Mean percentage increase

- establishments which were previously inspected for complaint or referral reasons, are expected to decrease 6% more in compliance than than similar establishments which were not previously inspected for complaint or referral reasons
- an establishment which had a higher percentage of past inspections with trader commitment is expected to decrease in compliance by 0.36% more than another establishment (everything else being equal) for every 1% difference in percentage of past inspections.

These program intervention and control results are highlighted further in the descriptive statistics shown in Exhibit III-3. The key finding in terms of program intervention is that a larger percentage of establishments which had previous action trader commitment had a major increase in compliance whereas about equal percentages of major increases and decreases occurred in establishments which did not have previous action trader commitment. In other words, for establishments with this action, 24.0% increased more than 10%, while 4.0% decreased more than 10%. For establishments without this action, 26.9% increased more than 10%, while 29.9% decreased more than 10%. Overall, in terms of net change or mean increase, establishments with previous action trader commitment had a mean increase of 14.5%, while establishments without previous action trader the findings of the model, i.e., when previous action trader commitment is a part of an inspection, there is a greater increase in percentage compliance than in inspections without this action.

### EFFECTS OF OTHER VARIABLES

The net change in compliance for all program intervention and some control variables are included in Exhibits III-4 and III-5. Exhibit III-4 shows some of the variables that have a statistically significant relationship, on their own, with increase in compliance, although they do not appear in the final model. These variables are previous actions of an information letter, trader correction, an oral warning, a written warning, a seizure and detention, and voluntary disposal or return. The first five of these previous actions are negatively related to increases in compliance, while the last previous action is positively related to increases in compliance. By negatively related, we mean that establishments with the action had a lower mean increase than establishments without the action; by positively related, we mean that establishments with the action had a higher mean increase than establishments without the action.

## EXHIBIT III-4

# QUALITY: NET CHANGE IN PERCENTAGE COMPLIANCE BY ACTIONS IN THE PREVIOUS INSPECTION

Actions in the	% of Cases	Net C	hange**
Previous Inspection	With Action	With Action	Without Action
Trader Education	7.6%	6.4%	4.6%
Information Letter	13.0	-3.7	6.0
Trader Correction	68.4	-2.7	20.8
Oral Warning	7.6	-14.0	6.3
Written Warning	30.4	-0.9	7.2
Seizure and Detention	15.2	-1.9	5.9
Voluntary Disposal/Return	26.1	11.6	2.3
Trader Commitment	27.2	14.5	1.1

N = 92

\* Variables in the final model

**\*\*** Mean percentage increase

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# EXHIBIT III-5

QUALITY: NET CHANGE IN PERCENTAGE COMPLIANCE BY TRADE LEVEL, ESTABLISHMENT SIZE, NUMBER OF PAST INSPECTIONS AND TIME BETWEEN INSPECTIONS

	% of Cases	Net Change*
Trade Level		
Manufacture	8.7%	10.6%
Retail	78.3	4.9
Wholesale/Import	13.0	0.0
Establishment Size		
Small	13.0%	8.3%
Medium	19.6	10.3
Large	6.7	2.4
Number of Inspections	,	
in the Last 3 Years		
1	15.2%	12.4%
2 to 3	30.4	7.7
4 to 5	35.9	0.6
more than 5	18.5	1.6
Number of Inspections		
in the Last 5 Years		
1 to 3	19.6%	11.9%
4 to 5	20.7	10.1
6 to 7	18.5	0.1
8 to 9	25.0	6.3
more than 9	16.2	-7.8
Time Between Inspections		
1 to 3 months	18.5%	1.7%
3 to 6 months	30.4	9.3
6 to 9 months	29.3	-4.6
9 to 12 months	8.7	11.9
more than 12 months	13.1	14.7

N = 92

\* Mean percentage increase
Exhibit III-5 shows more of the variables that have a statistically significant relationship, on their own, with increase in compliance, yet do not appear in the final model. These variables are manufacturing establishments, large-size establishments and the number of inspections both in the last 3 and in the last 5 years. Their relationship to increase in compliance are:

- manufacturers had a higher mean increase in compliance than did retailers and importers (10.6% versus 4.9% and 0.0%, respectively)
- small- and medium-size establishments increased more than large-size establishments
- mean percentage increase appears to decrease as the number of inspections in the last 3 years increased (i.e., an increase of 12.4% for 1 inspection and an increase of only 1.6% for more than 5 inspections). A similar relationship is found for the number of inspections in the last 5 years (i.e., as the number of inspections increased, mean percentage increase decreased).

All of these relationships, on their own, are statistically significant. In order to understand the exclusion of certain variables from the final model their interrelationship with each other must be examined. These interrelationships are illustrated in Exhibit III-6. We observe that:

- the effect of previous action information letter disappears when we control for both the number of inspections with a written warning in the last 5 years and the number of inspections with a seizure and detention in the last 5 years
- while there is a positive relationship between previous action trader commitment and increase in compliance, the negative relationship between previous action trader correction and previous action trader commitment results in a negative relationship between previous action trader correction and increase in compliance. This implies that establishments which had previous action trader correction also tended not to have previous action trader commitment
- the negative effect of previous action oral warning is mainly due to its relationship with two variables -the number of inspections with a written warning in the last 5 years and the reason for previous inspection is a complaint or referral. Previous

# EXHIBIT 111-6

### QUALITY: EFFECTS OF OTHER VARIABLES



action oral warning is positively related to these variables, while these variables are negatively related to increase in compliance. This, in turn, produces a negative effect between previous action oral warning and increase in compliance

- when the number of inspections with a seizure and detention in the last 5 years is controlled for, the effect of previous action written warning disappears. The same relationship is found with previous action seizure and detention
- the effect of previous action voluntary disposal or return seems mainly due to the influence of number of inspections with a seizure and detention in the last 5 years and reason for previous inspection is complaint or referral
- manufacturers tended to have previous action trader commitment more than other types of establishments
- the effect of large-size establishment disappears when controlling for previous action trader commitment and number of inspections with a written warning in the last 5 years
- the effect of the number of inspections in the last 3 years is mainly due to the influence of the number of inspections with a written warning in the last 5 years. The same relationship is found with the number of inspections in the last 5 years.

These interrelationships explain why the final basic model showed the program intervention variable previous action trader commitment, only, as having an incremental effect on increasing quality compliance.

#### IV - QUANTITY

In this chapter, the discussion centres on the increase in percentage quantity compliance. The basic model and descriptive statistics described below include consecutive inspections in which an establishment was inspected for quantity compliance only. The other difference models which were developed are summarized in Appendix C.

MODEL FOR INCREASE IN PERCENTAGE COMPLIANCE

The final model for increase in percentage compliance is shown in Exhibits IV-1 and IV-2. The major finding in terms of program effectiveness is that <u>time</u> <u>between inspections</u> affects the increase in compliance. Its coefficient of -.01 indicates that given two establishments that have been previously inspected, the establishment that has been most recently inspected is expected to decrease in compliance by 1% more than the establishment that has been less recently inspected (everything else being equal) for every month difference in time since last inspection.

The results concerning the control variables (i.e., variables which are not related to program effectiveness) indicate that:

- when all lots were acceptable in the previous inspection, the establishment is expected to have a decrease in compliance of 33% more than a similar establishment which did not have all lots acceptable (regression towards the mean effect\*)
- given two similar establishments, except that one had more past inspections (in the last 5 years) with all lots acceptable, then this establishment is expected to increase in compliance for each such past inspection by 4% more than the other establishment
- establishments which were previously inspected for complaint or referral reasons are expected to increase in compliance by 11% more than other establishments which were not previously inspected for complaint or referral reasons (everything else being equal)

Regression toward the mean signifies that particularly high values in one inspection will tend to be lower in the next (and vice-versa) due to normal statistical variability.

# MODEL FOR INCREASE IN PERCENTAGE COMPLIANCE: QUANTITY

TYPE OF VARIABLE	VARIABLE	COEFFICIENT	t-VALUE	SIGNIFICANCE	INTERPRETATION
Program Intervention	Time Between Inspections	01	1.46	.150	For each extra month between inspections, compliance decreased by 1%
Control	Previous Action All Lots Acceptable	33	3.18	•002	Decrease in compliance of 33% when all lots were acceptable in the previous inspection
	Number of Inspections with All Lots Acceptable in the Last 5 Years	•04	2.03	•046	For each inspection with all lots acceptable in the last 5 years, there was an increase in compliance of 4%
	Reason for Previous is Complaint/ Referral	•11	1.68	.098	Average increase of 11% when the reason for the previous inspection is complaint/referral
	Percentage of Past Inspections with a Written Warning	0045	1.72	•091	For each 1% increase in the percentage of past inspections with a written warning, compliance decreased .45%
	Constant	.06			$C_p = 6$
					$R^2 = 0.227$ N = 77

QUANTITY COMPLIANCE



 establishments which had a higher percentage of past inspections with written warnings are expected to decrease in compliance by .45% more than other establishments (everything else being equal) for each 1% difference in percentage of past inspections.

The descriptive statistics shown in Exhibit IV-3 are consistent with the findings of the model. For example, the mean time between inspections decreased from 8.17 months for establishments which decreased in compliance by more than 10% to 5.23 months for establishments which increased in compliance by more than 10%.

In summary, both the results of the model and descriptive statistics indicate that the amount of time until an establishment is reinspected is a determining factor in increasing quantity compliance.

#### EFFECTS OF OTHER VARIABLES

Although the only program intervention variable which was found to be incremental in changing compliance in the basic model was the time between inspections variable, other variables also have a statistically significant effect, but only on their own. Descriptive statistics for all programs intervention and establishment characteristic variables are included in Exhibits IV-4 and IV-5. These exhibits demonstrate the effects of these other variables, as described below:

- in Exhibit IV-4, establishments with previous action trader correction had a mean increase in compliance of 2.2%, whereas those without this action had a mean decrease in compliance of 3.0%. The positive effect of trader correction on the change in compliance is also found with enforcement actions of a seizure and detention and trader commitment. In contrast, a negative effect on compliance is observed for previous action written warning, i.e., establishments with this action decreased by 1.6% while establishments without this action increased by 1.6%
- in Exhibit IV-5, there appears to be an effect on compliance resulting not only from the time between inspections but also from the trade level and establishment size characteristics. Establishments which are in the manufacturing trade had a mean decrease in compliance, those in the import trade had substantial increases in compliance, and those in the retail trade did not greatly increase in compliance. In terms of size, small-size establishments decreased in compliance whereas medium- and large-size establishments increased in compliance. No apparent effects on compliance are shown with the number of past inspections (in either the last 3 or the last 5 years).

		Change in Compliance					
	Variable	Decrease 10%+	Decrease 0-10%	Increase 0-10%	Increase 10%+	Total	Net Change**
% of Establishments	Previous Action All Lots						
	Acceptable - With	14.3%	57.1%	2.9%	0.0%	100.0%	(-13.6%)
	- Without	15.7	35.7	27.1	21.4	100.0	(2.4)
	Reason for Previous is:		1				
	- Complaint/Referral	0.0	40.0	30.0	30.0	100.0	(-1.6)
	- Planned/Sample/Other	17.9	37.3	26.9	17.9	100.0	(1.4)
Mean %*	Percentage of Past inspections						
- <u></u>	with a Written Warning	10.7%	3.9%	3.2%	2.9%	4.6%	
Mean #*	Time Between Inspections	8.17	8.48	7.48	5.23	7.53	
	Number of Inspections with All Lots Acceptable in						
	the Last 5 Years	0.80	1.00	1.16	1.622	1.13	

# QUANTITY: VARIABLES IN THE FINAL MODEL BY CHANCES IN PERCENTACE COMPLIANCE

\* These values are the means of the variable for the four groups of establishments (based on change in compliance) and for establishments in the quality subsample

**\*\*** Mean percentage increase

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# QUANTITY: NET CHANGE IN PERCENTAGE COMPLIANCE BY ACTIONS IN THE PREVIOUS INSPECTION

Actions in the	% of Cases	Net C	hange*
Previous Inspection	With Action	With Action	Without Action
Trader Education	3.9%	2.0%	0.9%
Information Letter	7.8	-0.6	1.1
Trader Correction	75.3	-2.2	-3.0
Oral Warning	5.2	-0.2	1.0
Written Warning	20.8	-1.6	1.6
Seizure and Detention	10.4	5.7	0.4
Voluntary Disposal/Return	26.0	1.8	0.6
Trader Commitment	6.5	4.5	0.7

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N = 77

\* Mean percentage increase

QUANTITY: NET CHANGE IN PERCENTAGE COMPLIANCE BY TRADE LEVEL, ESTABLISHMENT SIZE, NUMBER OF PAST INSPECTIONS AND TIME BETWEEN INSPECTIONS

	% of Cases	Net Change**
Trade Level		
Manufacture	13.0%	-2.5%
Retail	80.5	0.9
Wholesale/Import	6.5	8.7
Establishment Size		
Small	5.2%	-1.4%
Medium	27.3	2.1
Large	67.5	0.7
Number of Inspections		
in the Last 3 Years		
1	13.0%	0.6%
2 to 3	28.6	3.9
4 to 5	35.1	-3.5
more than 5	23.3	4.3
Number of Inspections		
in the Last 5 Years		
1 to 3	14.3%	2.4%
4 to 5	19.5	4.3
6 to 7	20.8	-8.5
8 to 9	23.4	2.1
more than 9	22.0	4.7
Time Between Inspections*		
1 to 3 months	15.6%	10.7%
3 to 6 months	29.9	4.8
6 to 9 months	29.9	-6.8
9 to 12 months	11.7	0.9
more than 12 months	12.9	-1.9

N = 77

\* Variable in the final model

**\*\*** Mean percentage increase

To understand the exclusion of the variables which appear to have a statistically significant effect on their own, but do not appear in the final basic model (i.e., previous actions of trader correction, a seizure and detention, trader commitment and a written warning, manufacturing establishments and small-size establishments), we looked at the various interrelationships among variables in the model. These interrelationships are illustrated in Exhibit IV-6 and are described below:

- when previous action all lots acceptable is controlled for, the effect of previous action trader correction disappears. Establishments which had to correct any non-compliance in their previous inspection would not also have had all lots acceptable. A similar relationship is observed for the effects of previous action seizure and detention and previous action trader commitment. Establishments which either had products seized and detained or committed to future compliance in their previous inspection would not have also had all lots acceptable
- the negative effect of previous action written warning on compliance seems mainly due to its interrelationship with reason for previous inspection is complaint or referral. Establishments which had a written warning in their previous inspections were not normally inspected for complaint or referral reasons
- when previous action all lots acceptable is controlled for, the manufacturing effect disappears, i.e., manufacturing establishments tended to have had all lots acceptable
- small-size establishments tended to be reinspected sooner than large- and medium-size establishments. Thus, the negative effect of small-size establishments is mainly due to its relationship with time between inspections.

These interrelationships explain why the final basic model showed the program intervention variable time between inspection, only, as being effective in changing percentage quantity compliance.

### QUANTITY: EFFECTS OF OTHER VARIABLES



#### V - MEAN COMPLIANCE

This chapter deals with mean compliance. As indicated earlier, the mean compliance was derived by calculating the mean of any or all percentage compliance values for labelling, quality and/or quantity regulatory areas. Hence, the analyses in this chapter are based on consecutive inspections of food establishments performed for all regulatory areas.

Other difference models for mean compliance were also developed and are included in Appendix D.

#### MODEL FOR INCREASE IN PERCENTAGE COMPLIANCE

The final increase in percentage mean compliance model is shown in Exhibits V-1 and V-2. The variables included in this model which reflect program effectiveness are previous action <u>trader commitment</u> and previous action <u>trader</u> <u>education</u>. The coefficient for previous action trader commitment tells us that given two establishments similar in every respect except that one committed to future compliance in the previous inspection, then this establishment increased in compliance by 51% more than the other establishment. The coefficient for previous action trader education indicates that an establishment which had previous action trader education increased in mean compliance by 12% more than a similar establishment which did not have previous action trader education.

The other variables in the model are control variables. Their inclusion in the model allows for better estimation of the incremental factors of the program, but they are not measures of program effectiveness. However, the interpretation of their effect is interesting in terms of general patterns, and is provided below:

- establishments which are currently being inspected for complaint or referral reasons are expected to decrease in compliance by 21% more than those which are not currently being inspected for complaint or referral reasons (everything else being equal). This indicates that complaints and referrals are assisting in the detection of non-compliance
- given two similar establishment except that one had a higher percentage of past inspections with trader commitment, then this establishment is expected to decrease in compliance by .36% more than the other establishment for every 1% difference in percentage of past inspections
- when the reason for the previous inspection was a result of a complaint or referral, an establishment

V.1

# MODEL FOR INCREASE IN PERCENTAGE COMPLIANCE: MEAN COMPLIANCE

TYPE OF VARIABLE	VARIABLE	COEFFICIENT	t-VALUE	SIGNIFICANCE	INTERPRETATION
Program Intervention	Previous Action Trader Commitment	.51	5.41	•000	Increase in compliance of 51% when action in the previous inspection involved trader commitment
	Previous Action Trader Education	•12	1.33	.187	Increase in compliance of 12% when action in the previous inspection involved trader education
Control	Reason for Current is Complaint/ Referral	21	3.29	•001	Average decrease of 21% when the reason for the current inspection is complaint/ referral
	Percentage of Past Inspections with Trader Commitment	0036	2.19	•030	For each 1% increase in percentage of past inspections with trader commitment, compliance decreased .36%
	Reason for Previous is Complaint/ Referral	•08	1.26	.211	Average increase of 8% when the reason for the previous inspection is complaint/ referral
	Constant	03			$C_p = 6$ $R^2 = 0.239$

# EXILIBIT V-2

MEAN COMPLIANCE

PROGRAM INTERVENTION



CONTROL

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13 2 is expected to have an 8% higher increase in compliance than another establishment which was inspected for other reasons (everything else being equal)

These program effectiveness and control results are also shown in the descriptive statistics provided in Exhibit V-3. Here, we see that for both previous action trader commitment and previous action trader education, a higher percentage of establishments with the action had major increases rather than major decreases in compliance, whereas about equal percentages of establishments without the action had major increases and major decreases in compliance. Overall, in terms of net change or mean percentage increase, establishments with each action had a higher mean percentage increase in compliance than establishments without each action (i.e., mean increases of 27.5% with versus -5.2% without previous action trader commitment and 18.1% with versus 1.1% without previous trader education). The descriptive statistics for the control variables also support the model results.

In summary, when trader commitment or trader education are part of the enforcement action taken in an inspection, there is a higher tendency for an increased mean percentage compliance in a subsequent inspection. Mean compliance does not tend to increase as much when trader commitment or trader education do not occur in an inspection.

### EFFECTS OF OTHER VARIABLES

Descriptive statistics showing the net change in compliance for all program intervention and establishment characteristic variables are presented in Exhibits V-4 and V-5. Some of the major findings for variables not included in the model are:

- in Exhibit V-4, a positive effect on compliance is found with previous action oral warning, while a negative effect on compliance is found with previous action trader correction (i.e., establishments with previous action oral warning had higher increases than establishments without previous action oral warning and establishments with previous action trader correction had lower increases than establishments without previous action trader swithout previous action trader
- in Exhibit V-5, establishment characteristics of trade level and size appear to affect the change in compliance (i.e., manufacturers had higher increases in compliance than establishments of other trade levels and small-size establishments had higher increases in compliance than medium- and large-size establishments). No relationship with the change in compliance is shown with either the number of past inspections or time between inspections.

V.2

EXH	IB	IT	٧-	-3

### MEAN COMPLIANCE: VARIABLES IN THE FINAL MODEL BY CHANGES IN PERCENTAGE COMPLIANCE

		Change in Compliance					
	Variable	Decrease 10%+	Decrease 0-10%	Increase 0-10%	Inc <b>rease</b> 10 <b>%+</b>	<u>Total</u>	Net Change**
% of Establishments	Previous Action:						
	Trader Commitment - With	7.3%	34.1%	7.3%	51.3%	100.0%	(27.5%)
	- Without	32.6	26.0	13.8	27.6	100.0	(-5.2)
	Trader Education - With	16.7	33.3	11.1	38.9	100.0	(18.1)
	- Without	27.4	27.4	12.3	32.9	100.0	(1.1)
	Reason for Current is:						
	- Complaint/Referral	25.5	34.0	12.8	27.7	100.0	(-4.8)
	- Planned/Sample/Other	26.5	25.6	12.0	35.9	100.0	(6.1)
	Reason for Previous is:						
	- Complaint/Referral	12.5	45.8	8.3	33.3	100.0	(13.2)
	- Planned/Sample/Other	31.9	20.7	13.8	33.6	100.0	(-1.3)
<u>Mean                                    </u>	Percentage of Past	ŝ.					99 • 1 • 1
	- Trader Commitment	6.4%	19.6%	9.6%	12.7%	12.6%	

\* These values are the means of the variable for the four groups of establishments (based on change in compliance) and for all establishments in the mean compliance subsample

**\*\*** Mean percentage compliance

# MEAN COMPLIANCE: NET CHANGE IN PERCENTAGE COMPLIANCE BY ACTIONS IN THE PREVIOUS INSPECTION

Actions in the Previous Inspection	% of Cases With Action	Net C With Action	hange* Without Action
Trevious inspection			
*Trader Education	11.0%	18.1%	1.1%
Information Letter	11.6	6.0	2.6
Trader Correction	64.0	1.1	6.4
Oral Warning	7.9	25.3	1.0
Written Warning	31.1	5.1	2.0
Seizure and Detention	15.2	6.2	2.4
Voluntary Disposal/Return	17.1	1.5	3.3
*Trader Commitment	25.0	27.5	-5.2

N = 164

\* Variable in the final model

**\*\*** Mean percentage compliance

MEAN COMPLIANCE: NET CHANGE IN PERCENTAGE COMPLIANCE BY TRADE LEVEL, ESTABLISHMENT SIZE, NUMBER OF PAST INSPECTIONS AND TIME BETWEEN INSPECTIONS

	<u>% of Cases</u>	Net Change*
Trade Level		
Manufacture	19.5%	8.8%
Retail	62.2	1.0
Wholesale/Import	18.3	3.3
Establishment Size		
Small	17.7%	7.8%
Medium	26.8	3.9
Large	55.5	1.0
Number of Inspections		
in the Last 3 Years		
1	17.7%	-3.9%
2 to 3	29.9	8.3
4 to 5	31.1	3.1
more than 5	21.3	1.0
Number of Inspections		
in the Last 5 Years		
1 to 3	24.4%	0.3%
4 to 5	18.9	5.1
6 to 7	16.5	4.5
8 to 9	21.3	2.8
more than 9	18.9	3.3
Time Between Inspections		
1 to 3 months	24.4%	5.6%
3 to 6 months	28.1	1.2
6 to 9 months	26.8	-0.9
9 to 12 months	7.3	2.1
more than 12 months	13.4	10.0

N = 164

\* Mean percentage increase

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All these positive and negative effects on compliance are statistically significant on their own. However, in order to understand why these variables are not included in the final basic model, their interrelationship with other variables in the model must be examined. For this reason, we created the picture shown in Exhibit V-6.

In this Exhibit, we see the following:

- the positive effect of previous action oral warning seems mainly due to its relationship with both the previous action trader commitment and reason for previous inspection is complaint or referral variables. Establishments which were given an oral warning in their previous inspections also tended to have committed to future compliance or tended to have been inspected for complaint or referral reasons (or both)
- the negative relationship of previous action trader correction with increased compliance is mainly a result of previous action trader correction's negative relationship with previous action trader commitment and previous action trader commitment's positive relationship with increased compliance
- when previous action is controlled for, the manufacturing effect disappears, i.e., manufacturing establishments tended to have previous action trader commitment. The same relationship is found with small-size establishments, i.e., they tended to have previous action trader commitment.

As a result of these interrelationships, the final basic model shows the program intervention variables, trader commitment and trader education, only, as being effective in increasing the percentage mean compliance.

# MEAN COMPLIANCE: EFFECTS OF OTHER VARIABLES



#### VI - SUMMARY

The objective of this study was to identify the relative effectiveness of compliance activities undertaken by the Consumer Products Sub-Activity on food establishments. These findings were then compared with those found in an earlier evaluation in which we identified the relative effectiveness of compliance activities in all classes of establishments. This chapter summarizes our findings and their implications.

# EFFECTIVENESS OF COMPLIANCE ACTIVITIES ON FOOD ESTABLISHMENTS

The relative effectiveness of compliance activities on food establishments was determined through statistical modelling. In the basic model, the increase in percentage compliance between consecutive inspections was related to a number of explanatory variables. The major results which relate to program effectiveness are shown in Exhibit IV-1 and are described below:

- Enforcement actions of trader education, written warning, and trader commitment are all effective in bringing about an increase in labelling compliance.
- Trader commitment, as part of an inspection, is effective in increasing <u>quality</u> compliance in a subsequent inspection.
- The time between inspections is an important factor in determining increases in quantity compliance. The effects of one inspection on a subsequent inspection are less if time between inspections is large.
- Both trader education and trader commitment are effective instruments in bringing about an increase in <u>mean</u> compliance.

All these findings, except for those concerning quantity compliance, indicate that what happens in an inspection, rather than the occurrence of an inspection, is the most important factor in determining increases in compliance. Trader commitment is an important factor in determining increases in compliance in all but the quantity regulatory area. For the regulation of quantity, we found that the time between inspections was a determining factor influencing compliance.

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INCREMENTAL EFFECTS OF PROGRAM INTERVENTION VARIABLES ON FOOD ESTABLISHMENTS

Program Intervention Variable	Labelling	Quality	Quantity	Mean
Time Between Inspections	-	-	-1%	-
Previous Actions:				
Trader Education	+16%	-	-	+12%
Written Warning	+12%	-	-	-
Trader Commitment	+11%	+4 3%	-	+51%

# COMPARISON OF FOOD VERSUS ALL PRODUCT CLASSES

In the earlier evaluation, the relative effectiveness of different compliance activities on all classes of establishments was identified. By modelling food establishments on their own, as we did in this study, we were able to eliminate any interaction between food establishments and other types of establishments. This allowed us to clearly show which program intervention actions are most effective and to what extent they are effective on food establishments. A comparison of the program intervention results which were found in the earlier evaluation and of those which were found in this study is presented in Exhibit VI-2.

The Exhibit shows that in all regulatory areas and in the overall mean, the inspection/enforcement actions which are most effective on all classes of establishments are the same actions which are most effective on food establishments. This consistency in the effectiveness results was expected for the quality and quantity regulatory areas since the majority of establishments inspected for quality and quantity compliance deal in the food product class.

The Exhibit also indicates the magnitude of the effectiveness of the program intervention variables which are in the final basic model. Here, the magnitude of effectiveness is measured by percentage increases in compliance brought about by the program intervention variables in the final basic model. For <u>labelling compliance</u>, we see that for each enforcement action in the model, there is very little difference between the effectiveness in food establishments and the effectivenesss in establishments of all product classes.

With respect to <u>quality compliance</u>, we see that trader commitment is more effective on food establishments than it is on establishments of all product classes. Trader commitment causes an expected 43% higher increase in compliance in food establishments (compared to the increases of food establishments which did not have this action). In contrast, trader commitment brought about only an expected 24% higher increase in compliance (compared to the increase of establishments which did not have this action). The large difference in magnitude of effectiveness indicates that the trader commitment effect on establishments of all product classes is probably due to the large proportion of food establishments in the quality sub-sample. Because there were only a small number of establishments inspected for quality that were not food establishments, we cannot be certain which compliance activities, if any, are effective in increasing percentage compliance in this group of establishments (i.e., textile, precious metals and non-food).

# COMPARISON OF PROGRAM INTERVENTION RESULTS: FOOD VERSUS ALL PRODUCT CLASSES

Program Intervention	Label.	ling	Qual	ity	Quan	tity	Mean	n
Variable	Food	<u>Al 1</u>	Food	<u>A11</u>	Food	<u>A11</u>	Food	<u>A11</u>
Time Between Inspections	-	-	-	-	-1%	-1%	-	-
Previous Actions:								
Trader Education	+16%	+19%	-	-	-	-	+12%	+16%
Written Warning	+12%	+10%	-	-	-	-	-	-
Trader Commitment	+11%	+10%	+43%	+24%	-	-	+51%	+19%

For quantity compliance, we find that the time between inspections had the same effect (to one percentage point) on food establishments as it did on establishments of all products classes.

With respect to mean compliance, there is a substantial difference between the effectiveness of trader commitment on food establishments and on establishments of all product classes. Trader commitment brought about a 51% higher increase in compliance in food establishments with this action compared to food establishments without this action. In contrast, in establishments of all product classes, there is only a 19% higher increase in compliance in establishments with trader commitment over the increases of establishments without this action. Since mean compliance is the mean of all compliance values in each regulatory area, this difference in the effectiveness of trader commitment is primarily due to the large effect of trader commitment on quality compliance.

#### Effect of Complaints and Referrals

The effect of complaints and referrals was shown in the model for the increase in mean compliance. In this model we found that when a complaint or referral was the reason for the current inspection, there was a decrease in compliance. When a complaint or referral was the reason for the previous inspection, we found there was an increase in compliance in the current inspection. The effect of this control variable is similar in establishments of all product classes and in food establishments, as shown in the table below. The only difference is that the variable, reason for current inspection is complaint or referral, has a greater influence on food establishments than it has on establishments of all product classes. We can observe that when a complaint or referral was the reason for the current inspection, the decrease in compliance was 21% in food establishments compared to 14% in establishments of all product classes.

ON INCREASING COMPLIANCE							
CONTROL VARIABLE	FOOD	ALL ESTABLISHMENTS					
Reason for Previous Inspection is Complaint/ Referral	8%	9%					
Reason for Current	-21%	-14%					

# EFFECT OF COMPLAINTS AND REFERRALS

Reason for urrent Inspection is Complaint/Referral

#### IMPLICATIONS OF THE FINDINGS

In this study we were interested in identifying the relative effectiveness of enforcement and inspection activities undertaken on food establishments. Food establishments are of special concern to the Consumer Products Sub-activity because their compliance levels are lower than those of other types of establishments. It is for this reason that they were chosen for more in-depth analysis in this study. Interestingly, we found that the program intervention results of this study are very similar to those found in the original study which focused on establishments of all types. The only substantial difference in the results lies in the magnitude of the effectiveness of trader commitment on quality and mean compliance. Otherwise, it is evident that the <u>activities</u> which have the greatest impact on food establishments are also those which have the greatest impact on establishments of all product classes; these are trader education, a written warning and trader commitment.

Sec. 10 Sec. 19

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We also found that complaints and referrals have almost the same effect on food establishments as they did on establishments of all product classes. That is, when an inspection is the result of a complaint or referral, there is an increased tendency for non-compliance to be detected. When a subsequent inspection is carried out, compliance levels tend to improve. In the former case, the effect on food establishments is slightly greater than it is on establishments of all types.

The implications of these findings, therefore, reflect much of what was discussed in our earlier study.\* Most important, we feel, is the fact that less stringent or negotiating activities, again, have been found to be effective in improving compliance levels. What this means is that some shift from the more stringent activities (such as a seizure and detention) to the use of less stringent measures could be made without a great risk to compliance levels. Moreover, should these less stringent measures also prove to be less costly, the cost-effectiveness of carrying out these measures would be greatly increased.

Finally, the use of complaints and referrals as one tool for prioritizing inspections appears to be as important in food establishments as it does in establishments of all product classes. The selection of complaints and referrals to be acted upon would, of course, require some assessment of the factors which would truly warrant the expenditure of resources on an inspection.

<sup>\*</sup> It should be noted that the results of both studies are based on a sample of establishments from the Toronto District Office. Any extrapolation of the findings to the rest of Canada would have to be made on the basis of a country-wide sample.

APPENDIX A

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LABELLING: OTHER DIFFERENCE MODELS

#### APPENDIX A

#### LABELLING: OTHER DIFFERENCE MODELS

In addition to the basic model, other models were developed for changes or differences in probability of an inspection with actions: all lots acceptable, a seizure and detention, and a written warning. Presented in this Appendix are these other difference models for the regulatory area of labelling. Details on the major findings in terms of program effectiveness are provided below.

### All Lots Acceptable

Exhibits A-1 and A-2 describe the model for the increase in the probability of an inspection with all lots acceptable. The results indicate that previous actions of trader commitment, trader correction, a voluntary disposal or return, and trader education are effective tools in increasing the probability of an inspection with all lots acceptable. The difference in the increase in the probability of an inspection with all lots acceptable for establishments which have these actions compared to establishments which did not have these actions were 52% for trader commitment, 34% for trader correction, 10% for voluntary disposal or return and 9% for trader education (everything else being equal).

#### Seizure and Detention

The model for the decrease in the probability of an inspection with a seizure and detention is shown in Exhibits A-3 and A-4. Here, we find that the only program intervention variable which is effective in decreasing the probability is previous action written warning. Its coefficient of .14 indicates that given two similar establishments except that one had previous action written warning, then this establishment will decrease in probability of having an inspection with a seizure and detention by 14% more than the other establishment.

#### Written Warning

In the model for the decrease in the probability of an inspection with a written warning, shown in Exhibits A-5 and A-6, three enforcement actions are found to have an incremental effect. These enforcement actions are a seizure and detention, trader commitment and an information letter. Establishments which had these actions had greater decreases in probability of a written warning than establishments which did not have these actions (everything else being equal). The decrease in probability was greater by 20% for a seizure and detention, 12% for trader commitment and 15% for an information letter.

### MODEL FOR INCREASE IN PROBABILITY OF AN INSPECTION WITH ALL LOTS ACCEPTABLE: LABELLING

TYPE OF VARIABLE	VARIABLE	COEFFICIENT	t-VALUE	SIGNIFICANCE	INTERPRETATION
Program Intervention	Previous Action Trader Commitment	•52	6.63	.000	Increase in probability of 52% when action in the previous inspection involved trader commitment
	Previous Action Trader Correction	•34	4.50	•000	Increase in probability of 34% when action in the previous inspection involved trader correction
	Previous Action Disposal/Return	.10	1.21	.229	Increase in probability of 10% when action in the previous inspection involved voluntary disposal/return
	Previous Action Trader Education	.09	0.85	. 399	Increase in probability of 9% when action in the previous inspection involved trader education
Control	Reason for Previous is Complaint/ Referral	20	2.76	•006	Average decrease of 20% when the reason for the previous inspection is complaint/ referral
	Percentage of Past Inspections with All Lots Acceptable	0027	1.70	•091	For each 1% increase in the percentage of past inspections with all lots acceptable, probability decreased .27%
	Constant	24			$C_p = 8$ $R^2 = .305$ N = 177

LABELLING: INSPECTION WITH ALL LOTS ACCEPTABLE

### PROGRAM INTERVENTION

### CONTROL



### MODEL FOR DECREASE IN PROBABILITY OF AN INSPECTION WITH A SEIZURE AND DETENTION: LABELLING

VARIABLE	COEFFICIENT	t-VALUE	SIGNIFICANCE	INTERPRETATION
Previous Action Written Warning	.14	2.78	.006	Decrease in probability of 14% when action in the previous inspection involved a written warning
Percentage of Past Inspections with a Selzure and Detention	•0042	3.98	•000	For each 1% increase in percentage of past inspections with a seizure and detention, probability decreased .42%
Percentage of Past Inspections with a Written Warning	•0037	1.94	.054	For each 1% increase in percentage of past inspections with a written warning, probability decreased .37%
Constant	.01			$C_p = 4$ $R^2 = .213$ N = 177
	VARIABLE Previous Action Written Warning Percentage of Past Inspections with a Selzure and Detention Percentage of Past Inspections with a Written Warning Constant	VARIABLECOEFFICIENTPrevious Action Written Warning.14Percentage of Past Inspections with a Selzure and Detention.0042Percentage of Past Inspections with a Written Warning.0037Constant.01	VARIABLECOEFFICIENTt-VALUEPrevious Action Written Warning.142.78Percentage of Past Inspections with a Detention.00423.98Percentage of Past Inspections with a Written Warning.00371.94Constant.01.01	VARIABLECOEFFICIENTt-VALUESIGNIFICANCEPrevious Action Written Warning.142.78.006Percentage of Past Inspections with a Detention.00423.98.000Percentage of Past Inspections with a Written Warning.00371.94.054Constant.01.01.01.054

#### LABELLING: INSPECTION WITH A SEIZURE AND DETENTION

### PROGRAM INTERVENTION

CONTROL



### MODEL FOR DECREASE IN PROBABILITY OF AN INSPECTION WITH A WRITTEN WARNING: LABELLING

TYPE OF VARIABLE	VARIABLE	COEFFICIENT	t-VALUE	SIGNIFICANCE	INTERPRETATION
Program Intervention	Previous Action Seizure and Detention	•20	2.12	•036	Decrease in probability of 20% when action in the previous inspection involved a seizure and detention
	Previous Action Trader Commitment	•12	1.57	.119	Decrease in probability of 12% when action in the previous inspection involved trader commitment
	Previous Action Information Letter	.15	1.46	.147	Decrease in probability of 15% when action in the previous inspection involved an infor- mation letter
Control	Number of Inspec- tions with an In- formation Letter in the last 3 years	•65	2.95	•004	For each inspection with an information letter in the last 3 years, there was a decrease in probability of 65%
	Retail	16	2.04	.043	Average increase of 16% for retail establishments
	Number of Inspec- tions with a Seizure and Deten- tion in the last 5 years	.05	1.92	•056	For each inspection with a seizure and detention in the last 5 years, there was a decrease in probability of 5%
	Percentage of Past Inspections with a Written Warning	.0029	1.10	.272	For each 1% increase in the percentage of past inspections with a written warning, prob- ability decreased .29%
		25			$C_p = 6$
	Constant	.23			$R^2 = .299$

### LABELLING: INSPECTION WITH A WRITTEN WARNING



CONTROL

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# APPENDIX B

# QUALITY: OTHER DIFFERENCE MODELS
#### APPENDIX B

#### QUALITY: OTHER DIFFERENCE MODELS

The other difference models for the regulatory area of quality are described in this Appendix. These models looked at changes in probability of the occurrence or non-occurrence of an inspection with actions: all lots acceptable, a seizure and detention and a written warning.

#### All Lots Acceptable

A summary of the model for the increase in the probability of an inspection with all lots acceptable is shown in Exhibits B-1 and B-2. The findings related to program effectiveness indicate that trader commitment, trader correction and trader education are effective in bringing about an increase in the probability of an inspection with all lots acceptable. The probability increases were greater by 43% with trader commitment, 24% with trader correction, and 13% with trader education, (everything else being equal).

#### Seizure and Detention

The program intervention variables which are incremental in decreasing the probability of an inspection with a seizure and detention, shown in Exhibits B-3 and B-4 are previous actions of an oral warning, an information letter and trader commitment. The probability of a seizure and detention decreased more with than without these actions. The probability decreases were 20% with an oral with those actions warning, 11% with an information letter and 7% with trader commitment, (everything else being equal).

#### Written Warning

Exhibits B-5 and B-6 summarize the model for the decrease in the probability of an inspection with a written warning. The findings which relate to program effectiveness show that a seizure and detention, trader commitment or an information letter as part of an inspection are incremental in bringing about a decrease in probability of a written warning. Establishments with each of these actions had a decrease in probability of about 20% greater than establishments without these actions (everything else being equal).

# MODEL FOR INCREASE IN PROBABILITY OF AN INSPECTION WITH ALL LOTS ACCEPTABLE: QUALITY

TYPE OF VARIABLE	VARIABLE	COEFFICIENT	t-VALUE	SIGNIFICANCE	INTERPRETATION
Program Intervention	Previous Action Trader Commitment	.43	5.95	.000	Increase in probability of 43% when action in the previous inspection involved trader commitment
	Previous Action Trader Correction	.24	3.58	•000	Increase in probability of 24% when action in the previous inspection involved trader correction
	Previous Action Trader Education	.13	1.40	.164	Increase in probability of 13% when action in the previous inspection involved trader education
Cont rol	Reason for Previous is Complaint/ Referral	28	4.11	.000	Average decrease of 28% when the reason for the previous inspection is complaint/ referral
	Constant	17			$C_p = 3$ $R^2 = 0.261$
					N = 152
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### QUALITY: INSPECTION WITH ALL LOTS ACCEPTABLE

PROGRAM INTERVENTION

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## MODEL FOR DECREASE IN PROBABILITY OF AN INSPECTION WITH A SEIZURE AND DETENTION: QUALITY

TYPE OF VARIABLE	VARIABLE	COEFFICIENT	t-VALUE	SIGNIFICANCE	INTERPRETATION
Program Intervention	Previous Action Oral Warning	•20	2.30	.023	Decrease in probability of 20% when action in the previous inspection involved an oral warning
	Previous Action Information Letter	.11	1.68	.095	Decrease in probability of 11% when action in the previous inspection involved an infor- mation letter
	Previous Action Trader Commitment	•07	1.25	•213	Decrease in probability of 7% when action in the previous inspection involved trader commitment
Control	Percentage of Past Inspections with Selzure and Detention	.0042	3.90	.000	For each 1% increase in the percentage of past inspections with a selzure and detention, probability decreased .42%
	Percentage of Past Inspectlons with a Written Warning	•0098	3.28	.001	For each 1% increase in the percentage of past inspections with a written warning, prob- ability decreased .98%
	Number of Inspec- tions with a Written Warning in the last 5 years	12	2.34	.021	For each inspection with a written warning in the last 5 years, there was an increase in probability of 12%
	Number of Inspec- tions with Trader Education in the last 5 years	.03	1.85	•066	For each inspection with trader education in the last 5 years, there was a decrease in probability of 3%
	Constant	05			$C_p = 6$
					$R^2 = 0.305$

### QUALITY: INSPECTION WITH A SEIZURE AND DETENTION



## MODEL FOR DECREASE IN PROBABILITY OF AN INSPECTION WITH A WRITTEN WARNING: QUALITY

TYPE OF VARIABLE	VARIABLE	COEFFICIENT	t-VALUE	SIGNI FICANCE	INTERPRETATION
Program Intervention	Previous Action Seizure and Detention	.21	2.21	.029	Decrease in probability of 21% when action in the previous inspection involved a seizure and detention
	Previous Action Trader Commitment	•18	2.09	.038	Decrease in probability of 18% when action in the previous inspection involved trader commitment
	Previous Action Information Letter	.20	1.97	.050	Decrease in probability of 20% when action in the previous inspection involved an information letter
Control	Number of Inspec- tions with an Information Letter in the last 5 years	•52	3.73	.000	For each inspection with an information letter in the last 5 years, there was a decrease in probability of 52%
	Retail	22	2.51	.013	Average increase of 22% for retail establishments
	Constant	.32			
					C <sub>p</sub> = 5
					$R^2 = 0.318$
					N = 152

### QUALITY: INSPECTION WITH A WRITTEN WARNING

### PROGRAM INTERVENTION



CONTROL

# APPENDIX C

# QUANTITY: OTHER DIFFERENCE MODELS

### APPENDIX C

### QUANTITY: OTHER DIFFERENCE MODELS

Included in this Appendix is a summary of the other difference models for quantity compliance. These models look at changes in probability of the occurrence of one of three actions (i.e., all lots acceptable, a seizure and detention and a written warning) in an inspection. The program intervention results are described below.

#### All Lots Acceptable

The model for the increase in the probability of an inspection with all lots acceptable is shown in Exhibits C-1 and C-2. The findings with respect to program effectiveness show that both previous action trader correction and previous action seizure and detention have an incremental effect. That is, when these actions are a part of an inspection, there is a higher tendency for all lots to be acceptable in a subsequent inspection.

#### Seizure and Detention

The final model for the decrease in the probability of an inspection with a seizure and detention is shown in Exhibits C-3 and C-4. The only program intervention variable in this final model is time between current and previous inspections. Its coefficient of -.01 indicates that given two similar establishments that have been previously inspected, the establishment that has not been reinspected will increase in probability of a seizure and detention by 1% per month more than the establishment that has been reinspected.

#### Written Warning

Exhibits C-5 and C-6 present the model for the decrease in the probability of an inspection with a written warning. The program intervention results indicate that three variables are effective in decreasing the probability of an inspection with a written warning; these are the number of inspections in the last 5 years, previous action information letter and previous action trader commitment. An establishment which had been inspected more in the last 5 years, had a 3% greater decrease for each extra past inspection than another establishment (everything else being equal). Everything else being equal, the probability of an inspection with a seizure and detention also decreased more when previous actions of an information letter or trader commitment occurred (by 34% and 24%, respectively).

### MODEL FOR INCREASE IN PROBABILITY OF AN INSPECTION WITH ALL LOTS ACCEPTABLE: QUANTITY

TYPE OF VARIABLE	VAR IABLE	COEFFICIENT	t-VALUE	SIGNIFICANCE	INTERPRETATION
Program Intervention	Previous Action Trader Correction	.37	3.89	.000	Increase in probability of 37% when action in the previous inspection involved trader correction
	Previous Action Seizure and Detention	•35	2.88	.005	Increase in probability of 35% when action in the previous inspection involved a seizure and detention
Contrul	Percentage of Past Inspections with All Lots Acceptable	0059	3.55	.001	For each 1% increase in the percentage of past inspections with all lots acceptable, probability decreased .59%
	Retail	25	2.73	.008	Average decrease of 25% for retail establishments
	Previous Percentage Quantity Compliance	0043	1.95	.054	For each 1% increase in the previous percentage quantity compliance, probability decreased .43%
	Constant	.38			
					$C_p = 6$
					$R^2 = 0.363$
					N = 103

### QUANTITY: INSPECTION WITH ALL LOTS ACCEPTABLE

### PROGRAM INTERVENTION

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CONTROL



## MODEL FOR DECREASE IN PROBABILITY OF AN INSPECTION WITH A SEIZURE AND DETENTION: QUANTITY

TYPE OF VARIABLE	VARIABLE	COEFFICIENT	t-VALUE	SIGNIFICANCE	INTERPRETATION
Program Intervention	Time Between Inspection	01	1.58	.117	For each extra month between inspections, probability increased 1%
Control	Percentage of Past Inspections with Trader Education	•0027	2.07	.040	For each 1% increase in per- centage of past inspections with trader education, prob- ability decreased .27%
	Retail	11	1.93	•057	Average increase of 11% for retail establishments
	Number of Inspec- tions with a Seizure and Detention in the last 3 years	.10	1.79	.076	For each inspection with a seizure and detention in the last 3 years, there was a decrease in probability of 10%
	Number of Inspec- tions with an Information Letter in the last 3 years	.21	1.41	.161	For each inspection with an information letter in the last 3 years, there was a decrease in probability of 21%
	Constant	.16			
					$C_p = 5$
					$R^2 = 0.119$
					N = 128

## QUANTITY: INSPECTION WITH A SEIZURE AND DETENTION





CONTROL

# MODEL FOR DECREASE IN PROBABILITY OF AN INSPECTION WITH A WRITTEN WARNING: QUANTITY

TYPE OF VARIABLE	VARIABLE	COEFFICIENT	t-VALUE	SIGNIFICANCE	INTERPRETATION
Program Intervention	Number of Inspections in the last 5 years	.03	3.08	.003	For each inspection in the last 5 years, probability decreased by 3%
	Previous Action Information Letter	.34	2.43	.017	Decrease in probability of 34% when action in the previous inspection involved an information letter
	Previous Action Trader Commitment	.24	2.15	•033	Decrease in probability of 24% when action in the previous inspection involved trader commitment
Control	Percentage of Past Inspections with Trader Correction	0010	0.92	0.361	For each 1% increase in percentage of past inspections with trader correction, probability increased .10%
	Constant	.01			
					$C_p = 5$
		ļ			$R^2 = 0.159$
					N = 128
		}	1		

### QUANTITY: INSPECTION WITH A WRITTEN WARNING

### PROGRAM INTERVENTION

CONTROL



APPENDIX D

MEAN COMPLIANCE: OTHER DIFFERENCE MODELS

#### APPENDIX D

#### MEAN COMPLIANCE: OTHER DIFFERENCE MODELS

This Appendix includes the other difference in probability models relating to mean compliance. The major findings which deal with program effectiveness are described below.

### All Lots Acceptable

In Exhibits D-1 and D-2, we find that previous actions of trader correction, trader commitment and an oral warning are effective in increasing the probability of an inspection with all lots acceptable. When these actions were a part of the previous inspection, the probability increased more than when these actions were not a part of the previous inspection. The probability increases were 50% with trader correction, 35% with trader commitment and 14% with an oral warning (everything else being equal).

#### Seizure and Detention

The final decrease in probability of an inspection with a seizure and detention model, shown in Exhibits D-3 and D-4, indicates that an oral and a written warning have an incremental effect. An establishment which was given a warning, either orally or in writing, had a greater decrease in probability than a similar establishment which was not given such a warning. The decrease was greater by 17% for an oral warning and 10% for a written warning.

#### Written Warning

Presented in Exhibits D-5 and D-6 is the model for the decrease in the probability of an inspection with a written warning. We see that, when trader education, a seizure and detention, or an information letter is a part of an inspection, there is a greater decrease in probability of a written warning in a subsequent inspection. When these actions were part of a previous inspection, there were greater probability decreases of 17% with trader commitment, 18% with a seizure and detention and 16% with an information letter (everything else being equal).

# EXHIBIT D-1

# MODEL FOR INCREASE IN PROBABILITY OF AN INSPECTION WITH ALL LOTS ACCEPTABLE: MEAN COMPLIANCE

TYPE OF VARIABLE	VARIABLE	COEFFICIENT	t-VALUE	SIGNIFICANCE	INTERPRETATION
Program Intervention	Previous Action Trader Correction	• 50	5.57	.000	Increase in probability of 50% when action in the previous inspection involved trader education
	Previous Action Trader Commitment	•35	3.61	.000	Increase in probability of 35% when action in the previous inspection involved trader commitment
	Previous Action Oral Warning	.14	1.14	•255	Increase in probability of 14% when action in the previous inspection involved an oral warning.
Control	Reason for Previous is Complaint/ Referral	22	3.04	.003	Average decrease of 22% when the reason for the previous inspection is complaint/ referral
	Previous Percentage Mean Compliance	0029	2.40	.017	For each 1% increse in the previous percentage mean compliance, probability decreased .29%
	Reason for Current is Complaint/ Referral	17	2.30	.023	Average decrease of 17% when the reason for the current inspection is complaint/ referral

EXHIBIT D-1 (Cont'd)

# MODEL FOR INCREASE IN PROBABILITY OF AN INSPECTION WITH ALL LOTS ACCEPTABLE: MEAN COMPLIANCE

TYPE OF VARIABLE	VARIABLE	COEFFICIENT	t-VALUE	SIGNIFICANCE	INTERPRETATION
Control (Cont'd)	Percentage of Past Inspections with Trader Correction	0024	1.86	.065	For each 1% increase in the percentage of past inspections with trader commitment probability decreased .24%
	Number of Inspec- tions with a Written Warning in the last 5 years	08	1.81	0.72	For each inspection with a written warning in the last 5 years, there was a decrease in probability of 8%
	Manufacture	.11	1.26	.210	Average increase of 11% for manufacturing establishments
	Percentage of Past Inspections with All Lots Acceptable	0015	0.93	.352	For each 1% increase in the percentage of past inspections with all lots acceptable, probability decreased .15%
	Constant	• 08	u. L		
					$C_p = 10$
					$R^2 = 0.356$
					N = 177
				4	ŀ

### EXHIBIT D-2

### MEAN COMPLIANCE: INSPECTION WITH ALL LOTS ACCEPTABLE



# EXHIBIT D-3

# MODEL FOR DECREASE IN PROBABILITY OF AN INSPECTION WITH A SEIZURE AND DETENTION: MEAN COMPLIANCE

TYPE OF VARIABLE	VARIABLE	COEFFICIENT	t-VALUE	SIGNIFICANCE	INTERPRETATION
Program Intervention	Previous Action Oral Warning	.17	1.91	.057	Decrease in probability of 17% when action in the previous inspection involved an oral warning
	Previous Action Written Warning	.10	1.85	•066	Decrease in probability of 10% when action in the previous inspection involved a written warning
Control	Percentage of Past Inspection with a Written Warning	.0112	3.84	.000	For each 1% increase in the percentage of past inspections with a written warning, prob- ability decreased 1.12%
	Number of Inspec- tions with a Seizure and Detention in the last 3 years	.09	3.73	•000	For each inspection with a seizure and detention in the last 3 years, there was a decrease in probability of 9%
	Number of Inspec- tions with a Written Warning in the last 5 years	17	3.29	.001	For each inspection with a written warning in the last 5 years, there was an increase in probability of 17%
	Number of Inspec- tions with Trader Education in the last 5 years	•02	1.70	•090	For each inspection with trader education in the last 5 years, there was a decrease in probability of 2%
	Constant	00			$C_p = 7$ $R^2 = 0.211$
					N = 187

### EXILIBIT D-4

### MEAN COMPLIANCE: INSPECTION WITH A SEIZURE AND DETENTION

### PROGRAM INTERVENTION

CONTROL



# EXHIBIT D-5

## MODEL FOR DECREASE IN PROBABILITY OF AN INSPECTION WITH A WRITTEN WARNING: MEAN COMPLIANCE

TYPE OF VARIABLE	VARIABLE	COEFFICIENT	t-VALUE	SIGNIFICANCE	INTERPRETATION
Program Intervention	Previous Action Trader Commitment	.17	2.18	.030	Decrease in probability of 17% when action in the previous inspection involved trader commitment
	Previous Action Seizure and Detention	•18	2.00	.047	Decrease in probability of 18% when action in the previous inspection involved a selzure and detention
	Previous Action Information Letter	•16	1.55	.123	Decrease in probability of 16% when action in the previous inspection involved an infor- mation letter
Control	Number of Inspec- tions with an In- formation Letter in the last 3 years	•58	2.90	.004	For each inspection with an information letter in the last 3 years, there was a decrease in probability of 58%
	Retail	15	2.06	•041	Average increase of 15% for retail establishments
	Number of Inspec- tions with a Selzure and Detention in the last 5 years	.04	1.79	•076	For each inspection with a seizure and detention in the last 5 years, there was a decrease in probability of 4%
	Small	13	1.59	.115	Average increase of 13 for small-size establishments
	Constant	•26			$C_p = 7$
					$R^2 = 0.211$
					N = 187

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# EXHIBIT D-6

# MEAN COMPLIANCE: INSPECTION WITH A WRITTEN WARNING

PROGRAM INTERVENTION

CONTROL



September 1985

# EVALUATION OF INSPECTIONS

# FINAL REPORT

CCAC Program Evaluation Division Audit and Evaluation Branch Bureau of Policy Coordination

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Annex: Report by Thorne Riddell - An Evaluation of Inspection Services at the Bureau of Consumer Affairs

### EXECUTIVE SUMMARY

#### Purpose:

In February 1985, the Minister directed that a study be undertaken of inspection services within the Department.

This study was undertaken:

- o to examine in a practical and balanced manner, potentially promising areas for improving productivity or reducing costs while still maintaining benefits; and
- o to review achievements and current initiatives in this area.

### **Evaluation Findings:**

The study found that the Bureau of Consumer Affairs has already implemented or is in the process of implementing a number of the ideas that are outlined in the report to improve productivity. It further noted that while the Bureau's efforts are to be commended, to date these productivity enhancements have not led to cost reduction.

Eight areas have been identified where further investigation might yield productivity enhancement or cost reduction in the Bureau's activities. These are discussed under the following headings:

- o preventive compliance
- o cost recovery
- o self-regulation and self-inspection
- o privatization of compliance administration
- o tiering and priority setting
- o optimizing inspection plans
- o work methods and standards
- o trade-off analysis.

#### Management Response:

These ideas were discussed in detail with senior management of the Bureau of Consumer Affairs and met with a positive response. In many cases, active review and consideration is currently underway by the Bureau. A list of potential actions has been developed and Bureau management has undertaken to give them detailed consideration and to develop appropriate action plans to be reflected in the 1986/87 MYOP.

### Conclusions and Recommendations

- 1. We recommend that the Bureau of Consumer Affairs be encouraged to undertake the identified work to enhance productivity. All of the recommended work cannot be undertaken at one time. The Bureau should set the priorities for this work and proceed further with those ideas that appear to it to be most promising. As appropriate, any required assistance from the Bureau of Policy Coordination should be anticipated and planned for in annual work plans.
- 2. Any cost reductions which obtain from enhancing productivity in these areas should be retained within the Bureau of Consumer Affairs for new programs or reallocation among sub-activities in that Bureau.
- 3. Monitoring of implementation of these action plans will take place in the course of planned evaluations of each sub-activity according to the regular schedule for program evaluations in the Department.

### EVALUATION OF INSPECTIONS FINAL REPORT

### 1. Background and Purpose of the Study

In February 1985, the Minister directed that a study be undertaken of inspection services within the Department. The terms of reference for this study included the following subject, purpose and scope:

- a) <u>subject</u> the evaluation study would examine inspections in the context of strategies to achieve compliance;
- b) <u>purpose</u> the purpose of the evaluation study was: o to examine in a practical and balanced manner, potentially promising areas for improving productivity or reducing costs while still maintaining benefits; and
  - o to review achievements and current initiatives in this area;
- c) <u>scope</u> the scope of the evaluation study was to include the following sub-activities:
  - o Legal Metrology Weights and Measures
  - o Legal Metrology Electricity and Gas
  - o Consumer Products
  - o Product Safety.

Work on the project began in March 1985. Following a competitive selection process, Thorne Riddell was hired to undertake data collection and analysis. The complete report from Thorne Riddell is included as an annex to this report.

This final report describes the approach employed and its limitations (sections 2 and 3), summarizes the main findings of the Thorne Riddell study (section 4), describes and provides a brief comment on the list of possible actions for productivity improvement and/or cost savings identified in the Thorne Riddell report (section 5), and provides several recommendations (section 6).

### 2. Approach

In order to prepare this evaluation study, it was necessary to develop a good understanding of the nature and role of inspections in each of the four relevant sub-activities; identify major types of productivity increasing or cost reducing measures examined or implemented within the Bureau of Consumer Affairs or in other jurisdictions; and identify specific areas for productivity improvement or cost reduction for each of the four sub-activities. The primary sources of information were program documents, relevant academic literature and interviews with program managers and staff in the Bureau of Consumer Affairs and other jurisdictions.

The evaluation team undertook the following tasks in preparing the evaluation study:

- o reviewed the program documents related to the four sub-activities together with relevant academic literature;
- o prepared a preliminary list of issues;
- o held interviews with managers and staff in Ottawa, Toronto and Montreal;
- o held interviews with officials of seven Government of Canada and two Government of Ontario departments;
- o prepared a paper covering cost effectiveness and productivity measures already put in place together with an identification of broad cost effectiveness and productivity enhancing options;
- o held consultations with sub-activity management on that paper;
- o prepared this report in consultation with subactivity management.

### 3. Limitations

Given the restricted time and budget available for this work, explicit reference must be made to the following limitations of the study:

- o first, interviews were held only at headquarters and in two of the five regions. This has restricted somewhat the perspective available to the study team although we believe that the findings are generally representative for each of the sub-activities examined;
- o second, although inspections were examined in the broader context of the relevant compliance strategies, the focus was definitely on inspections and not on enforcement activities, trader information or other compliance tools;

o third, during the documents review and interviews, significant attention was paid to the benefits and impacts of inspections. However, there was not adequate information readily available to be able to come to firm conclusions about the benefits and impacts of inspections at this time. However, these issues would normally be considered as part of ongoing and planned program evaluations for the four sub-activities.

These limitations should be kept in mind when assessing this report. However, given the scope of the project we do not believe they seriously compromise the validity of the findings or the relevance of the possible action areas.

#### 4. Findings

#### 4.1 Description of Resource Levels

These are about 450 authorized inspection positions spread across the Bureau's five regions. Over the past two fiscal years, resources allocated to inspections, as defined internally, have remained level at about 325 person-years. During this period, workloads have either remained about the same or increased. It must be noted, however, that the four sub-activities have been subjected to considerable constraints, particularly in the area of O&M expenditures.

### 4.2 Cost Effectiveness and Productivity Measures in Place

All four sub-activities have put in place measures to improve cost effectiveness and improve productivity of inspections. These are described in detail in the attached report. In general, these measures involve:

- o the setting of priorities for inspections via tiering;
- o the extension of intervals between inspections where technically warranted;
- o the implementation of management systems which allow a dynamic assignment of priorities as new information comes to light;
- o the assignment of resources toward trader education programs to prevent non-compliance;
- o enhancing the ability of the buying public to detect non-compliance and shop wisely;
- o moving the inspection point as far up in the trade channels as possible;

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- o developing joint inter-regional programs (flagship store concept);
- o negotiating agreements with other departments to delineate inspection responsibilities.

These efforts are commendable and should be continued. However, to date, these productivity enhancements have not led to noticeable cost reduction, at least in the area of manpower costs. Any improvement in efficiency has led primarily to increases in the degree and scope of surveillance and/or compliance rates, but inspection staffing levels have remained essentially level over time. It is unlikely that the Bureau will be able to achieve the economies that would normally accrue from the implementation of various efficiency measures unless a target setting mechanism is put in place in the planning/budgeting system.

### 4.3 <u>Possibilities for Additional Cost Effectiveness and</u> Productivity Improving Measures

Notwithstanding the good work which has already been done to improve cost effectiveness and productivity, not all possibilities in this area have been exhausted. There are additional ideas which merit further consideration. The next section outlines possible actions for productivity improvement or cost savings.

## 5. <u>Possible Actions for Productivity Improvement and/or</u> Cost Savings

### 5.1 Strategies

The literature and documents review, sub-activity interviews and interviews with other departments identified a wide range of possible strategies for productivity improvement and/or cost reduction. Although those strategies covered a range of possibilities, a number of common elements were identified.

In general, we can characterize the main trends and outlooks with respect to productivity and cost savings in the area of inspection and compliance as follows:

a) <u>preventive compliance</u> - preventive compliance includes such actions as trader education and negotiations which are aimed at preventing future non-compliant activities.

- b) <u>cost recovery</u> cost recovery for inspections is most appropriate where inspections provide direct services to traders and are mandatory.
- c) <u>self-regulation and self-inspection</u> in the present context we are considering self-regulation not in the narrow sense, which would eliminate government operated regulation, but rather in the sense of introducing elements of self-regulation or self-inspection within existing regulatory structures.
- d) <u>privatization of compliance administration</u> this refers to the use of private but government licensed inspectors to carry out key aspects of the compliance function.
- e) <u>tiering and priority setting</u> tiering is used to structure firms or products into compliance classes based on such factors as class size or importance, estimates of perceived degree of non-compliance, severity of non-compliance and the consumers' abilities to detect non-compliance with inspection priorities then determined across the compliance classes.
- f) <u>optimizing inspection plans</u> this involves development of inspection approaches which reduce the burden on regulated firms through coordination of inspection activities across departments, development of "flagship store" approaches which minimize the burden on chain stores and so on.
- g) work methods and standards this strategy utilizes up to date work measurement techniques and analysis to identify opportunities for work simplification and improved time utilization.
- h) <u>trade-off analysis</u> trade-off analysis involves the identification and the measurement of benefits gained and lost as resources are shifted from one work element to another.

### 5.2 Specific Action Plans

Within the range of broad possible strategies for productivity improvement and/or cost reduction, the consultant has identified a number of specific possible actions which are set out in seven categories. (See Exhibit 1).

In most cases, these actions involve studies which could be undertaken by Program Evaluation, by Policy

Research, Analysis, and Liaison or by the sub-activities themselves to investigate further the costs, benefits and impacts of specific proposals.

The report as a whole, including in particular the list of possible actions, has been discussed in detail with senior management of the Bureau of Consumer Affairs at headquarters. The response by the Bureau has been most positive and the suggestions have been received with interest.

Given the number and complexity of the possible actions suggested by the consultant, and the costs implied, it is appropriate to give the Bureau time to digest these ideas. Although the timeframe for this study was too short to attempt to develop a detailed action plan for all the points raised, senior management of the Bureau of Consumer Affairs have indicated that some of the potential actions are under active review and that others will be examined and reflected in the 1986/87 MYOP.

### 6. Conclusions and Recommendations

- 1. We recommend that the Bureau of Consumer Affairs be encouraged to undertake the identified work to enhance productivity. All of the recommended work cannot be undertaken at one time. The Bureau should set the priorities for this work and proceed further with those ideas that appear to it to be most promising. As appropriate, any required assistance from the Bureau of Policy Coordination should be anticipated and planned for in annual work plans.
- 2. Any cost reductions which obtain from enhancing productivity in these areas should be retained within the Bureau of Consumer Affairs for new programs or reallocation among sub-activities in that Bureau.
- 3. Monitoring of implementation of these action plans will take place in the course of planned evaluations of each sub-activity according to the regular schedule for program evaluations in the Department.

# Exhibit 1

Summary of Potential Actions

	Potential Actions	Preliminary Study Cost Estimates
1.	Continue current efforts in preventive compliance, tiering and priority setting.	Management Action
2.	Develop enhanced measures sures of performance - i.e. go beyond compliance rate.	
	a) Estimate costs to develop unbiased estimates of Dollars at Risk.	\$20 K
	b) Develop a method to rate the severity of non-compliance.	
	i. Weights and Measures - Judgemental approach	\$20 K
	ii. Product Safety - Reference to existing systems.	\$20 K
	iii. Weights and Measures - Statistical approach.	\$40 K
	iv. Consumer Products - Market research approach.	
	. Ranking study.	\$50 K - \$75 K
	. Conjoint analysis: - to pilot - full sample.	\$50 K - \$75 K \$75 K - \$100 K
In pr Sa:	vestigate cost recovery and ivatization in Product fety.	\$100 к — \$125 к

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3.
## Exhibit 1

## Summary of Potential Actions

4.	Study the feasibility of cost recovery/privatization in Weights and Measures.	\$125 K - \$150 K
5.	Conduct studies to optimize inspection plans.	
	a) Extension of the flagship store concept in Consumer Products.	\$40 K — \$50 K
	b) Estimate feasibility and savings of testing for Electricity and Gas meters seal extension across utilities.	\$35 K
	c) If above feasible, develop outline of administrative system.	\$15 K - \$20 K
6.	Investigate work standards and methods.	
	a) Stage 1: Identification of Opportunities.	\$40 K
	b) Stage 2: Development of standards and procedures in identified areas.	No estimate
7.	Move to a resource allocation system based on the benefit/cost principle.	
	a) Consumer Products.	Wait until measures of performance have been
	b) Weights and Measures.	updated.
	c) Develop an optimal zone inspection policy.	\$30 K <b>-</b> \$50 K

#### AN EVALUATION OF INSPECTION SERVICES AT THE BUREAU OF CONSUMER AFFAIRS

Consumer and Corporate Affairs Canada Ottawa, Ontario

Leon Rucker

ŧ,

Thorne Riddell

July 1985 7516/rw/lm/cp

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#### Terms of Reference Evaluation of Inspections

- 1. Subject: The evaluation study will examine inspections in the context of strategies to achieve compliance.
- 2. Purpose: The purpose of the evaluation study is:
  - . to examine in a practical and balanced manner, potentially promising areas for improving productivity or reducing costs while still maintaining benefits; and
  - . to review achievements and current initiatives in this area.
- Scope: The scope of the evaluation study will include 3. the following sub-activities:
  - Legal Metrology Weights and Measures
  - Legal Metrology Electricity and Gas
  - Consumer Products
  - Product Safety
- Briefing: The Deputy Minister is to be briefed and consulted 4. once the evaluation study is completed in draft form.
- Advisory Committee: An Advisory Committee will be established to 5. assist the evaluation team in carrying out the evaluation study. The Committee will include representation from the Legal Metrology Branch, the Product Safety Branch, the Consumer Products Branch, the office of the ADM, Bureau of Consumer Affairs, the Program Evaluation Division, the office of the Comptroller General and any other department or agency as deemed appropriate by the Chairman. The Director, Audit, Evaluation and Control Branch, will serve as the Chairman of the Advisory Committee.
- Access: The evaluation team is to have reasonable access to all 6. documents and personnel of Consumer and Corporate Affairs as deemed necessary to carry out the evaluation study.
- Timeframe: The evaluation study and reports are to be submitted 7. to the Deputy Minister during June, 1985.

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#### INTRODUCTION

Consumer and Corporate Affairs Canada (CCAC) has retained Thorne Riddell to conduct an evaluation of the inspection function in the Bureau of Consumer Affairs. Inspection is an important element in the Bureau's strategy to achieve marketplace compliance with the complex set of acts and regulations the Bureau has been designated to administer; for purposes of this report we define inspection as the examination of products and devices by CCAC inspectors to verify and ensure this regulatory compliance. At present, there are about 450 authorized inspector positions spread across the Bureau's five regions. The inspection work element itself as defined internally by the Bureau accounts for 325 person-years.

As indicated in the terms of reference shown in Exhibit I-1, the prime focus of the evaluation is "improving productivity or reducing cost while maintaining benefits," i.e.

- What initiatives have been implemented in the recent past or are being implemented to enhance productivity, or reduce cost in the inspection function?
- Are there additional initiatives that might further enhance productivity or reduce cost? And if so, how should one go about assessing these initiatives?

By "cost", we mean direct cost to the federal Treasury. In some cases reducing the net cost to the federal Treasury will simply mean recovering the cost of that activity or transferring it to the private sector. In the short term such a move may not yield any benefit to the economy as a whole. But, it is felt that, in the long term, as long as benefits are retained, a greater reliance on the market mechanism will enhance efficiency in the use of resources.

It should be noted that the purpose of this report is to bring together promising ideas for consideration by management and to provide suggestions and options for action. In other words, the report is a piece of descriptive and analytical work rather than a formal, full program evaluation of inspection. Yet, it may serve as an input to future evaluation.

Following the Highlights described in Chapter II, the body of this report is made up of three chapters:

Chapter III which describes the current situation vis-a-vis the Bureau's inspection function with special focus on productivity and cost reduction initiatives implemented by the various sub-activities within the Bureau.

- Chapter IV where we discuss a set of possible additional initiatives to enhance productivity or reduce costs. These initiatives are drawn from relevant aspects of the inspection work carried out by other federal and provincial government agencies and our own analysis.
- Chapter V where we present a set of actions that could eventually allow the Bureau to exploit these opportunities. These actions are a combination of management initiatives and feasibility studies.

The time frame for our work has been somewhat compressed. As a result, in this report we have limited the descriptive elements of the Bureau's activities. These are available in other documents such as:

- Multi-Year Operational Plans (MYOPS).
- Operational plans.
- "Alternative Compliance Techniques in Use at the Bureau of Consumer Affairs": A report prepared by the Federal Statute Compliance Project of the Department of Justice.

Most of the information presented here with respect to the Bureau's operations and the activities of other agencies with inspection functions was gathered by reading planning documents and through interviews at CCA headquarters and in the regions. Also, we held interviews with representatives of other relevant agencies.

Some points raised in this report are the subject of on going program evaluation in the Consumer Products area. This work is complementary and provides some points of departure which we understand are being pursued in these other studies.

Much of this report's contents has undergone a thorough review by the study committee and we thank them for their help and guidance.

#### HIGHLIGHTS

Over the past two fiscal years, resources allocated to inspection at the Bureau of Consumer Affairs have remained level at about 450 authorized positions. The major area of human resource allocation for inspection is Legal Metrology. Although resources have remained level, the workload has either remained the same or been on the increase. For example, total Weights and Measures device inspections were 261,000 in 1983/84 and 295,300 in 1984/85.

Our review indicates that the Bureau has already implemented, or is in the process of implementing, a number of steps to improve productivity such as:

- The setting of priorities for inspections via tiering.
- The extension of intervals between inspections where technically warranted.
- The implementation of management systems that allow a dynamic assignment of priorities as new information comes to light.
- The assignment of resources toward cooperative education programs to reach as large an audience as possible, and prevent non-compliance before it occurs.
- Moving the inspection point as far up in the trade channels as possible.
- Developing joint inter-regional programs (flagship store concept).
- Negotiating agreements with other departments to delineate inspection responsibilities and prevent duplication of effort.

These efforts are commendable and should be continued. However, to date, these productivity enhancements have not led to noticeable cost reduction. Any improvement in efficiency has led primarily to increases in the degree and scope of surveillance and/or compliance rates, but inspection staffing levels have remained essentially level over time. It is unlikely that the Bureau will be able to achieve the economies that would normally accrue from the implementation of various efficiency measures unless a target setting mechanism is put in place in the planning/budgeting system.

Our contacts with other federal and provincial government agencies with inspection responsibilities showed that many of the concerns and outlooks expressed by the various sub-activities in the Bureau are shared by these agencies as well. Based on these interviews and our own analysis, we have selected six areas where further investigation might yield productivity enhancement or cost reduction in the Bureau's inspection activities. They are:

#### i. Cost recovery

Some segments of the Bureau's inspection work seem to satisfy the conditions needed for recovering their cost via an inspection or licencing charge. Such segments are found in:

- Weights and Measures.
- Electricity and gas.
- Possibly Product Safety if social and legal constraints can be overcome.

#### 2. Self-regulation or self-inspection

Under certain conditions, self-inspection is a viable alternative to direct government inspection. However some degree of government surveillance and monitoring is still required to ensure protection of the public. Self-inspection may ultimately pave the way for self-regulation -- i.e. minimal government involvement.

#### 3. Privatization of compliance administration

Licensing private operators to perform certain inspection functions may be another way of transferring the inspection cost out of the government expenditure burden. For example, we expect that a good proportion of the inspection work carried out by Legal Metrology could be privatized (licensing, accreditation). Another possibility is the transfer of certain compliance administration and enforcement functions to private agencies. This approach might work for certain product classes in the Product Safety sub-activity. But there too, some severe social and legal constraints would have to be dealt with first.

#### 4. Optimizing inspection plans

A number of steps have already been taken to avoid duplication of inspection services. However, there are some indications that the level of coordination between regions to prevent multiple inspections of the same products or outlets of the same chain within the Consumer Products sub-activity is uneven.

In Electricity and Gas we believe that there are possibilities for economies by pooling meter populations across utilities and sampling from these populations for purposes of seal extension.

#### 5. Work methods and standards

A number of measures have been implemented in the Bureau in the area of work simplification. Also, we understand that the work standards used to load resources against tasks in Weights and Measures have been developed from actual observation. In other sub-activities, work standards have been developed from historical data.

A review of further opportunities for work simplification and an audit of present work standards might yield additional efficiencies and cost saving.

#### 6. Trade-offs

In order to achieve economies while maintaining key benefits, the Bureau should lay the ground work for a management decision system based on trade-offs. Such a system implies a listing of projects or functions, their cost, and relative weightings of the potential loss in benefits if these projects are discontinued or curtailed. With such a system in place, the Bureau will be in a position to decide where projects or functions can be cut back if a minimal loss in benefits is acceptable. Alternately, the Bureau may shift resources between projects or even sub-activities to achieve overall maximal benefit with a given set of resources.

We have applied the general principles listed above over the full spectrum of inspection activities at the Bureau and have developed a list of potential actions. This list is a combination of management actions and feasibility studies.

The list is summarized in Exhibit II-1. The cost estimates shown in this exhibit are preliminary estimates to indicate a cost range assuming external consultants are retained to do the staff work.

We recommend that the Department begin to allocate funds to conduct this important work.

## EXHIBIT II-I

Page 1

#### A LIST OF POTENTIAL ACTIONS FOR EFFICIENCY ENHANCEMENT OR COST REDUCTION

## BUREAU OF CONSUMER AFFAIRS

	Continue current efforts in preventive compliance, tiering and priority setting. Ma Develop enhanced measures of performance - i.e. go beyond compliance rate. a) Estimate cost to develop unbiased estimates of Dollars at Risk. b) Develop a method to rate the severity of non-compliance. i. Weights and Measures - Judgemental approach. ii. Product Safety - Reference to existing systems. iii. Weights and Measures - Statistical approach. iv. Consumer Products - Market research approach.		Cost Estimate		
1.	Continu complia	ne current efforts in preventive Ince, tiering and priority setting.	Manag	ement action	
2.	Develor - i.e. go	o enhanced measures of performance beyond compliance rate.			
	a) Es	stimate cost to develop unbiased stimates of Dollars at Risk.	\$	20,000	
	b) D of	evelop a method to rate the severity [ non-compliance.			
	i.	Weights and Measures – Judgemental approach.	\$	20,000	
	ii.	Product Safety - Reference to existing systems.	\$	20,000	
	ii	i. Weights and Measures - Statistical approach.	\$	40,000	
	iv	<ul> <li>Consumer Products - Market research approach.</li> </ul>			
		. Ranking study.	\$	50-75,000	
		<ul> <li>Conjoint analysis:</li> <li>to pilot</li> <li>full sample.</li> </ul>	\$ \$ 7	50-75,000 5-100,000	
3.	Investig in Prod	ate cost recovery and privatization uct Safety.	\$10	0-125,000	
4.	Study ti privatiz	he feasibility of cost recovery/ zation in Weights and Measures.	\$12	5-150,000	
5.	Conduc	t studies to optimize inspection			

EXH	IBIT	<b>II-1</b> (cont.)		Page 2
	a)	Extension of the flagship store concept in Consumer Products.	\$	40-50,000
	ь)	Estimate feasibility and savings of testing for Electricity and Gas meters seal extension		
		across utilities.	\$	35,000
	c)	If above feasible, develop outline of administrative system.	\$	15-20,000
6.	Inve	stigate work standards and methods.		
	a)	Stage 1: Identification of Opportunities.	\$	40,000
	ь)	Stage 2: Development of standards and procedures in identified areas.	N	lo estimate
7.	Mov the	e to a resource allocation system based on benefit/cost principle.		
	a)	Consumer Products.	Wait	until measures
	ь)	Weights and Measures.	be	en updated.
	c)	Develop an optimal zone inspection policy within Weights and Measures.	\$	30-50,000

**.** .

#### THE BUREAU HAS PUT IN PLACE A VARIETY OF EFFECTIVENESS AND PRODUCTIVITY MEASURES

In all areas of inspection, even those inspections where frequency is mandated by statute, the Bureau of Consumer Affairs has put in place a number of effectiveness and efficiency measures. In general, these measures involve:

- The setting of priorities for inspections via tiering.
- The extension of intervals between inspections where technically warranted.
- The implementation of management systems that allow a dynamic assignment of priorities as new information comes to light.
- The assignment of resources toward trader education programs to prevent non-compliance before it occurs.
- Enhancing the ability of the buying public to detect non-compliance and shop wisely.
- Moving the inspection point as far up in the trade channels as possible.
- Developing joint inter-regional programs (flagship store concept).
- Negotiating agreements with other departments to delineate inspection responsibilities.

#### A. RESOURCES ALLOCATED TO INSPECTION HAVE REMAINED LEVEL

Exhibit III-1 shows that human resources allocated to inspection have remained essentially level since 1983/84. On the other hand, workload has either remained the same or been on the increase. For example, total Weights and Measures device inspections were 261,000 in 1983/84 and 295,300 in 1984/85.

Sub-Activity	<u>-</u>	1983/84	1984/85	1985/86
Product Safety	Inspection, PY*	N/A	N/A	N/A
	Positions**	N/A	27	29
Consumer Products	Inspection, PY	91.2	88.6	N/A
	Positions	N/A	123	120
Weights and Measures	Inspection, PY	154.3	156.5	N/A
	Positions*	N/A	209	205
Electricity and Gas	Inspection (incl. installations), PY Positions	80.1 N/A	76.1 95	N/A 104
Sub-Total	Inspection, PY	325.6	321.2	N/A
	Positions	N/A	454	458

#### EXHIBIT III-1 Bureau of Consumer Affairs - operational data summary

\* Work Element

**\*\*** Authorized positions

#### Source: Bureau of Consumer Affairs Workplan, 1984/85 CCAC Management Services Branch

Exhibit III-1 shows both person-years in terms of the inspection work element as defined by the Bureau and authorized inspector positions. These data were not available for all years in the table; nevertheless, since both inspection PY and inspection positions were available for 1984/85, the data support the conclusion of flat resource level. Exhibit III-1 shows that the major area of resource allocation as far as inspection work is concerned is Legal Metrology: Weights and Measures and Electricity and Gas meters.

The inspection person years differ from the authorized number of inspector positions for two basic reasons:

- a) Staffing is not always up to authorized levels.
- b) Field inspectors who carry out the functions of each sub-activity in the various regions perform a variety of other work elements:
  - Enforcement.
  - Sample pick-up.
  - Education, etc.

#### B. ALL SUB-ACTIVITIES WITHIN THE BUREAU HAVE DETAILED PLANNING SYSTEMS

For all sub-activities in the Bureau, a detailed work planning and control system has been put in place to ensure that effort is expended at the field level in a manner that corresponds to the best assessment of priorities by both headquarters staff and regional management.

In general, each area of required compliance entrusted to the Bureau is viewed as a cell in a multi-dimensional array. Typical dimensions of this array are:

- Item type.
- Trade level.
- Geographic area.

In some cases, some of these dimensions may be further expanded into subdimensions and therefore sub-cells. Based on past experience, concern expressed by the public and potential social cost of non-compliance, high priority cells are identified and a level of inspection effort assigned to these cells. This process is first carried out at Headquarters and then refined and translated into a resource allocation plan at the regional level. Regional plans are reviewed and commented upon by Headquarters staff before finalization. The regional plans are then rolled up into a national plan. As the year unfolds, activities are carried out as planned. But as new situations arise, resources are redirected from low priority areas to face up to these emergencies.

In the following sections, we will review the strategic elements of the management systems in each sub-activity with special emphasis on measures implemented to date to enhance the effectiveness of inspections as a compliance tool and achieve greater efficiency in the utilization of resources available for inspections.

#### C. INSPECTION STRATEGIES IN PRODUCT SAFETY

The objective of the Product Safety sub-activity is to reduce the potential for illness, injury or death due to product-related hazards.

The sub-activity aims to achieve this objective by administering the Hazardous Products Act and Regulations, and through public information.

Major techniques used for compliance by the sub-activity are:

- Voluntary actions.
  - Negotiation of voluntary agreements.
  - Voluntary product removal and recall.
  - Consultation.
  - Negotiated standards.
  - Moral suasion.
  - Information or warning letters.
  - Show-cause hearings.
- Sample pick-up and analysis.
- Seizures.

Prosecutions.

Information programs.

- At the consumer level.
- At the trade level.
- Third-party Certification/Monitoring (e.g. CSA).

Inspections are used to collect evidence of compliance or non-compliance, to verify compliance and to deter non-compliance. Inspections support the various compliance techniques listed above to varying degrees. The workplan of the sub-activity is built around the concept of projects. The majority of these projects relate to a product class (e.g. toys, hockey helmets). Overall, these projects are grouped into five categories: chemicals, flammables, general, mechanical/electrical and information projects. Most of the inspection work is directed to the discovery of specific products that are not in compliance with the regulations. In order to achieve maximal leverage on inspection time, Product Safety inspections are directed primarily at the manufacturer level. Imports, however, create a problem and Customs Canada cooperate to the extent of their resources. Containerized goods, in particular, present a significant problem.

The sub-activity priority system for products is essentially a tiering mechanism based on:

- The product: its potential for mishap and the possible severity of the mishap.
- The consumer groups: children followed by older people have the highest priority.
- Industry/manufacturer: track record of each given supplier or groups of suppliers.
- Technical factors: the relative ease or difficulty of compliance.

Of all sub-activities, Product Safety is the most prone to sudden changes in priority. The program has been expanding steadily as a result of rising public expectations. In 1969 the Branch was responsible for six items. Now about 70 different products come under the regulations. As a result, the workload has tended to increase over time.

In total, there are about 30 Product Safety Inspectors coast-to-coast. Their work differs from that of inspectors in other sub-activities. Only a small proportion of their time is devoted to a pure inspection work component. The major proportion of their time is occupied in sample pick up, information discrimination and enforcement activites. Based on discussion with planning personnel at Headquarters, time devoted to inspection and information is 8 PY and 6 PY respectively.

At present, the Product Safety sub-activity generates essentially no revenue. Since Product Safety like all other sub-activities within the Bureau operates within the realm of criminal law the opportunities for charging fees are limited. The rationale is that a service is rendered to the public at large and charging a manufacturer for inspecting or testing his product when others do not have to submit to the same process appears discriminatory. Assessing the effectiveness of the sub-activity's work is difficult. By necessity, the samples examined in the Product Safety lab or in the course of inspections are selected on the basis of some priority process that includes an element of suspicion of non-compliance. Therefore, the non-compliance rate observed by the sub-activity is biased. An unbiased estimate could only be yielded by statistical sampling. Another method is to use an epidemiological approach (i.e., history plus other data) and analyze mishaps due to unsafe products in Canada. This approach also presents many issues:

- Some unsafe products may have a delayed effect.
- One must differentiate between acute and chronic problems.
- ► To separate product misuse from unsafe product features in determining the cause of mishaps is a difficult exercise. If court cases are involved, the evidence is presented in such a way as to support the legal position of the parties involved.

At this stage, the concentration on the acquisition of external information by the sub-activity has not been so much to support the development of measures of effectiveness as to pragmatically track down and understand the dangers inherent in products sold in the Canadian marketplace. In particular, the subactivity has initiated the CAIRE data base to obtain data on accidents supplied by five hospitals. Since three of these are children's hospitals, the sub-activity is able to get fairly good information on hazards facing children, but at the cost of some bias in the sample. In any event, the number of hospitals generating data for the CAIRE system is small. In order to have a data base which would be representative at the national level, the number of hospitals would have to be increased at least four-fold, as these hospitals would have to be chosen on either a random or a stratified-random basis.

In order to improve its priority setting and resource allocation, the subactivity is going through a complete overhaul of its MIS. In particular, coded records dealing with accidents and complaints are being collected with the view to extracting these data along a variety of dimensions:

- Product.
- Brand.
- Size/style.
- Geographic location.
- Manufacturer/importer/distributor.
- ► Etc.

Extracts from this data base should enhance the setting of inspection plans via the identification of problem areas.

As in other sub-activities, the last few years have seen a shift from corrective to preventive programs to the point where such programs have now become a major portion of the sub-activity's endeavors:

- Working with manufacturers/importers/retailers to educate them with respect to product safety.
- Educating consumers to recognize unsafe products and even how to use potentially dangerous products in a safe manner.
- Enhancing children awareness of potential product hazards.
- Working with industry and standards setting bodies (CSA, etc.) to arrive at mutually agreeable standards.

The delivery of such programs combined with the deterent effect of inspections and other enforcement procedures have made Canada a country with a remarkably good record in the area of product safety.

#### D. INSPECTION STRATEGIES IN CONSUMER PRODUCTS

#### 1. General description

The following extract from the 1984/85 to 1988/89 MYOP for the Consumer Products sub-activity describes this organization and its programs:

#### 1. Description of Role and Organization

Consumer Products role is to identify, control and prevent product mis-representation in the marketplace and to ensure that adequate product information is available to facilitate effective consumer choice. The subactivity enforces legislation and administers voluntary programs applicable to foods, textiles, precious metals and prepackaged non-food consumer items involving 300 products and 40,000 brands which have an estimated annual consumption of \$50 billion. It is responsible for the planning, development and administration of several Federal Acts with supporting regulations as well as voluntary programs which concern the consumers' rights to information, assistance and protection. These activities encompass the packaging, labelling, quality, quantity, composition and advertising of consumer goods. Designed in the interests of protecting consumers, the regulations and programs also contribute to fairness, equity and the orderly conduct of business and as such as of value to business enterprises competing in the marketplace.

A headquarters staff of 35 is responsible for program development and design, monitoring, evaluation, regulatory review, consultation with interested groups, and the provision of functional and technical advice to the field. It also approves food advertisements for radio and television prior to airing and examines labels in relation to regulatory requirements.

A field staff of 240, consisting primarily of generalist inspectors supported by product specialists, plans and implements a compliance strategy directed to noncomplying products found at the manufacturing, import, wholesale and retail trade levels. Elements of the compliance strategy include inspection, trader education, sample pick-up and analysis, responding to complaints and enquiries, conducting label and advertising reviews and carrying out seizures and prosecutions. In addition, the field component is responsible for input to policy and program development, inspector training and the interface between the Department and the public on matters of sub-activity concern.

- 2. Strategic Objectives
  - i) To protect against product mis-representation through detection, control and prevention.
  - ii) To enhance the ability of the consumer to differentiate among product choices.

#### 3. Legislation administered

The sub-activity has sole responsibility for the development and administration of the Consumer Packaging and Labelling Act, the Textile Labelling Act, the Precious Metals Markings Act and the National Trade Mark and True Labelling Act. It is responsible for the Food and Drugs Act provisions relating to economic fraud in foods (e.g. packaging, labelling and advertising). Health matters pertaining to foods, drugs, cosmetics and medical devices under this Act are the responsibility of Health and Welfare Canada. Consumer Products, through formal agreements, administers the Agricultural Standards Act (AC) and the the Fish Inspection Act (F&OC) at the retail level of trade; responsibility for this legislation and inspection at all other trade levels rests with the respective parent departments. In addition, the requirements of 21 Provincial Acts and Regulations respecting the grading and sale of agricultural and fish products at the retail level are included in the program.

One might add that the sub-activity is not only a benefit to consumers. It also ensures equity in trading practices by ensuring that no trader can achieve an unfair advantage over competition through packaging and labelling practices. In particular, the consumer product regulations -- as well as all other regulations within the Bureau -- protect Canadian manufacturers position in the domestic market from potentially unfair practices by off-shore competitors.

#### 2. Management of the inspection function

The historical resource summary shown in the sub-activity MYOP referred to earlier yields these data:

Person-years for inspection for the past three years have remained essentially constant. Within this ceiling, inspection effort is prioritized based in great part on the "Dollars at Risk" concept. "Dollars at Risk" is defined as:

(Per cent non-compliance) x (\$ consumption) x (product/problem seriousness factor)

Exhibit III-2 shows the Dollars at Risk listing contained in the subactivity Operational Workplan for 1985/86.

Although dollars at risk is a quantity, it is intended to indicate only a ranking of concerns vis-a-vis the possible impact of non-compliance for various product classes, not an actual dollar amount of potential loss.

"Dollars at Risk" as it now stands is deficient to some extent:

- In the Consumers Products area, many elements of noncompliance have a social impact that is difficult to measure or relate to the economic value of the article that is affected.
- The per cent non-compliance of the formula is based on observations made by the sub-activity in the course of directed inspections, not as a result of a representative sampling of a standard basket of goods. As a result, multiplying this observed non-compliance rate by the total dollars spent on a particular item could yield an improper rank for this item in the "dollars at risk" ranking. To obtain an unbiased estimate of per cent non-compliance would require a major statistical sampling effort. (The same applies to Product Safety).

Rank	Product Class	D Ris	ollars at sk (\$000's)
1	Women's wear	\$	212,473
2	Dairy products	-	206,486
3	Grain and bakery products		195,642
4	Fresh fruits and vegetables		167,535
5	Non-alcoholic beverages		150,859
6	Alcoholic beverages		134,751
7	Entertainment articles		132,385
8	Fresh and frozen meats		130,312
9	Canned, frozen, dehydrated fruits and vegetables,		
	honey and maple		129,396
10	Men's wear		125,835
11	Major household textiles		116,509
12	Cosmetics and personal care supplies		65,970
13	Household furnishings and equipment		58,846
14	Canned, processed meat and poultry		54,009
15	Smokers' products		53,259
16	Freshwater and marine foods		52,931
17	Clothing accessories		49,756
18	Household cleaning supplies		33,229
19	Precious metal articles		32,075
20	Party foods		30,988
21	Fur garments		30,544
22	Home improvement		28,274
23	Puddings, gelatin desserts, spices and flavourings		23,007
24	Paper and plastic products		19,355
25	Fats and oils		14,945
26	Fresh, Irozen, BBQ, poultry		14,170
2/	Piece goods and notions		12,326
28	Infant's and children's wear		11,422
27	Pet supplies		11,12/
20	Fage and eag products		7,818
22	Leges and egg products		J,717 5 922
22	Specialty foods		J,0JZ
3/1	Eur trimmed articles		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
74	r di-trimmed at ticles	·	
		Ş :	z,319,571
	Food		1,311,503
	Textiles		533,186
	Precious metals		62,619
	Non-food		412,263
		\$	2.319.571
		¥ '	- , , 1

## EXHIBIT III-2 Consumer Products Branch — priority list, 1985/86

	•	Persor	-years
	1983/84 Actual	1984/85 Planned	1985/86 Planned
Inspection	67.5	70.5	69.4
Total Direct	148.6	153.5	152.3
Total Indirect	80.7	79.0	82.9
Overhead	48.7	42.5	40.0
Total Authorized:	278.0	275.0	275.2

In determining what and where to inspect Consumer Products also uses historical establishment compliance rate. This input is one of many provided by the new Management Information System that has just been put on line. This system will also enable the sub-activity to refine existing indicators.

The overall inspection workplan is developed within a 12-cell matrix:

- Three rows for trade level:
  - Manufacturer.
  - Importer/wholesaler.
  - Retail.
- Four columns for commodity groups:
  - Manufactured and retail food.
  - Textile.
  - Precious metals.
    - Non-food packaged.

Total time is allocated to these cells based on priority (Dollars at Risk, etc.). The plan is then rationalized and expanded into 34 product classes. In one region a referral system has been put in place to go to the source (manufacturer/importer) for each item.

Whenever possible, preference for inspection is given to the higher trade levels. But, for some products, Consumer Products is limited to retail inspections only, by agreeement with other government departments.

The Branch feels that inspections at the retail level cannot be ignored because the retail level is the ultimate trader-consumer interface. Also,

inspectors take advantage of problem-oriented inspections at the retail level to conduct random checks on other items.

The Branch has worked out a number of agreements with other departments to delineate areas of responsibility: for example, with Agriculture Canada (AC) and Fisheries and Ocean Canada (F&OC). In both cases, Consumer Products is responsible for inspections at the retail level. Relevant information is then passed on to AC and F&OC, who in turn do the same for Consumer Products at the manufacturer or packer level.

Most inspectors in Consumer Products are generalists. They need to apply judgement as they carry out their work. At times, they are assisted by specialists. The generalists conduct inspections at all trade levels with a checksheet of a list of about 200 products: Form CCA 1566. This form becomes an inspection report. A copy is left with the trader and the results of the inspection are input to the MIS to enrich the data base. The time required for the inspection is also input into the work measurement segment of the data base.

The compilation of these reports leads to the computation of compliance rates and ultimate determination of priorities. The work measurement section of the MIS leads to estimation of standard times for the various inspection tasks. Whether such work standards might be improved will be discussed in Chapter IV.

In addition to the tiered priority system described earlier, a good deal of management effort in recent years has gone toward enhancing effectiveness in the use of resources available to achieve compliance. For example:

- ▶ Whenever possible working at client headquarter level with manufacturers, importers and retailers.
- Working through industry groups (CMA, GPMC) to achieve compliance.
- When a particular brand is captured for inspection at a higher level of trade, instructing field inspectors to skip inspections of this item at the retail level.
- Working out agreements with other federal or provincial departments where there is overlapping jurisdiction to prevent a multiplicity of inspections. In some cases, this means carrying out inspections under shared legislation. In other cases, non-CCA inspectors administer CCA legislation.
- Educating consumers either directly or through consumer groups to make them into more discriminating buyers.
- ► Taking advantage of the centralized structure of much of Canadian merchandising via the Flagship store concept (i.e. for

each major merchandising organization, a store that carries all items sold by this company is selected and the region where it is located inspects it; e.g. The Bay in Toronto, Zeller's in Montreal). This idea, of course, can be expanded further.

Working with specific trade groups to develop voluntary guidelines (e.g. gemstones and diamonds).

To date, increased efficiency achieved through these measures has been translated into new programs and/or higher compliance rates.

It should be noted that the Consumer Products sub-activity faces a dynamic situation: new products are constantly being introduced and regulations have to be updated accordingly. Every two years, the Branch carries out a regulatory review to ensure that regulations are up-to-date.

At present, in addition to refining and updating existing programs, the Branch is looking at a national training program for inspectors. By achieving uniformity across regions, it will become easier to manage human resources effectively. Also, client discontent as a result of lack of uniformity in the application of regulations will be minimized.

At present, the sub-activity generates little revenue. A one-time fee is collected for textile labelling and the Precious Metals program generates some revenue. Fines collected as a result of prosecutions under CCA regulations are not credited to the Department. The sub-activity is obviously in the difficult situation that inspections are not mandatory; therefore one cannot justify charging for this work. Even the mandatory reviews of TV and radio food advertisement is done free of charge because print ads need not be pre-cleared. This issue is discussed further in Chapter IV.

The possibility of certification for self-policing at the retail level has also been investigated, but the Branch reports that it was partially implemented by the trade but abandoned. This issue is also discussed further in Chapter IV.

#### E. INSPECTION STRATEGIES IN WEIGHTS AND MEASURES

The Weights and Measures sub-activity, together with Electricity and Gas makes up Legal Metrology. This Branch differs somewhat from the rest of the Bureau in that its prime concern is not just consumer protection but equity in <u>all</u> trade transactions based on measurement.

The sub-activity is responsible for administering the Weights and Measures Act and some quantity provisions of the Consumer Packaging and Labelling Act and other Acts. Much of the workload in Legal Metrology is the result of mandated or regulated inspections and other activities such as calibration.

All weighting and measuring devices used for trade must be approved at the design or prototype stage (device approval). In addition, all individual scales or measuring devices that will be sold to traders for use in commerce have to be inspected either at the factory or warehouse or in situ (initial inspection).

There are two major types of field inspections:

- Zone inspection: these are general in nature and planned by geographic zone.
- Control inspection: these concentrate on trade group or class of device where real and significant problem areas are suspected.

Commodities and services that are provided on the basis of measure are also inspected periodically to verify that they are measured and priced accurately. Much of this work involves the inspection of commodities packaged for industry and institutions. Commodities packaged for retail or bought and sold in bulk are also inspected to ensure their accuracy. In addition, services that are provided on the basis of weight, volume, distance and time are examined periodically.

Exhibit III-3 is a reproduction of an exhibit in the CCA Operational Workplan for 1985/86. It shows that approved resources in Weights and Measures increased in 1983/84 over 1982/83 and also in 1984/85 to reach the authorized level of 335. The total increase over these two years was 12.4%. But the number of devices inspected increased by 13%. There was also an increase in compliance rate from 74% to 82%; and a further increase is anticipated in the future to a ceiling of 88%. Recent development in the area of electronic weighting devices has resulted in a greater accuracy and stability of calibration of these devices. On the other hand, the inspection task of such devices and their price tag printing attachments has become more complex.

Exhibit III-4 is extracted from the 1984/85 MYOP for the sub-activity. The work elements that are directed to inspection or closely related to inspection are:

- Device inspections.
- Commodity/service inspections.
- Standards calibration.
- MDO and inspection support.
- Travel.

## EXHIBIT III-3 Statistical overview — Weights and Measures

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		14,551	14,786	14,719	14,719	
11,168	12,962	14,450	15,181	14,974	15,043	
	+16.1%	+11.5%	+5.1%	-1.4%	+.5%	
		339	339	339	339	
297	316	335	335	335	335	
:	+6.4%	+6.0%	01	0%	01	
247,000	297,000	328,000	335,000	340,000	345,000	
	+20.2%	+10.4%	+2.1%	+1.5%	+1.5%	
\$21.93	\$21.68	\$21.91	\$22.32	\$21.80	\$21.69	
	-1.1%	+1.1%	+1.9%	-2.3%	5%	
74%	77%	82%	87%	88%	885	
68%	75%	901	90%	90%	90%	
	<ul> <li>μγ ζ Αμ ζ 1982 8 3</li> <li>11,168</li> <li>297</li> <li>247,000</li> <li>\$21.93</li> <li>74%</li> <li>68%</li> </ul>	PY 2         PY 1         AP 1           1982 8 3         1983 84           11,168         12,962           +16.13         +16.13           297         316           +6.43         +6.43           247,000         297,000           +20.23         \$21.68           -1.13         -1.13           743         775           683         753	$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$\begin{array}{c c c c c c c c c c c c c c c c c c c $	

- 23 -

	1984/85	1985/86	1986/87	1987/88	1988/89
Total PY's Authorized	335	335	335	335	335
Total PY's Available	287	287	287	287	287
Direct Work Elements					
<ul> <li>Program developmer</li> <li>Device inspections</li> <li>Commodity/service</li> </ul>	nt 6 74	6 73	6 73	6 73	6 73
inspections - Standards calibration - Device approvals - MDO and inspection	6 n 10 4	5 11 4	6 11 4	6 11 4	6 11 4
support - Travel - Other direct	37 37 24	37 37 23	37 37 22	37 37 22	37 37 22
Total Direct:	198	196	196	196	196
Indirect Work Elements:					
<ul> <li>Program managemer and support</li> <li>Training and</li> </ul>	67	68	68	68	68
development Total Indirect:	<u>22</u> 89	<u>23</u> 91	<u>23</u> 91	<u>23</u> 91	<u>23</u> 91
TOTAL ALL WORK:	287	287	287	287	287

## EXHIBIT III-4 Extract from 1984/85 MYOP -- Weights and Measures (resource deployment by major work elements in person-years)

1.

As a result, the approximate PY's allocated to inspection according to this MYOP are:

1984/85	1985/86	<u>1986/87</u>	<u>1987/88</u>	<u>1988/89</u>
164	163	164	164	164

Exhibit III-5 shows a breakdown of the inspection workload as well as compliance rates shown in the 1984/85 MYOP. Since the overall compliance rate shown in Exhibit III-3 was 82% for 1984/85, we must assume that the target compliance levels for 1984/85 shown in Exhibit III-5 were achieved.

With about 600,000 devices in Canada at present, Exhibit III-5 shows that every device is inspected about once every two years (for grain elevators, the frequency is once a year by statute). This exhibit also shows that about 70% of the inspections are devoted to zone inspections. This activity occupies 65% of inspector time. The reasons for zone inspections are:

- a) To collect device population data.
- b) To improve compliance levels through a greater degree of visibility.
- c) To bring devices that are found to be in non-compliance into compliance.

The Branch feels that it is difficult to achieve objective a) above via sampling because the population is highly heterogenous.

In preparing its workplan for control inspections, the sub-activity uses a priority scheme approach. The main factor used for setting priorities is: the perceived or suspected problem with a particular device or level of trade.

The respective roles of the regions and headquarters in preparing operational plans resemble the process described under Consumer Products.

The 1984/85 MYOP indicates revenues for this sub-activity at \$1.1 million in FY 1983/84 and \$2.0 million in FY 1987/88. This is fee revenue, in addition to any fines collected via the Consolidated Revenue Fund and not credited to the sub-activity. With a total expenditure level for PY, O&M and Capital of close to \$15 million, this revenue is less than 15% of resources expended.

At present, the Branch is considering the introduction of these measures to enhance overall effectiveness and efficiency:

a) Licencing: Empower certain service companies to conduct routine inspections and report that adjustments have been made to devices in the field. This concept can also be extended to companies that manufacture devices.

	FY 1984/85	1985/86	1986/87	1987/88	1988/89
Device inspections ('000	)				
- Initial - Zone - Control	54 233	46 231	50 210 30	50 200 40	50 190 50
- Other	26	34	35	35	35
Total Device Inspections	s 328	325	325	325	325
Commodity/Service Insp (establishments)	ections 4,700	4,500	5,000	5,000	5,000
Standards Calibrations (000)	74	60	60	60	60
Device Approvals	320	30 <i>5</i>	320	320	320
Compliance Rates (%)					
<ul> <li>Small devices</li> <li>Heavy duty device</li> <li>Commodities</li> </ul>	85 s 80 80	90 85 85	90 87 87	90 87 87	90 87 87

# EXHIBIT III-5 Quantified operational objectives (1984/85 MYOP Weights and Measures)

- b) Changes in fee structure to achieve a 45% increase in total revenue by 1986/87.
- c) Ticketing: Decriminalize infraction proceedings.

The timetable for testing or implementing a) and c) has not been spelled out.

#### F. ELECTRICITY AND GAS

The Electricity and Gas sub-activity is responsible for ensuring accurate measurement and equity in trade of electricity and gas. The mandate and work of the sub-activity has its basis in the Electricity and Gas Inspection Act and related Regulations.

The sub-activity attempts to achieve its objectives via five principal areas of operations:

- Type approval.
- Calibration of standards.
- Initial inspection and seal extension.
- Installation inspection.
- Expert investigation and arbitration.

Type approval involves work with a manufacturer to ensure that a new meter design meets all regulatory requirements.

Initial inspection and seal extension is the testing of batches of meters sometimes on a sampled basis, and subsequent sealing of these meters against tampering.

Installation inspection usually involves the field examination of a complex metering installation to ensure that all meters and ancillary equipment are correctly installed.

Expert investigation is concerned with the resolution of disputes.

Resource deployment is shown in Exhibit III-6, extracted from the 1984/85 MYOP. In 1984/85, about 75 PY were allocated to inspection or inspection-related work.

Exhibit III-7 shows the most up-to-date resource level plan submitted to us. From 1983/84 on, it indicates level staffing -- a more or less steady workload and a steady compliance rate of 91%. (This rate is an average taken over a variety of meter types.)

		1983/84			1984/85		
		% of			% of		
	ΡΥ	Avail.	Number	РҮ	Avail.	Number	
Authorized Available	154.7			147.8			
Direct							
Electrical Inspection	35.2	23%	1,167,100	34.0	23%	1,240,270	
Electrical Installations	10.5	6%	10,908	8.2	6%	8,170	
Gas Inspections	20.5	13%	860,619	20.1	14%	851,358	
Dispute Tests	15.0	10%	15,938	12.5	8%	13,180	
Sub Total	81.2	52%	2,054,565	74.8	51%	2,112,978	
Education Inspection	5.3	4%		5.3	3%		
Travel Direct	12.0	8%		11.5	8%		
Other Direct	7.9	5%		8.6	6%		
Total Direct	106.4	69%		100.2	68%		
Indirect							
Management Support	40.7	26%		38.3	26%		
Timing and Development	7.6	5%		9.3	6%		
Other							
Total Indirect	48.3	31%		47.6	32%		
Total Time	154.7	100%		147.8	100%		

EXHIBIT III-6 Resource deployment by major work elements — electricity and gas (1984/85 MYOP)

Source: 1984/85 Electricity & Gas MYOP

## EXHIBIT III-7 Electricity and gas resource level plan - 1985/86 operational plan

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PHILINAM CONSUMER & CORPORATE OPERATIONAL PLAN	1985 1986		[][ PAH]N Mihistei	Cons	umer and Cor	porate Affai	
APPAIKS Concumer Affairs			ſ	Fur IBusk Only A. Curdye exclusit du CI			
LEMINI DE PLANIE LATION			Ø storig't oats		Late	f'ays	
SUBJECT STATISTICAL OVERVIEW ELECTRICITY & GAS CBIEL AMERCU STATISTIQUE			l, rase clic de	255411 		1,1 134	
DE SC Hall I vara	64.5 - AP 2 1482 <b>83</b>	441 441 178384	.LV AC 1984 85	Upcoming year Annice financière Solvante 1983-86	Praining year Annee de pranslication 1986 87	Praining year Annie Cite Granification 2 1982-88	
IJ FINANCIAL RESOURCES 8 (000's) RESSOURCES FINANCIERES (an militer de duiters)							
A) Fall reference levels Nireaux de référence de l'aulumne			8,650	7,965	7,932	7,932	
B) Proposed spring reference levels Niveaux de référence du printemps proposé	7,444	7,930	8,665	10,554	8,122	8,415	
—year Guer year chango (%) —		+6.5%	+9.3%	+21.8%	-23.0%	+3.6%	
2) PERSON-VEARS ANNEES-PERSONNES							
Aj Fali relerençe levels Niveaux de réference de l'automne			193	193	193	193	
Bj Proposed spring reference levels Nivesum de référence du printemps proposé	206	193	193	193	193	193	
— year over year change (%) — changement d'année en année (%)		-6.3%	0%	0%	0%	01	
3) RESULTS (where quantifications are applicable) Resultats (l'orsqu'ils peuvent être quantifiés)							
year over year change (%) changement d'année en anuée (%)					,		
Inspections - # of E&G meters & gas installation	1,896,000	2,031,000	2,105,000	1,891,000	1,892,000	1,912,000	
3 change		+7.1%	+36\$	-10.2%	01.	+1.15	
Cost per inspection	\$2.54	\$2.25	\$2.33	\$3.16	\$2.43	\$2.49	
3 change		-11.4%	+3.6%	+35.6%	-23.1%	+2.5%	
Compliance rate	93%	93%	912	91%	91%	91%	
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Exhibit III-7 shows that the total expenditure level is expected to stay between \$8.0 and \$8.5 million per year through 1987/88. A temporary increase of about \$2 million was expected in 1985/86 due to a high pressure facility. This item has since been removed from the budget.

Yearly revenue for electricity and gas is slightly over \$1 million per year, or 12% of total expenditures. It is worth noting that some fees had not changed since 1909 (e.g. 0.60¢ for a gas meter). But, as a result of fee increases, E&G revenue will double in 1985/86.

A major productivity measure introduced by the Branch some years ago has been the increase of the period for seal extension on domestic electricity meters. Whereas checking for seal extension was done 8 years after initial verification, it is now done 12 years after the initial verification. We understand that the process for initial verification and seal extension of domestic electricity and gas meters is as follows:

	Initial Verification	Extension
Electricity	12 years	6 years (4 yrs if conditional)
Gas	7 years (full population check)	4 years

The reason for the more stringent inspections of gas meters is their lower reliability and accuracy. When sampling takes place, samples are selected so that, if the population is accepted, there is only a risk that 1% of this population is out of compliance. In general, it is found that for electric domestic meters, 97% of meters are in compliance. The Branch is currently considering lengthening the period prior to the first recall after the initial inspection.

Another cost saving measure introduced by the Branch is the concept of accreditation for electric meter testing. Under this concept, a manufacturer, a private contractor or a utility can be accredited to conduct meter inspection. Of course, the sub-activity would monitor all accredited bodies. So far, three electric meter manufacturers have indicated their interest. Hydro Quebec among Canadian utilities has indicated a strong desire to follow this path.

An <u>attractive approach</u> implemented by the sub-activity when accreditation is not feasible is witness testing. Under this scheme, testing is conducted by the utility and a CCA inspector need be there only at special times during the inspection.

One should note the Branch's contention echoed in the regional organization that any personnel reduction that could result from accreditation has already been effected in anticipation of this move. The Branch reports that, so far, there has been a cut in 42 PY in anticipation of accreditation. The only anticipated benefit from implementing this strategy is a more manageable workload and therefore an improvement in morale among Electric and Gas inspectors and an ability to expand installation inspections.

So far, accreditation and witness testing are only being considered for domestic electricity meters and domestic gas meters.

In order to improve analysis and planning of its activities, the Branch is preparing to put in place a computer-based management information system. This system will provide all the background data required to assess the compliance history of a particular group of meters. Based on this information, it will be possible to estimate the benefits and risks of potential strategies aimed at increasing efficiency and/or effectiveness. The development of this system is planned for 86/87.

#### SOME EFFICIENCY AND COST REDUCTION OPTIONS

In the previous chapter, we presented an overview of the present situation with respect to inspection services at the Bureau of Consumer Affairs. We outlined effectiveness and efficiency measures that have been put in place or are being considered for implementation.

Another element of the study consisted in a series of interviews with other government agencies with inspection responsibilities. Combining results from these interviews with interviews conducted within the Bureau at Headquarters and at the Regional level, we have generated a list of strategies that could lead to enhancements in efficiency. These efficiency enhancements might result either into increased benefits (compliance) or decreased costs. A number of these strategies have already been initiated or are being considered by the Bureau. Others appear worthy of further consideration.

#### A. APPROACHES TO INSPECTION IN OTHER JURISDICTIONS

To broaden our field of vision, we have met with representatives from a number of federal and Ontario provincial government agencies that either have a concern with inspection as a means of compliance or operate inspection services. Groups contacted were:

- Justice Canada; Federal Statute Compliance Project
- Office of Regulatory Reform
- Agriculture Canada; Food Inspection Directorate
- Fisheries and Oceans; Inspection and Technology Branch
- Environment Canada; Commercial Chemicals Branch
- Health and Welfare; Bureau of Field Operations
- Department of Labour; Regional Operations.
- Ontario Ministry of Consumer and Corporate Relations; Technical Standards Division and Business Practices Division
- Ontario Ministry of the Environment; Regional Operations and Laboratories Division.

In the course of these interviews, we found a number of common elements that are relevant to the management and planning of inspection services at the Bureau of Consumer Affairs. Also, many of the viewpoints expressed in the course of these interviews echoed those expressed by Bureau managers, both at Headquarters and in the Region. The trends and outlooks that prevail today to enhance efficiency and effectiveness in the fields of compliance and inspection can be categorized as follows:

Preventative compliance (as opposed to remedial compliance).

- Cost recovery.
- Self-regulation and self-inspection.
- Privatization of compliance administration.
- Tiering and priority setting in the allocation of resources.
- Optimizing inspection plans.
- Work methods and standards.

Trade-off analysis.

We describe these concepts briefly below, give examples of their application, and indicate potential areas of application in the Bureau of Consumer Affairs.

#### **B. PREVENTIVE COMPLIANCE**

All agencies contacted -- including the sub-activities within the Consumer Bureau -- indicated a preference for preventive (education, negotiations) as opposed to remedial compliance from both a cost and overall effectiveness standpoint. In many instances, inspectors are viewed as an integral element of this communication process. The Federal Statute Compliance Project goes one step further and views this communication and negotiation aspect as the prime role of the inspector. In particular, this group views the punitive aspect of inspection as a poor deterrent tool. In their view, enforcement should be decriminalized.

At any rate, all sub-activities within the Bureau indicated that they are well down the road of preventive compliance and we can only assume that this effort will continue and expand over the next few years. It would seem however, that one would need to understand the resources invested in preventive compliance and see if an equivalent or greater amount of resources could be saved on the inspection and enforcement side. If -- as all agree -- it is more efficient to invest resources in preventive compliance, then there should be an overall reduction in resources allocated to compliance as a whole. The resources
that have thus been freed up should be clearly identified and a decision made whether to capture a corresponding saving or reallocate these resources toward new areas of compliance.

In making these resource allocation decisions one should acknowledge the fact that for preventive compliance to be effective, an ongoing education and re-enforcement program is required.

### C. COST RECOVERY

Some sub-activities in the Bureau recover no cost; others such as E & G recover up to 20%. In Ontario, some Branches in the Technical Standards Division (e.g. Elevating Devices, Pressure Vessels) recover two-thirds of their cost or more.

The ability to recover costs varies widely with the type of inspection being conducted. The key concept is that of equity. To justify charging for an inspection, the inspection must be part of a universal or licensing system. This is the case, for example, with plant inspections conducted by F&OC and AC. These inspections protect the public and also achieve equity among producers/traders.

When an inspection is conducted to gather data or provide a deterent or on the basis of suspicion, an inspection charge cannot be justified unless it is a charge to an industry as a whole. On the other hand, a ticketing system could be a useful medium to improve compliance. A well-devised ticketing system would offer several advantages:

- It would offer an additional compliance medium lying between "soft" mechanisms such as moral suasion; and "hard" mechanisms such as prosecutions.
- It would offer the possibility of making the compliance system more fair by reducing the discretionary power given to inspectors and increasing the evenness of treatment of firms (e.g. if certain classes of violation were not corrected within a given period of time, tickets would be automatic).

To place inspections within the Bureau of Consumer Affairs on a cost recovery basis, one has to examine each sub-activity, whether the inspection is universal or not, and the motivation for the inspection. For example:

#### 1. Product Safety

For certain products that present a safety risk to consumers, it could be argued that the onus is on the manufacturer or importer to ensure that the buying public is protected. The purchase of a license to distribute certain products -- and satisfying the requirements for such a licence -- would be a proof that the products meet certain government regulations. But, there may be political issues:

a) If an article that bears a Canadian government certificate fails and causes injury, is the Government's liability under Common Law more stringent than at present? The UFFI case may be an indication that the answer is yes.

b) The cost of the license will be shared by the manufacturer/ importer to the buying public via the market system as opposed to the tax system. Since the tax system is intended to acknowledge individuals' ability to pay, the market system may introduce certain inequities but these are minimal compared to the price of the article. In particular, these inequities are far greater in the case of gasoline, tobacco and alcohol.

c) Would licensing remove the product safety regulations from the realm of criminal law? In particular would the Bureau lose the power to seize? We believe not, but this has to be verified.

#### 2. Legal Metrology

There is a variety of examples of cost recovery for mandatory inspections throughout government agencies. Recovering the cost of all mandatory inspections would seem to be a reasonable target for Legal Metrology.

Setting the wheels in motion in that direction may accelerate the move to accreditation in the case of electricity and gas meters.

#### 3. Consumer Products

Since the majority of inspections in Consumer Products are nonmandatory, cost recovery may be elusive. There may be a possibility with respect to the approval of TV and radio advertisements for food. TV and radio might protest since print ads are only checked by Consumer Products and do not need pre-approval. But the industry acknowledges that TV and radio ads are much more effective than print. Therefore, the case of preferential treatment given to print would not be a very strong one and any fee charged for preapproval of TV and radio ads is unlikely to result in a swich of advertisers from these media toward print.

#### D. SELF-REGULATION OR SELF-INSPECTION

Whenever particular groups have been faced with a choice between government regulation and self-regulation, they sometimes opt for selfregulation. The rationale from industry's viewpoint is usually that a particular industry or trade group:

- Understands its problems better than anyone else.
- Can resolve difficulties informally and quickly.
- Can adapt to changing situations more rapidly under self-regulation than under a governmental regime.

The question is, of course, "Is the public getting the same degree of protection?" When the issue is purely economic, self-regulation combined with government monitoring and payment to an insurance fund seems to work. In Ontario, this has been the case with the tour travel agency business and the real estate agency business.

For a group to self regulate satisfactorily it must be made up of a relatively small number of participants, be homogeneous, and readily identifiable. To be effective, self-regulation must include some measure of governmental scrutiny or monitoring.

A regime that is mid-way between full government regulation and inspection is self-inspection. For example, in fish plants under F & OC jurisdiction, government licensed inspectors on company payroll grade fishery products at dock side and in the plant. With such a system, a secondary or shadow inspection scheme must be put in place to ensure that regulations are in fact followed.

The Consumer Products Branch has indicated a preference for self regulation and guidelines to a variety of trade groups. This effort in particular has led to the guidelines for Gems and Diamonds. On the other hand, we understand that some trade groups have looked at self-inspection but have not pursued it (e.g., food retail). The reasons for this lack of follow-up should perhaps be investigated to understand what the issues were and see if they can be corrected.

We believe that a variety of schemes involving various measures of selfregulation, self-inspection and government monitoring should be investigated with a view to reducing the overall government inspection workload.

# E. PRIVATIZATION OF COMPLIANCE ADMINISTRATION

Individuals and agencies with technical know-how can be licensed to carry out inspections in lieu of government inspectors:

- Garage mechanics give cars safety certificates for resale (Ontario) and license renewals (Pennsylvania).
- In Ontario, private inspectors are licensed to approve conversion of cars to propane.

Also in Ontario, licensed elevator maintenance companies submit all technical documents required for yearly renewal of elevator licenses (government inspects every three years).

The major move toward a form of privatization initiated by the Bureau of Consumer Affairs has been accreditation in Electricity and Gas and to a lesser degree, witness inspection in the same sub-activity. (See Chapter III, section A.)

While utilities in Canada are not private companies, we call accreditation a form of privatization since it involves transfer of an activity to an organization that is not a direct arm of the federal government.

In the Bureau, we see these possibilities in addition to accreditation:

- Licensing of scale service companies to inspect scales, especially simple retail devices and gas pumps. This scheme is under consideration by the Branch. There is concern about workmanship quality, but that is a matter of training. There will obviously be a reluctance on the part of traders to retain such a service. On the other hand, there is growing awareness that government services can no longer be "free". The alternative is the payment of a one time fee to Legal Metrology by each trader who buys a new device. This fee would cover the cost of future inspections by government.
- Appointment of a well-known recognized agency such as CSA or UL to ensure that certain standards under Product Safety are met, and then policing these standards. This would give such agencies a "monopoly" and the issue of government liability would have to be ascertained. But at this stage, this option is worth considering.

In both cases, the Bureau would still have to monitor the quality of the inspection work. Again, the political implications of system failure have to be investigated.

Under both self-inspection and privatization, penalties for non-compliance may have to be made more severe to achieve the same degree of deterrence since the probability of governmental detection is lower. One could for example equalize the economic risk of non-compliance before and after the implementation of these alternatives. Admittedly, there is still a philosophical argument as to whether penalty should be an inverse function of detection probability.

## F. TIERING AND PRIORITY SETTING

All sub-activities within the Bureau develop workplans using the concept of tiering and priority setting. Priorities are set on the basis of factors such as segment size or importance, estimated or perceived degree of non-compliance,

severity of suspected non-compliance and consumers' ability to detect noncompliance. All sub-activities have plans to enhance their tiering and priority setting schemes as information becomes available via M.I.S.

This approach is followed by essentially all agencies with inspection responsibilities that we encountered. In particular, Agriculture Canada -- Food Inspection Directorate appears to have a highly sophisticated system. That system emphasizes tiering based on large vs. small firms and high priority vs. low priority violations.

An element of the priority setting mechanism for Consumer Products that perhaps should be reviewed is the ranking indicator called: Dollars at Risk. As explained earlier, multiplying a non-compliance rate observed on the basis of a biased sample by a total consumption dollar times a weighting factor can yield a misleading inspection priority ranking. One should segment the consumption dollars by type, say: Domestic manufacturers vs. importers or by type of outlets, and try as much as possible to multiply non-compliance rate observed at random in a homogenous segment by the total consumption for that segment.

There are additional difficulties with this measure because the dollar values of sales for various groups depends on the arbitrary definition of product categories, and because the weights used do not adequately reflect the economic loss to consumers caused by various violations. We understand that some effort is currently being invested into an examination of the "dollar at risk" concept.

As indicated earlier, the implementation of various tiering and priority setting schemes by the sub-activities should be accompanied by an overall management system to:

- Set quantified objectives, i.e., what are acceptable levels of noncompliance for various severity levels.
- Define targets for cost reductions via tiering and priority setting. (See Section I: Trade-offs).

## G. OPTIMIZING INSPECTION PLANS

The Bureau and other agencies are well aware of the poor impression created when several government inspectors visit the same establishment within a short period of time. As explained in the previous chapter, agreements have been worked out with other agencies to arrive at work sharing agreements.

Within the Bureau itself, the Quebec and Ontario regions have been working together on the flagship store concept and only a few national retailers have been involved so far. This concept has been examined to determine its impact and is being expanded to other organizations and other regions. One area where one could possibly achieve efficiencies through similar coordination is Electricity and Gas. For seal extension work, the test is always conducted with respect to a meter population segment within a utility. Given the small number of electricity and gas meter manufacturers in Canada, one would think that many meter population segments in Canada would be similar in terms of initial inspection, production lot, etc. A priori, which utility owns a meter should not introduce a significant element of difference since practices of Canadian utilities are highly standardized. One could therefore create expanded meter population segments across utilities and across regions. Meter testing via sampling for seal extension could then become more efficient. We understand that this approach has been tried and rejected due to administrative difficulties. It is being reconsidered within the context of E & G records computerization or some other administrative concept.

# H. WORK METHODS AND STANDARDS

In planning the workload of a particular group of inspectors, standard times are used for various work elements. In Legal Metrology, there are time standards for inspecting each type of weighing and measuring device used for trade in Canada. These standards were developed historically and through observed experience. Some degree of scrutiny of these standards, especially via up to date work measurement techniques, might uncover possibilities for work simplification and improved time utilization. There has been some advances in work simplification in Electricity and Gas via the automated inspection methodology and this type of effort should be continued.

Based on a short observation of an inspector at work, the amount of writing to be done at the client's location appears significant. Whether it be zone or control inspection work, it seems that much of the information (client name, address, etc.) could already be preprinted on the inspection document.

Travel is an unavoidable element of inspection work. But is it possible to create more resident area district offices, especially in large metro areas without adding to overhead staff to minimize travel to and from a central depot? These resident area district offices could have telephone message recorders, transcribers and other automated communications equipment. As an example, we understand that the Toronto district has been broken up into three such offices, one of the reasons being to cut down on travel time. One should look for further opportunities.

Lastly, some regional managers have complained that their administrative workload reduces the time available to go out in the field, verify the work that is being done and get a first hand appraisal of problems. Some work analysis of field managers could also perhaps lead to better supervisory personnel utilization and, as a secondary benefit, enhanced output at the inspector level.

## I. TRADE-OFFS

As one applies more and more resources to ensure compliance with a particular set of regulations, one would expect the degree of compliance to increase. In pragmatic terms, the optimal balance between the application of resources to achieve a certain level of compliance is determined through a variety of political and negotiating processes which take into account:

- The perceived views of the public.
- The fiscal policy of the hour.
- The cost and potential benefits of competing programs.

In time of fiscal restraints, the tendency is to freeze resources in the various programs at historical levels and try to deliver services of maximal benefits with this given set of resources. That is not necessarily the optimal approach. To make a better judgment as to the appropriate level of resources to apply within a program, one needs to understand what a departure from traditional resource levels -- either up or down -- will mean in terms of increased or reduced benefits. Then, one can reallocate resources sensibly between sub-activities or across programs in order to achieve maximal overall benefits within a given resource envelope. For example, one might try to estimate the anticipated impact on benefits of a  $\pm 10\%$  change in resource level followed by rational trade-offs.

There are two steps to this approach:

- Relating inspection level of effort to compliance rate.
- Relating compliance rate to various objective socio-economic benefit measures.

Both steps are quite difficult. In particular developing socio-economic benefit measures for compliance rate. However, even going through the exercise can be of useful since it forces one to focus on the potential impact of compliance or non-compliance.

Then, the Bureau could rank independent inspection activities in terms of increasing benefit and assess the relative magnitude of resources assigned to these activities. It is recognized that this work may well be difficult, since it is not easy to measure the impact of various work elements on the achievement of program objectives. Nevertheless, relatively small scale projects could well be useful in both examining the feasibility of measuring the impact of program activities and in getting a preliminary indication of the relative benefits involved.

Work elements that rank lower in the list, but have resources of some magnitude allocated to them, should be subjected to a benefit/cost analysis

where one asks the question, "What loss of benefit will result from the elimination or curtailment of a particular work element?" If a work element is aimed at increasing compliance, one would ask, "What decrease in compliance would result and what would be the ensuing social cost?"

To explain the concept, we have selected two areas from Legal Metrology where we believe that a curtailment in inspection intensity would not necessarily yield an unacceptable risk of economic loss to the Canadian public. These two examples are:

- Further increases in the time periods for domestic electricity meter seal extensions.
- The replacement of Weights and Measures zone inspections (currently a census carried out over a two year period) by a stratified random sample.
- 1. Lengthening the time period for domestic electricity meter seal periods

This move is currently being considered by the Branch and does not present major problems.

# 2. The replacement of some weights and measures zone inspections by stratified random sampling

At present, the Branch estimates that about 65% of inspection PY are allocated to the zone inspection all 600,000 measuring devices that fall within Weights and Measures' jurisdiction. The zone inspections achieve these objectives:

- Ensure a high degree of compliance.
- Act as a highly visible deterrent.
- Provide accurate data on compliance level.
- Permit the Branch to maintain up-to-date records on the active population of measuring devices.
- Correct non-compliant devices and thus minimize overall noncompliance rate.

There is no question that replacing zone inspections by a sample for small scales and gas pumps, for instance, will reduce the attainment of these objectives to some extent. But the key question is, "What is the likely loss to the Canadian public?" If we consider the objectives listed above one by one, the following comments can be made:

- The majority of measuring devices in the population are small scales and gas pumps. Historical compliance rates for these devices have been good. Even when there is non-compliance, one should analyze the severity of non-compliance in terms of the expected loss to the buying public.
- As far as deterrence is concerned, some measure of visibility is achievable via:
  - Control inspections.
  - Those sample inspections that might replace zone inspections.
  - Trader education.
  - Pamphlets and other communications.
  - Meetings with trade associations and manufacturers to discuss standards.
  - Prosecutions and subsequent publicity.
- As mentioned earlier, the population of measuring devices is highly heterogenous and the creation of homogenous strata within this population may be difficult. However, it is possible to use pilot studies to determine the magnitude of the sampling error in the computation of compliance rate. One can then weigh the cost of increasing sample size vs. the benefit of knowing the compliance rate with various degrees of accuracy.
- Under the present system, only zone inspections provide detailed device population data. That information might possibly be acquired via a different administrative system and a sampling procedure.

How these concepts can be studied further is discussed in the next chapter.

#### INVESTIGATING THE OPTIONS

In this chapter we expand the concepts introduced in the previous chapter and develop an action plan aimed at enhancing efficiency or reducing costs of the inspection function in the Bureau of Consumer Affairs.

In Exhibit V-1 we show a summary of opportunities and issues in relation to the eight broad concepts of efficiency enhancement or cost reduction identified in the previous chapter. Some are general options that apply across subactivities. Others appear more applicable to some activities than others. As indicated in the previous chapter, the Bureau has started to implement some of these options. Others would normally be examined in the course of program evaluation.

Overall, we recommend that the Department follow a multiple course of action which is a combination of management activities and individual feasibility studies. Specific actions are:

- Continue current efforts in preventive compliance, tiering and priority setting.
- Develop enhanced measures of performance.
- Investigate cost recovery, self regulation and privatization in Product Safety.
- Study the feasibility of cost recovery/privatization in Weights and Measures.
- Conduct studies to optimize inspection plans.
- Investigate work standards and methods.
- Move to a resource allocation system based on benefit/cost analysis.

#### A. CONTINUE CURRENT EFFORTS IN PREVENTIVE COMPLIANCE, TIERING AND PRIORITY SETTING

As indicated in Chapter IV the principles of preventive compliance, tiering and priority setting are being applied in all sub-activities in the Bureau. It is self-evident that management, both at Headquarters and in the regions, intends to continue these efforts.

V

	Preventive Compliance	Cost Recovery	Self- Regulation/ Self- Inspection	Privatization	Tiering and Priority Setting	Optimize Inspection Plans	Work Methods and Standards	·Trade-offs: Cost Reductions Via Benefit/ Cost Analysis
Product Safety	Continue current efforts, but identify savings.	Possible under a Product Safety fee System possible but social and legal issues must be investigated.	Self-defeating if carried out in isolation. Third party must be involved. Social and Legal issues must be investigate	Feasible, at least for certain products. d.	Continue current efforts but identify savings.	Little applicability. (we under- stand there is national coordination)	Applicable.	Applicable, but better knowledge of actual compli- ance rates and of death and injury rates required.
Consumer Products	Continue current efforts, but identify savings.	Difficult to justify. One possibility: charge to review TV ads.	If trade finds current inspec- tions bothersome, they will accept this option only as an alternative to a costlier one.	Not applicable.	Continue current efforts but identify savings.	Extension of flagship store concept to additional areas and identify savings.	Applicable.	Applicable, but better knowledge of actual compliance rates required.
Weights and Measures	Continue current efforts, but identify savings.	Justifiable for design approvals and initial inspections. Could be justified with universal periodic inspections. But such inspections may not be required.	Not applicable.	Feasible for certain types of devices and inspections.	Continue current efforts but identify savings. (Where applicable.)	Not applicable.	Applicable.	Applicable.
Electricity and Gas	Continue current efforts, but identify savings. (Where applicable.)	Justifiable across the board, except consumer complaints.	Not applicable.	Verification is highly feasible (accreditation) either by utility or private testing organization.	Continue current efforts but identify savings. (Where applicable.)	Conduct seal extension tests across utilities.	Applicable. (lower priority).	Applicable.

# EXHIBIT V-1 Summary of option assessment for enhancing efficiency or reducing cost of inspections

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In Section G we discuss how the formal application of benefit/cost principles would allow the Bureau to upgrade present planning systems into resource allocation systems where one makes rational decisions about trade-offs between resources and benefits. But, even without such a system, one should develop a planning methodology that allows the identification of benefits to be derived from preventive compliance and tiering in each sub-activity.

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Whenever applicable, current sub-activity planning systems should show how resources have been applied in a given year between various client segments and by activity type (inspection and others). In particular, one should identify resources applied to preventive compliance and higher level inspection. On a year over year basis, one should be able to track how resources applied in a given year to lower level inspections will be redirected to greater leverage activities in the subsequent year. Presumably, these resources will prove more cost effective when applied in the preventive mode or to higher level inspections. Therefore, on a year over year basis some saving should be realized or resources reallocated to new compliance areas, assuming compliance rates (i.e. benefits) across all segments are acceptable. We believe that it is in Consumer Products that this approach would be the most beneficial. But, a greater degree of national planning coordination as well as a finer level of segmentation would be required. Conceptually, for every segment that is eligible for inspection in a sub-activity the resource allocation proposal for a given year would follow this format.

Inspection Segment	Compliance Level (measured or suspected)	Activity Type	Level	Prior Year	Planning Year
	,		National		·····.
		Preventive	Intermediate		
<u> </u>		Compliance	Local		
	<b>.</b> .		National		
		Inspection	Intermediate		<u>, iz iz iz</u>

#### Local

With this format, each sub-activity could track the shift of resources from client segments with good compliance to segments with poor compliance and from local or low level inspections to higher level inspections. At this stage, this is only a concept and we realize that the actual real world situation is far more complex. Yet, we do make the recommendation that the present systems for resource allocation be reviewed. Such systems should, if possible, be enhanced to incorporate these principles:

- The planning system should highlight potential resource saving that could result from a shift to preventive compliance activities and higher level inspections.
- In some sub-activites where compliance rates are not mandated by law, 100% compliance may not be a realistic target and the concept of acceptable compliance rate for various infraction severity levels should be considered. The application of resources to increase compliance rates above such acceptable levels should be questioned.

# B. DEVELOP ENHANCED MEASURES OF PERFORMANCE

A key measure of performance used to measure the impact of the subactivity within the Bureau -- except Product Safety -- is rate of compliance. In one sub-activity, Consumer Products, this rate is used to develop a priority indicator: Dollars at Risk. Insofar as resource allocation are based on compliance rates and dollars at risk measures, we believe that work should be undertaken to enhance these measures. We see two prime areas of investigation:

- Developing unbiased estimates of dollars at risk.
- Combining compliance rates with a degree of severity of noncompliance.

### 1. Developing unbiased estimates of dollars at risk

There is currently a project underway to study the Dollars at Risk concept. One of the features of Dollars at Risk over which we have expressed concerns is the bias introduced when a non-compliance rate observed on a subsample selected because of suspicion of non-compliance is multiplied by the total national consumption for goods of this class.

We therefore recommend that a study be conducted to determine if the statistical survey needed to estimate unbiased compliance rates in Consumer Products can be cost justified. This study would cover these areas:

- Number of items -- or dollar value -- required to be sampled for various product classes to achieve a target sampling error level. Generally, we would expect that the sample would be an unbiased representation of the Canadian basket of goods over which Consumer Products has jurisdiction.
- The cost of collecting and analyzing this sample.
- How often the work should be undertaken and should all product classes be covered?

The cost of a pilot test to determine the impact that unbiased non-compliance estimates would have an ultimate decision making and priority allocation.

Such a study would shed light on this issue and recommend whether or not one should proceed to the pilot study stage. (preliminary estimated cost of study only: \$20,000).

### 2. Rating the severity of non-compliance

Assessing the severity of non-compliance is a common day to day activity at the Bureau. This is how inspectors and others decide what course of action to follow when a case of non-compliance has been uncovered. For example, we understand that Problem Seriousness Factor is a component of the Dollars at Risk indicator used by Consumer Products. In Product Safety, a higher priority is given to children's products and products for the elderly. In Legal Metrology, the buyer's ability to detect non-compliance is a priority factor. But there are a number of ways in which the notion of non-compliance severity can be introduced into the resource allocation system or expanded. We see these possibilities:

- Staff judgement.
- Reference to other systems.
- Statistical survey.
- Market research.

But we must emphasize that developing non-compliance severity rating schemes is of use only if the resource allocation process is impacted.

#### a) Staff judgement

We indicated earlier that some element of staff judgement is used at present in rating the relative severity of different types or degrees of non-compliance. One could make this process more formal. For example:

> Whenever a non-compliance is uncovered by an inspector a severity rating is assigned to this noncompliance and captured by the M.I.S. In the case of Legal Metrology the lowest severity level could be one where there is no direct economic inequity in trade as a result of the non-compliance. Then the rating could increase as the size of the inequity increases. One could further expand on this system by reflecting on:

- The total yearly dollar transacted via the device.
- The average size of transaction for which the device is used.
- The relative economic strength of the parties to the transaction, in whose favor the discrepancy exists and the possibility for either party to verify the measurement.

Gathering these data via MIS would allow the planning staff to segment the non-compliance rate for the 22 or so device types covered by Weights and Measures into severity levels. Preliminary cost estimate to develop the system framework for Weights and Measures: \$20,000.

Such an approach could also be used in the case of Product Safety; although in this sub-activity, developing a severity rating scheme would probably involve reference to other systems.

#### b. Reference to other systems

Rating the risk content of an unsafe product is a delicate matter and the Product Safety sub-activity has developed a judgemental scheme based on experience. To strengthen the link between the Bureau's rating scheme and other internationally recognized schemes one should undertake a thorough literature review and communications program with various safety bodies in Canada and the U.S. (NFPA, UL, CSA). Insofar as little inspection -- in the narrow sense --is conducted by Product Safety, there may be little advantage in developing a more involved priority scheme than exists at present. On the other hand if one looks at all resources expended by Product Safety, such an investigation could prove worthwhile (preliminary estimated study cost: \$20,000).

#### c. National survey

In the case of Weights and Measures, some of the judemental factors mentioned in paragraph **a**) above could be replaced by more objective measures, for example:

- Estimates of the average yearly dollar value transacted by device type.
- Estimates of the average transaction size.

Ideally, such estimates would lead to quantitative estimates of the economic inequity resulting from a given level of noncompliance for various classes of Weights and Measures devices. But, given the wide variety of devices within some classes, there may be significant statistical problems in arriving at such estimates. On the other hand, it would be of value to arrive at some quantitative assessment of the economic inequity that Weights and Measures is attempting to correct and/or prevent. Such an assessment would help justify resource authorization for this sub-activity.

To approach this difficult problem one would need to study the following:

- The variety of devices in each of the 22 classes covered by Weights and Measures.
- The type of sampling or economic information required to estimate the total economic transactions affected by these devices.
- How economic inequities resulting from noncompliance and other technical factors should be treated in arriving at a priority index for inspection by Weights and Measures.

Such a study should include same pilot sampling work (preliminary cost estimate \$40,000).

#### d) Market research

How does the public feel about various types of noncompliance? In the case of Consumer Products, for example, where it is difficult to attach an economic cost to a particular element of non-compliance, tapping public opinion is one way to supplement staff judgement in assessing the severity of non-compliance.

There are two basic approaches to market research of this

type:

- A simple approach consists in asking a properly statified random sample of consumers to rank their level of displeasure at the thought that a range of items they have purchased might be deficient with respect to one aspect or other of Consumer Products regulations (preliminary cost estimate: \$50-75,000).
- A more complicated approach consists in going one step beyond a simple ranking and using the method of conjoint analysis to arrive at a quantitative relationship between the utilities expressed by consumers for various compliance attributes. Such a market research study would also lead to the identification of clusters of consumers whose

attitudes are similar and the determination of the socioeconomic characteristics of these clusters.

A conjoint analysis study is usually preceded by a focus group study to understand the range of views of respondents and the terminology that is meaningful to them. Also, it almost always involves a fairly sizable pilot test. The estimated cost to the pilot stage is \$50-75,000. Going on to a fully representative sample would cost an additional \$75 to \$100,000. These estimates like all estimated study cost shown here are not firm: they are only intended to indicate an order of magnitude.

Again, we must emphasize that investing in the development of enhanced measures of performance is justifiable only if these measures are used within a rational resource allocation process. (See Section G: Allocate Resource Via Benefit/Cost Analysis).

# C. INVESTIGATE COST RECOVERY, MONITORED SELF-INSPECTION AND PRIVATIZATION IN PRODUCT SAFETY

The total complement of Product Safety Inspectors is not large and the proportion of their time applied to pure inspection activities is small. However if one includes the test lab within the broad inspection responsibility of this sub-activity the resource level becomes greater.

We indicated in the previous chapter that the options for reducing the net cost of Product Safety operations to the Crown are:

Option 1: Cost Recovery. Option 2: Monitored self-inspection. Option 3: Privatization.

#### 1. Option 1: Cost Recovery

Charging an industry wide Product Safety fee for the right to market products that come under Product Safety legislation. Revenues from this fee would cover costs of inspection.

### 2. Option 2: Monitored Self-inspection

Working with industry to set up product safety organizations on an industry by industry basis to ensure that Product Safety regulations are respected. The Product Safety sub-activity would still have to monitor the effectiveness of these organizations and bring imports under their umbrella.

#### 3. Option 3: Privatization

Making third party certification compulsory for products that come under Product Safety legislation. There too, Product Safety would have to monitor the effectiveness of this system.

Under options 2 and 3 the following conditions would apply:

- Whenever possible, inspection for Product Safety certification markings and sample pick-up are entrusted to suitably trained Consumer Products inspectors to achieve economies of scale.
- Penalties for lack of Product Safety markings or fraudulent markings are worked out. In particular under all three options, Product Safety retains power to seize.

With respect to Option 2, we understand that, in Japan, there is a Japanese Toy Institute supported by industry that certifies that products are safe before they are marked. Such a model exists for other industries as well (for example, the Japanese pottery industry).

As an example, under Option 3, Product Safety regulations would not simply call for hockey helmets to meet CSA standards, they would make it mandatory for all hockey helmets to be approved by CSA and indicate the fact on each helmet sold at retail.

We recommend that the pros and cons of each option be studied. The objective of this feasibility study will be: to maintain a high level of product safety in Canada while transferring the cost of the inspection system away from taxpayers to the industry that profits from the sale of these products.

At the start of the study a scenario would be hypothesized. Such a scenario might be as follows:

- Assuming that all three options are legally, technically and economically feasible, for each regulated product, representatives of government and Canadian manufacturers and importers would arrive at a consensus on which of the three options is preferable. Prior to these discussions the full details of Option 1 (the fall-back option) will have been worked out in proposal form so the possible Product Safety fee structure and conditions can be made known to manufacturers/importers.
- Whatever option is selected, the government/industry committee works out:
  - Fee structures.
  - Operations.

- Product Safety certification markings.
- Monitoring system.
- Any article sold at retail that does not bear the approval seal is in non-compliance. The retailer and the manufacturer/importer are held jointly responsible.
- Importers, wholesalers, retailers, consumer groups and Consumer Products inspectors are alerted to these regulations. If feasible, the certification agency (option 2 or 3) polices the certification system.

The feasibility study would comprise these steps:

- A socio-legal review to clarify the following points:
  - Extent of government liability under the current system and under the study scenarios described above.
  - Can government retain power to seize under each of these options?
  - An overview of potential public relations to mishaps compared to the present system.
- ► Full financial implications of options 1, 2 and 3 for government and industry should be developed. This includes the development of an initial fee structure after review of present sub-activity costs and charges by various testing and certification agencies, manpower implications under all these options, and MIS needs.
- Review of implications of potential delays in approval and certification of existing and new products. As well, foreign trade implications would have to be reviewed.
- Review and recommendation as to the most appropriate form of Product Safety markings.
- Discussion with a range of current third party testing and certification agencies and industry product certification groups to understand their mode of operation and applicability within the study scenario.
- Review of organisms and procedures in place in other Canadian jurisdictions and outside Canada to enforce Product Safety regulations while minimize net cost of government operations.
- Study of issue of design confidentiality at product approval stage.

- Discussion with Customs Canada to determine how Customs Canada could police imports under the study scenario.
- Study of the feasibility of using appropriately trained Consumer Products inspectors to verify Product Safety markings on products at all trade levels and incremented cost to this sub-activity.

The study would culminate with a recommendation for each major product group administered by Product Safety whether to retain the current system or select Option 1, 2 or 3. A general progressive implementation program should be developed for any departure from the present system. We estimate the cost of this study at \$100-125,000, exclusive of legal work. The study would be conducted in stages. Some of the stages (e.g. socio-legal review) could culminate with a GO-NO-GO decision.

# D. STUDY THE FEASIBILITY OF COST RECOVERY/PRIVATIZATION IN WEIGHTS AND MEASURES

Weight and Measures is a sub-activity where significant Bureau resources are invested in inspection. It is one area where, we believe there is potential for cost recovery and privatization. Although the overall current government philosophy is to give priority to privatization, this may not be feasible in all sectors of Weights and Measures inspection:

- The skills and equipment required to inspect certain types of devices are unlikely to be found in the private sector.
- Some geographic areas may not support a viable private inspection activity.
- Certain classes of inspection such as type approval and initial inspections are not really candidate for privatization.

But this still leaves a good deal of inspection work in Weights and Measures open for cost recovery/privatization. We, therefore, recommend to study the feasibility of combining cost recovery and privatization in order to reduce the net cost of Weights and Measures inspections to the Crown. Such a move may, in the long run, prove beneficial to the economy as a whole, since the freer application of market forces usually influences decision makers to make more economically efficient decisions.

The feasibility study we envisage would follow these steps:

- Review of present device classification; technical assessment of inspection difficulties.
- Review of unit inspection costs.

- Review of current scale service companies in Canada. Industry profile (company size, location, work force). Interviews with industry representatives. Impact of licensing to conduct inspections.
- Development of likely charges for inspections with options (one time charge, pay as you go).
- Licensing system options. Cost of licensing system.
- Review/assessment of socio-legal implications; in particular: capacity to seize, prosecute or apply other forms of enforcement (see discussion in Section C above).
- Discussions with trade group representatives:
  - Manufacturers.
  - Wholesalers.
  - Retailers.
  - Major and independent gasoline retailers.

The discussions would focus not on whether to pay or not to pay but preferred methods of payment. The possibility of licensing employees to conduct inspections would also be discussed.

- Financial model development to assess the full impact of various options.
- Reviews of issues and opportunities. Comparing the options: cost of recovery only vs. cost recovery/privatization mix.

Recommendations from the study:

- What device types can be inspected by private operators? How can the range be expanded?
- What geographic areas can initially be opened to private operators? System for opening additional areas?
- Training of licensees -- licensing system.
- In field verification system -- de-licensing.
- Under what conditions could trader employees be licensed?
- Should government inspection services compete as an option to private operators?

- Responsibilities of trader vs. private licensed inspector: if noncompliance is uncovered, who is at fault?
- Inspection fee system (government and private).

The preliminary estimated cost for such a feasibility study is \$125,000 - 150,000. It should be structured in stages with a refinement of the remainder of the study plan at the end of each stage.

# E. OPTIMIZE INSPECTION PLANS

There are two sub-activities where optimization of inspection plans could be of benefit as indicated in Exhibit V-1:

- Consumer Products.
- Electricity and gas.

#### 1. Extension of the flagship concept in consumer products

The flagship store concept has the potential of achieving high leverage on the utilization of resources in the inspection of trade channels. This effort has been initiated at the Branch and region level and should be continued with national co-ordination. In concept, the approach is relatively simple:

- Rank the 50 to 100 top consumer product retail organizations in Canada.
- Enlist the co-operation of these organizations through the incentive of reduced number of inspections.
- Communicate with these organizations to determine the degree of centralized purchasing for various classes of items.
- For each organization, identify one or more locations (store or warehouse) where all products sold in the country or in a region can be found. Verify this information on a sampled basis.
- Identify the minimal number of flagship locations that will give a high percent coverage of total dollar sales of the organization and assign a retail dollar coverage value to these locations.
- Develop a national co-ordination system to ensure that any inspection at a flagship location is not duplicated anywhere in the country.

Much of the above is the natural extension of what has already been done in consumer products. To accelerate the process, the Branch may wish to use outside consultants to supplement existing staff. A preliminary fee estimate for this work is \$40-50,000.

# 2. Testing for electricity and gas domestic meter seal extension across utilities

At present, when a meter population is small, the whole population has to be tested for seal extension to satisfy the significance level requirements for population acceptance. We propose a feasibility study to determine:

a) The potential saving in seal extension costs, if the only factor used in assigning an electricity gas meter to a "population" is its manufacturer model and year.

b) What administrative systems would be required to conduct seal extension tests under this new definition of meter population.

The feasibility study would include these steps:

- Review of current meter tracking system (model number, batch number, utility, seal number, etc.). This review will involve discussions with meter makers and Branch personnel.
- Review of current record keeping systems at the Branch and regional level.
- Review of statistical procedures for sample sizing and selection. Examination of possible options.
- Pilot study to attempt link-up of meters within similar manufacturer model and year across utilities. Computation of total sample size for seal extension after this link-up. Comparison to current system-estimation of saving if any. (Estimated cost to this point: \$35,000).
- If potential savings are identified, develop the outline of an administrative system for centralized meter tracking. Determine computer requirements to support such a system. In particular, could standard software (e.g. dBase II) be used for this application? Assess whether net additional system cost is justified in the light of potential savings. (Additional study cost: \$15-20,000).

# F. INVESTIGATE WORK STANDARDS AND METHODS

Investigation into enhanced work standards and methods often yield useful insight that can be translated into greater efficiency or cost savings. We therefore propose a two-stage study for all sub-activities. The first stage being of an exploratory nature and the second stage being the detailed study of specific opportunities identified in the first stage and the development of specific implementation plans. We see the steps in the first stage as follows:

- Detailed review of inspection resource planning and allocation system, work standards, daily or weekly task assignment system, task control system, performance evaluation, efficiency incentives.
- Field survey of inspectors at work in a variety of settings. Review of paperwork handled by inspectors.
- Review of inspectors' non inspection time (prevention, prosecution etc.).
- Discussions with supervisory personnel to identify concerns and opportunities in the area of personnel utilization and performance.
- Identification of possible potential for:
  - Work simplification.
  - Travel optimization.
  - Enhanced work standards.
  - Reallocation of tasks to lower level personnel.
  - Enhanced supervisory effectiveness.
  - Use of part-time personnel or volunteers (Consumers Association, etc.) for certain tasks.
- Review of identified areas with Headquarters staff.

Estimated cost for first stage: \$40,000. The report prepared at the end of this stage would present the consensus arrived at with Bureau management with respect to areas for further study and a detailed plan of approach.

# G. MOVE TO A RESOURCE ALLOCATION SYSTEM BASED ON THE BENEFIT/COST PRINCIPLE

In section B of this chapter we discussed various approaches to enhancing the allocation of resources to inspection duties via more appropriate measures of performance (i.e. benefit measurement). Moving one step further, one should not only allocate resources based on perceived total need in a particular segment --i.e. the measure of dis-benefit such as low compliance rate --- but also based on the efficacity of inspections in correcting this dis-benefit. This is the application of the benefit/cost principle to resource allocation. It is carried out currently in a subjective manner in all sub-activities.

We believe, however, that making the system slightly more formal, will force consideration of the possible trade-offs mentioned in section I of Chapter IV. Using this approach one would select major inspection work elements in a sub-activity (e.g. inspection of ladies' wear at retail, zone inspections of particular Weights and Measures devices), and relate the cost of inspection to the magnitude of the problem that one is attempting to resolve. The measures of performance or benefit measures mentioned earlier are a reflection of "problem magnitude". A ranking of these various benefit/cost ratios would indicate the areas whose inspections represent an efficient utilization of resources. Under this system, for every client segment the following tabulation should then be worked out:

Historical

Anticipated measure of performance at various inspection intensity levels

Non-	Non-							
Compliance	Compliance	Measure of	Inspectio	on				
Rate	Severity	Performance	Čost	-20%	-10%	Historical	+10%	+20%

The actual benefit level and the marginal return in terms of change in measure of performance per unit change in inspection cost will give an indication of worthwhile shifts in resources between segments. Also, this tabulation will indicate where resource economies could take place with minimal impact to benefits. A prerequisite to the implementation of such resource allocation systems is the development of appropriate measures of performance. Therefore the work described in section B of this chapter. Developing Enhanced Measures of Performance should be carried out first.

The benefit/cost approach to resource allocation can be used across the board or a case by case basis. A this stage we see two sub-activites that are potential areas of application:

Consumer Products.

#### Weights and Measures.

As indicated earlier, it is more pragmatic to wait until the work on measures of performance is completed before any work on areas a) and b) above can be planned. But, as discussed in Chapter IV, zone inspections within Weights and Measures could be the object of a special benefit/cost case study. As was shown in Exhibit III-5, the sub-activity intends to slowly decrease the level of zone inspections from 233,000 devices in 1984/85 to 190,000 in 1988/89. What would be the impact of accelerating this decline on cost and benefits?

An examination of objectives of zone inspections, the cost of zone inspections and the effectiveness of various intervals between zone inspections in combination with alternative schemes such as a sampled approach should be carried out. The steps for such a study would be as follows:

- Select those segments of the Weights and Measures device population that account for 70% to 80% of the zone inspection resource expenditure.
- Develop a computer model that will simulate and/or compute directly the impact on compliance rate over time of a variety of zone inspection schemes such as:
  - On going census with one, two, three year cycle, etc.
  - Census carried out over a two year period at intervals of three, five, eight years with sampling in off years to verify that non-compliance drift is not out of control.
  - Continuous sampling and conduct census only if sample shows out of control situation.
- For each segment the computer will produce:
  - An estimated inspection resource requirement for each scheme.
  - A time plot of average compliance rate and/or other measure of performance if available (see section B). This time plot would clearly show maximum and minimum performance for each scheme.

This output would allow management to make a final decision based on a rational trade-off between benefits and cost for given segments and in between segments.

A preliminary estimate of study cost is \$30-50,000.

# Study Director's Note

Following completion of the consultant's report, the following points were brought forward:

# a) privatization of compliance administration

Page 37 states "...Licensing of scale service companies to inspect scales, especially simple retail devices and gas pumps. This scheme is under consideration by the Branch." And it also states that "The alternative is the payment of a one time fee to Legal Metrology by each trader who buys a new device."

Weights and Measures have pointed out that the scheme being considered is actually one where firms would be licensed to repair and certify that the repairs were properly done and the devices left in compliance. In addition, there are other alternatives to a one-time payment, i.e. collection of a fee each time an inspection is done.

b) cost recovery

With respect to the government's potential, perceived liability on page 35, paragraph a, officials in Product Safety suggest that it could be argued that there is likely some degree of government liability in any certification scheme and that there would be potentially negative consequences of "wrongful approval".

c) cost reduction

On page 4, it is suggested that "...these productivity improvements have not led to noticeable cost reduction".

One Regional Director suggests that this observation does not take into consideration the fact that the Bureau has been under considerable constraint both in terms of man-power and O&M budgets while the market covered has continued to expand.

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# CONSUMER AND CORPORATE AFFAIRS CANADA AUDIT, EVALUATION AND CONTROL BRANCH

# **DECEPTIVE MARKETING PRACTICES:**

# LITERATURE REVIEW OF ISSUES FOR THE EVALUATION ASSESSMENT

# **FINAL REPORT**

# APRIL 3, 1984

Prepared by:

RES Policy Research Inc. 294 Albert Street 4th Floor Ottawa, Ontario KIP 6E6

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# APPENDIX A: ISSUE NUMBERS, LABELS AND DESCRIPTIONS

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# EXECUTIVE SUMMARY DECEPTIVE MARKETING PRACTICES: LITERATURE REVIEW OF ISSUES

This report presents results of a review of the literature with bearing on the evaluation issues proposed for the evaluation project on the deceptive marketing practices (DMP) component, and secondarily, the traded goods component. The purpose of the review was to summarize major theoretical themes on the effectiveness of regulatory enforcement; identify empirical research and assess its reliability in terms of methods; determine its continued relevance if dated, or its relevance in Canada if foreign; and summarize differences between various jurisdictions in their approach to enforcement or deterrence, be it legal or administrative.

Beginning with items supplied by the Audit, Evaluation and Control Branch, we searched libraries, consulted academic specialists and U.S. associates, obtained materials from the U.S. Government, and conducted inquiries in the U.S., Britain and Sweden.

Literature was analyzed systematically according to a check list. Items scanned but not used are included in the bibliography, those read in detail are summarized in the annotated portion of the bibliography (under separate cover) which also shows the proposed evaluation issue or issue group to which each item speaks. Items of more central interest are discussed or quoted in the text. The bibliography contains about eighty items; abstracts were prepared for fifty, of which approximately thirty are cited in the text. A cross-reference table links evaluation issues to items of literature. It is emphasized that this study is one part of a series of preparatory studies to develop the evaluation assessment report. Evaluation issues and research hypotheses are all tentative and do not commit the Branch to a particular approach, method or area of emphasis in the planned evaluation project.

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The effectiveness of regulatory enforcement and self-regulation of industry is a complex, poorly researched field. It is at the intersection of: law, both positive and common law; law enforcement and judiciary practice; the economics of incomplete competition and consumer information; behavioural and marketing studies; political science and the sociology of regulatory agencies; and voluntary organizations and other intermediate-level institutions in democratic societies with mixed economic systems.

As an aid in placing literature, and also to remind ourselves of mechanisms of regulation other than government enforcement through adversary means, the report contains a Figure (1) setting out the main players in the field of regulation. We also suggest that the total effort of enforcement and the mix of government and self-enforcement can and ought to vary with the age of an industry (Figure 2). Finally, the theoretical discussion attempts to lay out the main groups of variables or institutional points through which the effects of regulation could be measured (Figure 3).

Turning to results, our major observation is that the literature is extremely short in methodologically sound, replicable work on effects of regulatory activity. In fact, there are U.S. sources which say that the total effectiveness of regulation simply has not been measured.

Global measures of regulatory effectiveness such as the economic loss prevented have been proposed but never implemented (except for ORI (1968)), much less used by agencies. There are views in key pieces of writing (Diver, 1980) to the effect that such single goal variables cannot be reliably measured, in fact should not be maintained. Such sources favour an institutional or organizational approach, addressing the actual conduct of the field organization. The literature has not accumulated empirical knowledge through studies that replicate and build upon each other. Speculative economic and legal literature is rich, but mostly in opinions and various assumptions. Sources emphasize that to assess the effectiveness of regulation, an in-depth understanding of the industry in question is more important than a theoretical model.

ii

General themes of thought on where the business of regulation is heading, or should head, include the following: increased use of civil redress at the expense of penalties without restitution; broader use of implied warranties of performance of goods as intended; systematic search for self-regulating mechanisms; and encouragement of regulatory staff to settle short of legal sanctions. All sources agree, however, that residual enforcement and fines, possibly of significant magnitude, should stay in place to deter and set the moral tone in an industry.

If lessons for the proposed evaluation can be drawn, we would propose that the study should be modest in its aims, seeking to assemble mostly operational data and informational or attitude data specific to an industry. Even so, a study in depth with multiple lines of evidence, if only of a subset of Canada's regulated industry, would be unique among the sources reviewed.

**RES Policy Research Inc. Project Staff:** 

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# 2. GENERAL CONSIDERATIONS

# 2.1 Introduction

The problem of measuring the effectiveness of protection against deceptive trade practices is complex. The main reasons for such complexity are as follows:

- The institutional landscape is complex, with split jurisdiction between governments, an independent judiciary and a wide set of intermediate organizations (Figure 1 on P. 4).
- In each market there is a product or marketing life cycle, giving rise to changing needs for protection and enforcement over time. Changing tastes and preferences, changing technology, and external shocks are the main factors driving the cyclical shift of needs for deterrence and protection.

- The populations of traders on the one hand, and consumers on the other, are heterogeneous; a fact which requires different enforcement and protection mechanisms to coexist.

The aspects of the problem are now reviewed in more detail.

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# 2.2 Institutional Setting

In the interest of developing a map for systematic placement of the literature, the main groups of players in consumer protection in a democracy are displayed in Figure 1 on P.4. The glossary following on P.5 illustrates the main transactions between groups. The groups in this figure are operating with somewhat different objectives and perceptions, which may be summarised as follows.

<u>Governments</u>: Without referring to specific laws and objectives of the Program under review, one may say that governments in North America are operating under the following objectives:

- To establish and maintain an optimal regulatory environment for industry at an acceptable cost to government.
- To increase the transparency of markets to the consumer.
- To establish and maintain intermediate (semi-public) institutions so as to further the first two objectives with minimal government involvement.
- To support and develop legal institutions so as to stabilise and make predictable the relations among traders, consumers and intermediate institutions.

<u>Traders</u>: Individual traders are interested in creating and protecting market imperfections, as well as reducing the incidence, cost and risk of government intervention. Industry leaders or oligopolists are probably more interested in predictability of their regulatory environment.

<u>Trade Associations</u>: Are interested in limiting the risk and cost of government intervention, as well as substituting self-regulation, or standards and certification, for enforcement by consumers through adversary means.

<u>Standards/Certification Bodies and Testing Organizations</u>: Are interested in developing standards and certification programs by the consensus method, and securing stable markets for standards writing and certification.

<u>Consumers</u>: Are interested in: transparency of markets, both as to price and product performance; reduction of the cost of search; reliability of redress; and minimal cost, time delay and risk to themselves of enforcement. Are interested also in visibility of results of enforcement.

<u>Consumer Protection Organizations</u>: Are interested in increasing their membership by providing consumer education, securing increased government intervention, and securing increased access to legal redress or decertification.

Legal Institutions: Are interested in obtaining a high proportion of prosecutable claims, and securing a high proportion of convictions with minimal risk and time delay. Are interested also in developing the body of precedent and rules of evidence so as to decrease the risk of unsuccessful prosecution, its cost, and time delay.




See P.5 for Glossary

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Figure 1 (P. 4): Glossary of Transaction Nos.

- No. Description of Transactions
- 1 Government Intervention through Legislation, Investigation and Prosecution.

Trader Compliance or Response to Intervention.

- 2 Government Activity to Maximize Deterrence above and beyond Enforcement; Trader Education.
- 3 Trader Representation to Consumers: Advertising, Sales Contracts and Warranties.
- 4 Consumer Purchasing Decisions, Payment and Complaints.
- 5 Consumer Education by Government.

Consumer Complaints to Government.

6 Formation of, and Membership in, Trade Associations.

Trader Education by Associations and Exclusionary Practices.

- 7 Government Accreditation of Trade Associations; Trader Education through Associations.
- 8 Impact of Legal Institutions on Traders.
- 9 Development and Use by Government of Legal Institutions.
- 10 Development and Use by Consumers of Legal Institutions.
- II Consumer Education by SWOs (Standards Writing Organizations) and Certification/Testing Organizations.

Consumer Input in Standards Development and Certification.

12 Development and Support by Consumers of Consumer Protection Organizations.

Consumer Education by their Protection Organizations.

- 13 Standards Development and Promulgation by Trade Associations (Consensus Method).
- 14 Standards Development and Dissemination by Consumer Organizations.
- 15 Government Intervention in the Standards/Certification System through Consensus Method, Funding, and Regulatory Follow-up.
- 16 Specific Complaints and General Recommendations to Governments by Consumer Protection Organizations. Support of and Interventionary Response to Protection Organizations by Government.

#### 2.3 Industry Life Cycles

The incidence of deceptive practice varies during the life of an industry or a marketing cycle of a product. Similarly, the effort of governments, consumers or intermediate organizations to deter fraud and deception vary through time. Figure 2 on P. 8 illustrates such an industry life cycle in general terms.

By way of historical examples, the period of Western settlement was accompanied by a series of land frauds, and the railroad boom generated a number of fraudulent stock schemes. These industries no longer show high rates of fraud. In this decade, the tax preference of R and D stock issues is giving rise to many questionable research and development ventures. Such practices can be expected to subside as the high technology sector stabilizes.

Figure 2 shows a new market developing from zero to a point of saturation, when further sales are replacement/upgrade business, for example, or to newly arrived members of the relevant customer class. One would expect the likelihood of deception or its incidence to begin at a peak and then drop off to a steady state. Legal sanctions would begin after a certain time lag, leading to a peak of prosecution after sanctions are in place and enforced. Then, as the likelihood of deception declined, so would the incidence of prosecution; although the likelihood of detection and prosecution, as well as the level of deterrence, would remain high. Legal sanctions normally remain in place, but they could be replaced by mechanisms of consumer enforcement through legal precedent, e.g. class action, or by means of intermediate organizations that are emerging. The micro computer industry and the home insulation industry are current examples of industries in early stages of their life cycle. They show, respectively, a high incidence of false advertising and consumer

fraud. The probability of deception and fraud in these industries is now declining in response to self-regulation, and enforcement through market-driven standards or certification, respectively. In home insulation the Government has funded the standards and certification/listing program. It would be desirable to position proposed evaluations so as to capture different stages of life cycles in several industries.

Although the literature under review acknowledges that perceptions of risk, costs, and benefits of redress differ by industry, it remains largely silent concerning the cyclical factors sketched here.

On a closely related theme however, Golding (1982), uses the notion of "reputation capital" in a theoretical discussion of self-regulation. In this context, reputation capital is accumulated <u>over time</u>. The firm relies on this to establish its market share with the results of consistently high quality output and prompt warranty action.





### Glossary

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Market Saturation:	Full Development by Traders of Potential Market		
Self-Enforcement:	Standards, Certification, Consumer Information, Protection of Acquired Reputation		
Legal Sanctions:	Application of Existing Law, New Laws or Regulatory Practice, Precedents; Deregulation		
Deception:	Deceptive Transactions, as % of All Transactions		
Prosecution:	Deceptive Transactions Identified and Remedied under Criminal law, as % of All Transactions		

### 2.4 Target Populations

A final problem is found in the heterogeneity of the two populations, traders and consumers. A key U.S. source (Sheldon, 1978) emphasizes the difference in compliance behaviour and effects of deterrence as between main-stream traders and fly-by-night operators. These two groups differ in their time horizon and perception of risk. For the latter group, deterrence generally does not work. For this reason, some criminal enforcement will always be required, even in mature industries after self-enforcement and educated consumer enforcement are in place. However, in an industry where deterrence of main-stream traders works, the effort of government enforcement including inspections could be reduced (see Figure 2 on P.8). This raises an opportunity for the evaluation, namely to examine whether government effort for enforcement can be optimized overall by redeploying resources in phase with industry cycles as outlined here.

The same issue of heterogeneity arises with respect to consumers, in their propensity to complain and their perception of likelihood of success. Disadvantaged groups are more likely to be defrauded, and have less product knowledge, less knowledge of sanctions, and lower faith in their effectiveness, than do middle class or educated consumers. Therefore, evaluation projects involving data collection from consumers should seek to stratify samples by education and socio-economic status.

### 3. THEORETICAL BACKGROUND

### 3.1 Major Themes

In this section major themes of the literature will be introduced in a systematic fashion. It has been observed in an important recent article (Diver, 1980, p. 259) that theoretical and empirical studies of regulatory enforcement are scarce. The main reason is that "enforcement is difficult to study". Enforcement is generally an activity of low visibility; enforcement agencies are reluctant to reveal their enforcement policies and , contrary to popular views, the great majority of enforcement actions do not reach the adversarial stage. Depending on the professional discipline of the analyst and his preferred causal model of regulatory action, only parts of the whole universe of variables are addressed, and much of the literature is disjointed. Figure 3 on P.15 will assist in placing major groups of variables or constructs for a better understanding of the general problem of effectiveness of regulatory enforcement, and measurement of that effectiveness.

Figure 3 shows major groups of regulatory factors or variables in five layers as follows:

- Socio-political
- Economic
- Legal
- Organizational
- Market

Blocks arranged on the left-hand side of Figure 3 generally represent government activity and the adversarial system, as opposed to selfregulation without adverserial remedies on the right.

The overall goal of the regulatory system in a mixed economy is represented by an unmeasured variable, here called protection at

optimal social cost. The socially necessary regulation is allocated either to Government or to intermediate organizations devoted to self-regulation, or to both. There is no theory to suggest an optimal allocation of a regulatory function to either sector. The political process produces various solutions, here described as being found through negotiation.

Figure 3 shows the rule-making authority of regulatory agencies as a separate function between laws and the actual enforcement, to reflect the view of theorists (Diver, 1980) that the autonomy of regulators in this regard should be an element of a good theory of regulatory enforcement. At this level there are trade-offs with self-regulation; for example, in the trend towards regulation with "reference to standards" (Canadian General Standards Board). Underneath the rule-making function lies the enforcement activity.

The economic loss prevented, as defined in Andras (1976, p. 28), is the central measure of benefits to consumers from regulation. The costs of enforcement or self-regulation, respectively, are the logical counterparts to benefits. Government regulation and self-regulation cannot be compared without knowing these costs, both within government and industry. This fact is represented by showing two cost-benefit ratios. As was originally proposed by ORI Ltd. in 1968 and cited by Andras (1976, p. 28), the economic loss prevented consists of a direct benefit attibutable to enforcement as such, and an induced benefit which is obtained through deterrence of other, undetected violators.

Andras (1976) proposed the following relationship between the key measure of violations and that of economic loss prevented. The difference between the rates of violation before regulatory inspection and, presumably, enforcement activity, and after such activity, is multiplied by the dollar value of goods and sales volume (in units) in the market under study, to produce the estimate of loss prevented. R. Andras also proposed a measure of violation after random survey. This measure avoids biases caused by the fact that inspection activity tends to cluster around known violators. It is not known whether the rates of violation measured through the inspection activity itself are significantly higher than those obtained through a survey taken independently of inspections. R. Andras (p. 27) proposed that they are generally higher.

The legal system is conceived of in Figure 3 as a kind of filter for violations. The legislation and enforcement rules, combined with precedent and rules of evidence as well as the practice of enforcement staffs, determine how many reported violations result in convictions and fines. In some jurisdictions there are civil penalties in the sense of punitive damages awarded to the plaintiff; although informal consultancy with the legal firm of Gowling & Henderson informs us that punitive damages are not awarded in Canada under civil law, and that simple redress is never referred to as a penalty in the Canadian legal system. (Please note that it is not part of RES's mandate in preparing this report to conduct full and rigorous legal research.) Especially in the U.S., orders to cease and desist are Finally, a notice of violation may be used to obtain available. Common variables suggested for compliance by agreement. examination of legal remedies are: from the point of view of both violators and consumers, the risk of detection and successful remedy; for the consumer only, the probability of obtaining redress; and the cost in money and/or time for both parties. Shapiro (1979) notes asymmetries between both parties with respect to these variables, generally in favour of the trader. Perhaps the greatest asymmetry lies in the trader's advantage, both financially and in terms of human resources, in entering into legal disputes. As well, information is

usually not as readily available to the consumer as it is to the trader on specific product related issues.

At the bottom line of Figure 3 are the concrete actions of players in the market:

Investigation Complaints \_

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Publicity Education \_

Testing or Certification -





#### 3.2 Assessment

In order to draw general lessons from the literature for the proposed program evaluation, we will now consider three questions:

- 1. Which elements of Figure 3 on P. 14 are outside the terms of reference of the evaluation project?
- 2. Which variables have not been measured in the literature and show little promise of being measured in the proposed project?
- 3. Given the boundaries of the problem and likely data problems, are there theoretical approaches which justify a study of the remaining variables?

#### 3.2.1 Boundaries of the Evaluation

The proposed project takes as given the legislation in place. Therefore the top layer of Figure 3 is not part of the proposed study. Similarly, it is not part of the proposed study to examine how a new regulatory need of society is allocated to selfregulatory bodies as opposed to Government; whether the Government should develop alternate non-governmental institutions for self-regulation; or, indeed, whether existing regulatory laws can be dropped in the interest of de-regulation.

#### 3.2.2 Variables Not Measured

Most of the economic constructs listed in Figure 3, in particular that of economic loss prevented, which was proposed by R. Andras (1976), have in fact not been measured by the authors under review. It is questionable whether they can be measured, at least within the confines of a project such as the present evaluation. The first data problem arises in estimating the rate of violation without enforcement activity, a measure required to derive the estimate of dollars-at-risk (Andras, 1976, p. 27). Given the lack of similar measures in the literature, we suggest that a direct measure of the quantities referred to from raw field data should not be attempted. Andras (p. 31) noted other difficulties in obtaining accurate, product-specific sales data. Reliability of reporting is the major difficulty; in this respect even Revenue Canada cannot be confident in reported sales figures. These inconsistencies proliferate in turn into biases as the sample data is extrapolated to represent the entire population. If the biases discussed by Andras and the problem of sales data can be overcome, then pre-inspection dollars at risk (V<sup>a</sup>S) would be a useful measure obtainable from operating data (see Andras, p.34).

Further, the total cost of enforcement will be hard to measure.

### 3.2.3 Theoretical Rationale

The unreliability of estimates noted above has also been emphasized by Diver (1980, p. 264). However, much more important is the theoretical argument presented by Diver.

He argues that economic loss prevented and similar high-level measures of social benefit are representative of the "top-down" approach to regulation, which uses a rational model of a regulatory agency that is operating under one criterion of effectiveness. The extensive survey by Sheldon (1978), of evidence in sociology of regulatory enforcement, supports Diver's view that rational models of regulation do not work, due to measurement problems; and that in fact the overall effectiveness against a global goal variable of an enforcement agency has not been measured.

By contrast, the behavioural theory of organizations (Cyert & March, 1963) advanced by Diver suggests that the actual working organization, down to the inspector level, should be the focus of study. Under this model, the regulatory enforcement agency adopts several simplifying strategies, namely:

- reduction of the number of alternatives in problems of choice,
- displacement of an ultimate goal with a more easily measured proximate objective, and
- where goals conflict, responding sequentially and reactively to problems (Diver, 1980, p. 272).

A full discussion of these strategies postulated by the behavioural school of organizations would go beyond the present report. The background literature cited in Diver (1980) contains examples of each strategy in regulatory enforcement. Diver (p. 272) observes that regulatory agencies typically resort to all three techniques. They will be defined in brief.

<u>Reduction of Alternatives:</u> In selecting types of enforcement actions from those illustrated in the second-lowest layer of Figure 3, the agency is not able to calculate the costs and benefits of each, and that of their mix overall, employed in each industry. To do this nationally, it would have to know their cost and benefit curves for each industry. Therefore it tends to simplify its problem of choice by setting an acceptable level of goal attainment across the board, often based on average as against marginal analysis, and modifying activities one at a time, and only until the acceptable level of performance, however defined, is reached.

<u>Goal Displacement:</u> The enforcement agency is compelled to develop operational proxies for its ultimate objectives, and over

time, these measurable goals or even constraints tend to displace ultimate objectives. For example, the agency may orient itself to attaining an acceptable number of reported violations rather than minimising the total societal cost of infractons. Or it may take complaints from the public as a valid indicator of frequency and severity of infractions. Under a hypothesis of goal displacement in this sense one would expect that minor infractions of new entrants in a regulated market are inspected more frequently than major or systematic violations by industry leaders. In general, Diver suggests that under goal displacement the agency would concentrate its resources on those activities which it perceives as presenting the greatest risk of visible harm.

Sequential Attention to Goals: Even with reduced alternatives and displaced goals the agency is faced with conflicting goals. It is also faced with changing external requirements from various coalitions of counterparts such as the trade associations, organized consumer interests, central agencies or management. In these conditions it is too costly to formulate a "comprehensive explicit enforcement strategy" (p. 279). The behavioural model assumes that the agency attends to problems sequentially by shifting its resources between various operational objectives. In fact, Diver emphasizes that the enforcement agency can thus act as a safety valve for the Government. We would add that under this perspective the Government would be interested in having an enforcement agency which operates sequentially under partially conflicting goals with incomplete accountability.

Finally, the enforcement organization must delegate considerable discretion to low-level officials. This is due to the

required decentralization of inspection activity, and the extensive judgements required of inspectors when assessing violations. Therefore such an agency is resistant to change from above, and may in fact use its rule-making power to protect itself from senior management or political intervention. From this point of view, it would not be an accident that the global effectiveness measure proposed eight years ago has not been fully implemented. As we observed above, in Sub-Section 3.1, Major Themes, Andras (1976) proposed that reduction in dollars-at-risk be measured through independent surveys. Such a survey had been conducted by ORI Ltd. (1968).

Diver suggests some useful hypotheses derived from the socalled satisficing model of regulatory enforcement, for example (pp. 274-289):

- The agency will substitute prevention of adverse criticism for prevention of societal harm.
- In allocating resources, it will give preference to complaints from the public.
- The agency's performance will be largely shaped by pressures from below.
- The enforcement staff puts high priority on obtaining signals from the environment that indicate the relative probability of finding violations.
- Risk-averse behaviour leads to a preference for conducting an extensive superficial examination for easily detectable violations, rather than an intensive inspection for less visible offences.
- In order to increase the agency's bargaining position with traders, its staff would favour early negotiated settlements. To this end it would be reluctant to publish explicit penalty standards.

This list of hypotheses suggests that the evaluation should concentrate its research questions on the internal functioning of the Branch at the expense of the external, in particular economic, measures of effectiveness. A recent British source on the economics of enforcement (Veljanowski, 1982) supports the approach proposed by Diver. This author provides an exposition of a 'compliance' model of agency behaviour. Under the model, the agency official is engaged in a form of economic bargaining with traders. Using the threat of sanctions as background only, he negotiates compliance in the face of detected violations, sometimes short of full enforcement of the law. He acts more as an advisor to industry rather than an efficient enforcer who would be out to maximize deterrence by penalties. The corresponding model of the firm is similar to the satisficing model of Cyert & March (Diver, 1980).

### 3.3 Systematic Description of Issues

The institutional model and its transaction numbers (Figure 1 on P. 4) are used in the study to classify literature on the issues.

Each issue is identified as relating to one or more particular transaction numbers. Those transaction numbers then serve as a check list for literature search on the issue, under each major consideration where it can apply. This ensures that no area is overlooked; and makes it easy to see those areas for which there is no or comparatively little relevant literature.

A review of transaction numbers to which none of the issues relate can suggest further issues which should be added to those already formulated.

The Issue/Transaction Tables on PP. 22-25 relate issues to transactions and show, for each issue, whether literature has been identified. If it has, cross-reference is made to the particular work or works in the bibliography by using the bibliography item reference numbers. Theoretical and empirical literature are shown in separate columns. The issues are given a number and a brief descriptive label. Appendix A to the report relates the numbers to those in the two documents of issues, from Consumer Products and Combines Investigation Act, and provides a full description of each issue.

The Tables, together with the commentaries on the institutional model and its transaction numbers, can be regarded as a systematic description of both theoretical and empirical issues.

### RATIONALE

	ISSUES		LITERATURE	
10.	LABEL	TRANSACTIONS	THEORETICAL	EMPIRICAL
1	Trader Awareness	1, 2, 5, 7	45	9, 13, 20, 32, 33, 41
2	Constitutionality	9	40, 47	42
3	Information to Consumers	3, 5, 10, 12	18, 24	27, 35, 41
4	Enforcement Effectiveness	1, 2, 5, 9	3, 17, 23, 25, 34, 40	27, 48
5	Strength of Program Links	1, 2, 5, 8, 9	3, 17, 25, 34	

### **OBJECTIVE ACHIEVEMENT**

	ISSUES		LITERATURE	
NO.	LABEL	TRANSACTIONS	THEORETICAL	EMPIRICAL
6	Changed Trader Behaviour	1	2	1, 46, 48
7	Changed Consumer Behaviour	5	30, 31	1, 7, 19, 27, 29, 30, 31
8	Other Influencing Factors & Programs	l-15	49	1, 27, 46
9	Adequacy of Present Techniques	1, 2, 5	2, 5	20, 48
10	Priorities for Activities	1	2	

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### IMPACTS

	ISSUES	LITERATURE		
NO.	LABEL	TRANSACTIONS	THEORETICAL	EMPIRICAL
11	Costs of Techniques	1-6, 8-10	15, 16, 22, 25, 34	9, 10, 21, 28, 32, 50

### ALTERNATIVES

ISSUES			LITERATURE	
NO.	LABEL	TRANSACTIONS	THEORETICAL	EMPIRICAL
12	Regional Differences	l, 3-5		8, 12
13	Other Enforcers	1, 2	12	8
14	Prosecution Techniques	8, 9	5	48
15	Priority System	1, 2, 5, 8-10, 12	14, 15, 18	
16	Alternatives to Prosecution & Legislation	I-15	26, 39, 47	4, 8, 11, 21, 32, 38, 42, 46, 48
17	Alternatives for Compliance	1-6, 8-10, 12	6, 7	8, 35, 46, 48
18	Response to Alternatives	1-6, 8, 10, 12		
19	Limitations on Alternatives	1-15		
20	Consumer Orientation of Program	4, 5, 8-10		
21	Acceptability of Alternatives	1-15		

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#### 4. EMPIRICAL BACKGROUND

#### 4.1 Introduction

This section presents a general description of the empirical research reviewed to date, as well as an informed opinion on the reliability of the various methodologies used. In addition, the methodologies are assessed in terms of their potential for replicability in the case of dated research, or adaptability to the Canadian situation in the case of foreign research. Finally, a general critique is provided on commonly used research designs to evaluate consumer protection programs, and suggestions are offered to strengthen these designs.

Four specific points must be made prior to describing the research reviewed, as they identify gaps in research which may well be seen to be significant.

- (i) Very few studies have attempted to measure the effectiveness of enforcement techniques in terms of a cost-benefit analysis. Most statements on effectiveness are not quantified, but inferred from the data collected. Sheldon (1978) came to the conclusion that there was no hard evidence to demonstrate the success of consumer education programs or to assess whether criminal sanctions in fact deter consumer fraud. He concluded that no one seemed to know how to evaluate the effect of criminal sanctions, and determined that consumer fraud agencies in the U.S. do not even attempt to measure the deterrent effect.
- (ii) No studies were found which directly address the program evaluation function, and none which used multiple lines of evidence to establish a proposition.

- (iii) The unavailability of up to date information on studies and research conducted by the component branches did not permit an assessment of recent or ongoing efforts to study the effectiveness of enforcement techniques.
- (iv) A majority of the literature reviewed to date, while addressing areas and topics of consumerism which are clearly relevant to this study, does not specifically address the central question of compliance inducement.

А typical example of this is Consumer Satisfaction/Dissatisfaction (Ash, 1980). It identifies the product rather than marketing as being the principal cause of dissatisfaction. This relates to Transactions 3 and 4 in Figure 1 on P. 15 between trader and consumer; and it does lead to a consideration of Issue 16, Alternatives to Prosecution and Legislation: "require trial periods, warranties, refunds", and "let trade associations set standards and police them", as techniques for reducing the incidence of consumer dissatisfaction. However, it does not explicitly address those alternatives as techniques for inducing compliance to deceptive marketing legislation.

In the light of the four points made above, a note of caution must be struck. The available literature, while useful and relevant to the objectives of the evaluation, cannot be said to address them specifically and directly; and it cannot be expected to give clear and unequivocal direction to the fulfilment of those objectives.

It should be noted however, that the most reliable and informative work is Consumer and Corporate Affairs' Expenditure Plan Estimates. Although this does not constitute an empirical work, the report was able to shed light on the relative magnitude of the cost/benefit ratio, and on compliance rates. In 1983-84, the areas of food, non-food and textile products reported a dollars-at-risk factor of \$1.5 billion (unfortunately no elaboration was provided to assess the validity of the figure). On the cost side, adjustment of the reported figures for Consumer Affairs to include food, non-food and textile products, yields a net cost of \$23 million including the relevant administrative costs. The cost/dollars-at-risk ratio is thus approximately .015, suggesting that Consumer and Corporate Affairs has a significant potential as a cost effective deterrent agency. If the dollars-at-risk have been reduced by only 10%, the cost/dollars saved ratio is approximately .15, i.e. each dollar spent has saved approximately \$6.50.

Although somewhat dated, one other empirical work is worth mentioning. Orkand et al (1968) carried out a cost-benefit analysis of retail food inspection activity on behalf of the Department of Consumer and Corporate Affairs. The purpose of their study was to perform the analysis on a selected activity of Consumer and Corporate Affairs, to demonstrate the applicability of the method for other resource allocation requirements. At the outset they point out that the literature at the time (1968) does not report on any cases of cost benefit analysis used for regulatory activities.

The results of this study were impressive. Both direct and induced benefits of retail food inspection were measured on a national basis. In 1968 dollars, they reported benefits in excess of \$27 million compared to costs of less than half a million dollars. Although the present day methods of cost-benefit analysis have been refined considerably since 1968, the authors concede a point that is still valid today:

"Confidence in Canadian produce' is not readily translated into dollars and is thus not commensurable with costs expressed in dollars." (Orkland et al, 1968, p. 27.)

### 4.2 General Description of Empirical Research

One of the central themes investigated in the studies reviewed reflects the importance of the concept of information and communication in the trader-consumer transaction. Maynes (1979) and Trebilcock (1976) have stressed the importance of the "informed consumer" and suggest that it is a prerequisite to product quality and fair pricing. Trebilcock advances the argument that advertising is the principal line of communication between trader and consumer, and that the cost of this communication is eventually borne by the consumer. He suggests, therefore, that there is a certain responsibility on the part of the trader to the consumer, who is invested with the <u>right</u> to be informed. According to Maynes, this right of the consumer to be informed has achieved universal acceptance.

It is not surprising, therefore, that a significant amount of research has been done in attempting to understand the relationship between information provided and consumers' purchasing decisions. Seaton (undated) found that the probability of a satisfactory purchasing decision increased with objective, reliable information - with a consequent reduction in deceptive practices on the part of the trader. Katz (1980) and Olsen & Dover (1976) found that consumers' purchasing decisions could be affected by the presentation of biased information, i.e. deceptive advertising. Though he does not offer any actual measures, Katz suggests that the empirical measurement of deceptive advertising can be achieved using an attitudinal information processing approach.

In the area of labelling, Katz and Rose (1976) and Padberg (1977) showed, in separate studies, that information disclosure on labels (including unit pricing) was desired by consumers but that it had little impact on their buying behaviour. Padberg recommends that the

measurement of a shift in consumer behaviour should be attempted some considerable time after the introduction of labelling, since he identified a time lag in the consumer's use of new information. He also found that the labelling requirements seemed to be achieving their objectives of deterring fraud by influencing the actions of the traders - an unintended, though desirable, effect.

On the periphery of the theme of information is the wealth of research done in the area of consumer satisfaction and dissatisfaction. Ash's research (1980) typifies the work that has been done. As with most of the studies identified, the findings do not bear directly on the issue of program effectiveness; but they do provide insight into the reasons for consumer disatisfaction (resulting from a failure of the enforcement techniques) and suggest specific industries and areas into which enforcement efforts can be directed.

In brief, Ash found that consumers' dissatisfaction with a market transaction, and hence their propensity to complain, is situation specific. In the food and clothing industries, for example, product quality rather than marketing practices were the primary cause of dissatisfaction. In regard to durables, inferior quality and warranty problems were cited; and in the service industries careless and unprofessional service was the most often cited cause of dissatisfaction. In general, then, dissatisfaction tended to relate to the product and its performance rather than the marketing aspect of the transaction.

Consumers' attempts to resolve dissatisfactions incurred in transactions tends to be through personal action such as cessation of use of the products and warning friends about their negative experience. Direct action such as the registering of complaints and the seeking of redress are the less preferred methods of resolving their dissatisfactions. Furthermore, the propensity to complain was found to be in direct proportion to the importance of the purchase and the perceived level of the pay-off.

Research of this type suggests that an understanding of consumer behaviour, together with an appreciation of how specific markets or industries impact on the behaviour, will help the development of compliance enforcement techniques which have a higher likelihood of being effective. Katz (1980) and Ayres & Padberg (1975) have suggested that lack of such understanding by legislators has resulted in a proliferation of ineffective enforcement methods.

As pointed out in the discussion of the theoretical literature, the concept of self-regulation is very important in the overall description of the compliance enhancement framework. A seminal work by La Barbera (1983) on self-regulation in the advertising industry in the U.S. delineates clearly, though not in monetary terms, the costs and benefits to industry, consumers, and government of self-regulation. These are outlined in the following three paragraphs.

The benefits to industry include the forestalling of government intervention and regulations, the efficient resolution of complaints, an enhanced public image, and an overall increase in the effectiveness of advertising. On the cost side, potential for discord within the industry is increased as is the potential for anti-trust violations and subsequent prosecutions.

Consumers benefit because they are exposed to more truthful and tasteful advertising and because they have direct recourse to the industry itself for the airing of complaints. The major potential cost borne by consumers is the increased bias that may result without third party scrutiny, i.e. government regulation. Governments benefit by a reduction in their backlog of cases deriving from complaints and, most importantly, by the release of significant resources which can then be directed to other pressing issues. On the other hand, self-regulation represents a significant restriction of governments' policing authority and increases the likelihood of governments' involvement in lengthy and costly anti-trust procedures.

Though not specifically addressing self-regulation in the Canadian advertising industry, Rotenberg et al (1978) found that 70 percent of advertising executives interviewed in Montreal would have welcomed self-regulation (more specifically, they disagreed with government regulation); on the other hand, an equivalent percentage felt that the industry was not capable of regulating its own standards and activities.

Notwithstanding Rotenberg's findings described above, there is no reason to suppose that La Barbera's conclusions on the cost/benefits of self-regulation in the U.S. advertising industry are not equally applicable to Canada. La Barbera questioned 2,000 directors of trade associations, Rotenberg only 200 members of advertising agencies; suggesting La Barbera's received answers to be more informed and representative than Rotenberg's. Furthermore, the fact that 70% of Rotenberg's respondents favoured self-regulation, and yet 70% felt it would not work, suggests the "yes but" attitude of a biased or, at the least, ill thought out response at the collective level (at least 40% were giving a "yes but" response).

La Barbera implies that the benefits of self-regulation in this industry outweigh the costs for each of the players involved. In contrast to Rotenberg, there is no indication that self-regulation is not successful and one is lead to the conclusion that this method has been effective in reducing deceptive practices. Unfortunately, no attempt is made to quantify the data, or apply them to a theoretical model to estimate the loss prevented to the consumer; so that a definitive statement on effectiveness is not possible.

No research was identified which studied self-regulation in other industries. However, a representative of the Standards System of Canada will be available for advice.

A critical area in regard to the evaluation of program performance is the consideration of alternative means of achieving the desired result; in this case the reduction of deceptive trade practices. Only one study was identified which directly addressed this particular issue. Nader (1980) compiled a collection of works dealing with alternatives to the American legal system to mediate consumer disputes. Using the experiences of consumers in their attempts to obtain redress through the legal system, Nader prepared a "how to" guide for the consumer to expedite the redress procedure. The overall conclusion of the work is that for every consumer problem there is a direct "non-legal" way of solving the complaint. However, only by implication can inferences be made on the development of alternatives to existing regulatory programs.

Though it does not provide alternatives as such, the work by Sheldon (1978) outlines every conceivable strategy for consumer fraud intervention. The work is the culmination of a three phase study prepared by the National Consumer Law Centre and the American Institute for Research. Though methodologically and statistically questionable, this effort results in findings which have strong intuitive appeal and is considered the most comprehensive work in the field of consumer fraud.

Phase I attempts to describe the nature, scope and characteristics of consumer fraud. This is a critical first step to understanding the

problems that intervention techniques are intended to address. Several authors have suggested that regulators too frequently rely on intuition, and not enough on a thorough appreciation of the problem at hand.

Phase II examines the incidence and impact of consumer fraud in order to determine the requirements for prevention and control. Previous articles have suggested that this exercise should be done separately for specific industries.

On the basis of the results from the first two phases, intervention strategies are outlined and a detailed discussion of their strengths and weaknesses is presented. Strategies considered are under the following headings:

### 1. DETERRENCE OF FRAUD

- Criminal Sentences
- Injunctions, Cease and Desist Orders
- Fines, Penalties, License Revocation
- Private Attorneys General

### 2. COMPENSATION OF VICTIMS

- Private Damage Actions
- Restitution
- Complaint Mediation

#### 3. SELF-ENFORCING REMEDIES

- Witholding Payment
- Automatic Remedies
- Consumer Demonstrations

#### 4. CONTROLLING SELLERS

- Licensing
- Restricting Sales Approaches and Advertising
- Controlling Contract Language

#### 5. IMPROVING CONSUMER DECISION MAKING

- Pre-Sale Disclosures
- Cooling Off, Trial Periods, Affirmation
- Consumer Education

### 6. MINIMIZING FRAUD LOSSES

- Price Limitations
- Escrow
- 7. POLICING OF FRAUD AND BEARING OF LOSS BY THIRD PARTY
  - Limiting Defence Cut-Offs
  - Bankruptcy
  - Holding Corporate Officials Liable
  - Bonding, Insurance

However, no specific recommendations are made, nor is there any attempt to formulate a general theory of effective regulation and enforcement. Examples of various strategies and their effectiveness are drawn from various industries; and by implication it is left to the regulator to assess his own situation and weigh the relative merits of each strategy in relation to it.

We infer from Sheldon's work that effective intervention strategies must flow from a thorough understanding of the industry for which interventions are being considered, as well as from a sound conceptual framework.

As an illustration, consider the discussion of licensing on pp. 113-118, and the findings on television repair fraud. In one state, licensing with entry restrictions was found to increase the costs to enter the television repair business, and thus to reduce the number of repairmen to one-third fewer technicians per set than in states with no entry restrictions. Repair costs were 20% higher in the licensed state even though the general consumer price index was lower than in the other states sampled. The immediate conclusion would be that licensing for television repairs not only fails to yield benefits but actually worsens the situation. However, licensing was found to yield a benefit in terms of controlling fly-by-night operators. Prosecution can be based merely on practising without a license; the burden of proving fraud is thus avoided. Further, monitoring of local advertising quickly reveals the presence of unlicensed operators, at the same time and in the same way as their message is received by potential consumers. With an understanding of the industry therefore (specifically, knowing that local advertising is the principal avenue of solicitation) one would not discard licensing altogether as an effective intervention strategy.

Another example is the effectiveness of an investigative regulatory agency in the television repair industry. It is a fast and efficient process to send to repairmen causing complaints test television sets with carefully controlled malfunctions, and then to evaluate the 'repaired' set back in the laboratory. This is done with great effectiveness by the Bureau of Repair Services in California. Clearly knowledge of the industry is a prerequisite to deciding on the effectiveness of such an intervention strategy: it would, for example, be highly effective in the automobile repair business, but would become unwieldy if applied in the household electrical repair business or construction business, where the sheer physical factors make the process less efficient and less prompt.

To illustrate for the Canadian case how industry knowledge is essential, the measurement of enforcement effectiveness must take account of vertical and horizontal splits in the mandate between Consumer and Corporate Affairs and other Departments.

For example, food is regulated by Agriculture Canada at the producer level, and by CCA at the retail level. These layers of enforcement interact; both in the sense that the effectiveness of enforcement upstream affects that directed at the retail level, and in the sense that, even with constant effort by both Departments, a number of infractions are crossing the boundary of mandate. For example, meat on display may be bad because of fraud by the retailer or improper processing at the plant.

Horizontally split enforcement is found in health products, where National Health and Welfare and Consumer and Corporate Affairs are mandated to inspect at the same level of trade. Without elaborating on the Canadian case, the U.S. literature reviewed here tells us that a unitary system of effectiveness measurement across the two industries would not succeed.

In summation, the empirical research identified and reviewed has not directly or adequately adressed the question of effectiveness of various techniques designed to minimize deceptive marketing practices. Much of the research is, however, useful in terms of contributing to an overall understanding of the problem and in terms of identifying specific issues to be considered. In the following section, the reliability of the findings are examined with a view to determining the overall confidence one can have not only in the findings but also in the research designs used.

### 4.3 Reliability, Replicability and Adaptability of Methods Used

When considering the reliability of research carried out on the effectiveness of regulations to protect consumers from deceptive trade practices, the decision is distilled down to accepting one of a number of factors. These usually include intuitive appeal, statistical soundness, and overall methodological plausibility.

The research examined reveals that statistical rigour, from which to draw conclusive and reliable results, is severely lacking. Also, it was found in many instances that methodological approaches were often too ad hoc in nature to accommodate statistical treatment.

A prime example of this situation can be found in Oster (1980). In this study an attempt was made to show the contributions made by consumers and industry in forming individual state regulations for specific product areas. Conclusions were formulated from a highly sophisticated statistical model that yielded only marginally acceptable results, without the benefit of a clearly laid out hypothesis. Nevertheless, the findings that both consumers and industry groups contribute to the evolution of rules have a great deal of intuitive appeal, and on that basis alone the study has redeeming value.

Often, the lack of methodological and statistical rigour results in conclusions that have ambiguous intuitive appeal. To illustrate this point consider Padberg (1977). The basic finding of this study was that consumer labelling information instilled confidence in consumers, but that consumers made little use of the information in their purchasing habits. This has intuitive appeal when one considers the inherent rigidities in consumers' food shopping habits. Equally appealing however is the notion that there is a time lag before

information is utilized in such a way as to create new consumer habits. Given that this time lag could easily last several years, Padberg's study may have been somewhat premature in its execution, and is therefore methodologically flawed.

As an example of ambiguities resulting from statistically flawed approaches, consider Wheatly & Gordon (1971). They set out to establish that, as a result of an interest rate ceiling imposed on consumer lending in the State of Washington, lending practices shifted to less risky, financially sound borrowers, essentially locking low income borrowers out of the market. Unfortunately, they were unable to isolate and discount the effects of the recession that occurred during the period of examination (1968-69).

As a result it could not be said with certainty whether the shift in lending practices was due more to the recession or the interest rate ceiling. This was pointed out by Phillips & Calder (1979).

These examples will serve to convey the considerations involved when assessing reliability. However, they should not be construed as a general condemnation of the works on the subject. In most cases considerable insights were gained from the research, and they merely showed a lack of analytical expertise.

When addressing the question of replicability of dated studies and the adaptability of those done in the United States, the situation is favourable. Keeping in mind the inherent reliability problems, a number of studies were discovered that were suitable for replication, and adaptation, and were even conclusive enough to stand on their own.

A prime candidate for replication is Padberg (1977). Regardless of whether it is redone in the United States or Canada, the obvious
hypothesis to test for is the existence of a time before consumer utilization of food product information labels.

A strong justification for replication can be drawn from Scheffman (1980). This theoretical paper developes a long-run dynamic model incorporating a speed of consumer adjustment factor. This implicitly contradicts Padberg's assumption that consumer adjustment is a short-run phenomenon (he measured consumer reactions to information only two years after implementation). According to Scheffman, a measure ten years after the fact would be more appropriate.

As well, La Barbera (1983) may shed new light if adapted to the Canadian milieu. This work deals with the costs of techniques for industry self-regulation, using a cost-benefit format and a questionnaire covering 2,000 executive directors of trade associations in the U.S. A similar study in Canada to assess the costs to traders, government and consumers of compliance with regulations, and the alternatives of self-regulation, would surely prove enlightening.

Another U.S. candidate for adaptability in Canada would be Sigelman & Smith (1980). This study stands out as one of the few experimentally sound works. It develops a concise set of hypotheses and follows through with appropriate analytical techniques from which conclusions are drawn. It determines the responsiveness of the individual states in instituting consumer protection legislation based on social, economic, and political criteria. Given Canada's social, economic and political variation by province, which in many details differs from the U.S., the results would be invaluable.

In a comprehensive work, Sheldon (1978) covers virtually every aspect of consumer fraud and the opportunities for intervention, within legal frameworks both proposed and in place. If a similar compilation of Canadian legal structures, remedies and alternatives could be produced, written with the Canadian consumer in mind, it would serve as an excellent consumer handbook.

Replication of studies carried out in the United States will often run into data collection problems. In the U.S., as is found in Schubert et al (1978), there are numerous consumer oriented agencies both private and public from which to acquire data. In Canada, though, the agencies tend to be fewer and more centralized, and therefore reduce data compatibility problems.

An indication of the type of conclusive work on the subject, in spite of its experimental short-comings, is Rotenberg et al (1978). This paper consists of a survey in Montreal of advertising executives. It determined that due to high personnel turnover within the industry, and the resulting feelings of job insecurity, advertising agency executives feel little responsibility to the consumers that are influenced by their advertising. While a nation-wide survey would have been methodologically more appropriate (as well as more costly) it is unlikely that different results would obtain. Therefore, it can stand as it is.

### 4.4 <u>General Statement Evaluating Methodologies and Suggested Methods</u> to Improve Reliability

Lately it has become fashionable to use quantitative methods to assess policy issues. The area of consumer regulation assessment is no exception to this trend, as an increasing number of authors on the subject endeavour to employ these methods. Given the quantum leaps achieved in computer technology and econometrics, it is not surprising that the various disciplines of social and natural sciences would find the new generation of quantitative methods attractive. Unfortunately, some disciplines are more receptive than others to utilizing these new technologies in their research.

In the area of evaluating consumer protection laws, a number of hurdles have been overcome in designing assessment methodologies. The historical progress over the past ten years on the subject has made tremendous progress; however, the dissemination of the pure theory into evaluating consumer protection laws is still not complete.

The result of this situation is a number of ambitious research efforts that cannot provide conclusive results. In light of this fact Phillips & Calder (1979, 1980) produced two definitive critiques on the problems of evaluating consumer protection programs.

In the first paper (1979) Phillips & Calder Introduce the notion of a quasi-experimental research design. As the term suggests, a number of investigators undermine the integrity of their conclusions by adopting intrinsically flawed methodologies. In spite of this problem, these results often receive considerable attention. The problem typically lies at the heart of the methodology, i.e. the data. Measuring human behavioural responses to policy changes, in a consistent and quantifiable form, is an extremely difficult task.

Phillips & Calder identify specific pitfalls of testing methodologies that had once been considered acceptably reliable. They point out that comparing pre-regulatory scenarios with post-regulatory effects will often incorporate effects which are independent of the regulation. Pitfalls considered endemic to quasi-experimental research include:

- \* Testing:- previous interviewing or other data collection may sensitize people to a law.
- \* Instrumentation:-- mere changes in the measurement procedure between two points in time may create or conceal effects.
- \* Instability:-- random error in the measurement procedures may create or conceal effects.
- \* Statistical regression:-- measurement values that are by chance extreme at one point are less likely to be extreme at another point, thereby creating or concealing effects.
- \* History:-- other forces or events may be the real cause of effects.
- \* Maturation:-- change in the respondents themselves (growing older, wiser, etc.) may be the real cause of effects.
- \* Selection:-- changes in the composition of groups that are compared may create or conceal effects.
- \* Selection interactions:-- selection may operate in combination with maturation, history, statistical regression, or instrumentation (e.g., groups that are compared may mature at different rates so that they appear similar at one point and different at another).

(Phillips & Calder 1980, P. 10)

That is not to imply that all studies are tainted by these unrelated effects. As an example they cite Robertson (1976) "comparing Canadian and U.S. drivers' use of seat belts before and after a mandatory seat belt usage law in Canada. It is difficult to attribute the sharp increase in Canadian drivers' seat belt usage from 23 percent to 75 percent to historical factors experienced only by Canadian motorists, such as more severe weather conditions, increased traffic enforcement, etc. The magnitude of this effect would seem to belie any alternative interpretation based upon selection-historical factors" (Phillips & Calder, P. 19).

With these problems in mind, Phillips & Calder set out to bridge the dissemination gap between current quantitative methods and current research application. To a researcher well versed in the former, the solutions they propose are standard. However, to those unfamiliar with the techniques they will undoubtably be enlightening.

The basic premise is that methods must be used that will isolate only the desired effects for measurement. To achieve this, a number of techniques are available. Included below are three of the most common, which were considered in part by Phillips & Calder.

Verification of data:--- whenever possible data should be checked against random samples to ensure there is no reporting bias in the data set. To prevent such bias, a random sample survey of the population can be used to compare with data reported or detected by the agency. Here the obvious problem is that only the inspection staff would have the skill to replicate investigatory work.

Model specification:-- the methodology must be complete; that is, it must incorporate all relevant variables that may have a bearing on the regulationary effects. Ofen these variables are not obvious. For example, if, over the time frame under consideration, a postal strike or recession has occurred, these events will have an effect on the overall economic activity and should therefore be included.

Pre- and post-regulatory compatibility:-- when comparing events prior to the imposition of a regulation with the observed situation

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after imposition, in order to isolate regulatory effects it is important that the data used is consistent. This may be achieved by "pooling" data, which simply involves massaging data into a continuous form. Using a pooled data set will then yield a format capable of being adapted to other statistical techniques that will facilitate a clean extraction of regulatory effects. True experiments involve an intervention under control of the research agency. Such designs would support strong inferences about, say, the relative marginal costs of alternate forms of compliance enhancement.

This is by no means an exhaustive list. Phillips & Calder have made a major contribution in pointing out deficiences in present methodologies. Nevertheless, they have only scratched the surface of the options available to researchers in this field. There is no doubt that methodologies can be developed using the existing body of knowledge available. It is therefore the responsibility of future investigators to make every effort to incorporate the appropriate techniques, should they choose the quantitative mode of investigation.

#### 5. JURISDICTIONAL DIFFERENCES IN DETERRENCE

### 5.1 Introduction

In considering the legal and administrative measures available across different jurisdictions to deter fraud, deterrence must be clearly differentiated from punishment. Punishment is a deterrent measure, but by no means the only one. Further, punishment on its own can deter only the punished, from repeating the infraction: it will be substantially effective as a deterrent only as it is made widely known, as a deed or a threat.

Therefore, jurisdictions can be compared on two dimensions: in the narrow legal sense or with respect to their approach to deterrence above and beyond punishment. Some sources to be reviewed here refer to deterrence in general. As this program evaluation is not substantially concerned with comparative law, we will refer to deterrence whenever the sources permit.

When evaluating deterrent approaches in different jurisdictions, the question of measurement inevitably arises. In the literature reviewed to date, we have not found any reliable empirical work from which conclusive assessments could be drawn of the relative effectiveness of deterrence in different jurisdictions. Academics who were contacted during our literature searches were not aware of any raw data on comparative effectiveness of enforcement across jurisdictions. In the absence of published empirical work such data might be proposed as input for empirical comparison. Ironically, these academics referred us back to Consumer and Corporate Affairs.

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# 5.2 Theoretical Rationale

Approaches to deterring consumer fraud are often determined by the jurisdiction in which the offences and/or effects occur. This may involve jurisdictions at various levels – municipal, provincial/state, or national – in both public and private forums.

Because of this, the determining factor in establishing an appropriate set of deterrent measures cannot be economic efficiency alone. A compromise must be made by adapting economic efficiency to the legal framework and to the attitudes of consumer groups in the specific jurisdiction. These groups may vary in militancy of attitude, and in degree of awareness (of both the market and the available forms of redress); and these two variabls will show in the effectiveness of their organization.

Further, an incidence of consumer fraud may fall under one jurisdiction, or under two or more, each with its own forms of redress.

To evaluate the rationale of jurisdictional approaches, both a theoretical intuition and a survey of existing jurisdictional approaches is required. As will be shown, methods of deterring consumer fraud tend to develop so as to accommodate both legal considerations and those of economic efficiency.

The theoretical underpinnings describing the relationship between economic efficiency and legal jurisdiction can be found in both Scheffman (1980) and Mazis (1980). These Federal Trade Commission studies are of particular interest because they hypothesize controlled theoretical conditions that allow the explicit examination of both a regulated and unregulated market place. Given that regulation is the essence of jurisdictional differences, these studies provide insights into the problem of maintaining market efficiency compatible with jurisdictional law. Using the hypothetical setting of a competitive market, where consumers have perfect information, these studies use as examples the Common Law criteria and the First Amendment to the American Constitution.

The Common Law criterion used by Scheffman states that a consumer must be compensated, in full, the equivalent amount of damages sustained due to a fraudulent act. Mazis, using the First Amendment to the American Constitution, offers a different jurisdictional criterion for market regulation. The basic premise of the First Amendment is that freedom of speech should prevail. This implies that regulatory bodies must not impede the rights of firms to state their beliefs on the reliability of their products.

Addressing the question of direct regulation of information reliability in the context of advertising fraud, Scheffman shows that, in order to ensure market efficiency, the onus of reliability must be placed on the producer. In this way the producer of the product is required to provide compensation as stipulated by Common Law. In the absence of the Common Law criterion the burden is placed on the consumer to seek redress. Under this condition, action on the part of the consumer will only be taken if compensation is assured and the effort to do so is not in itself a deterrent.

Clearly, if the regulation is not directed at the producer, the tendency would be for consumers to forego their legally sanctioned remedies. In this case neither market efficiency nor deterrence of fraudulent practices would be accomplished.

In reality, as an incentive to action, the consumer must often be offered more in compensation than was actually lost. To this end, several American jurisdictions offer up to three times the amount of the loss incurred. This is called the "treble rule" and provides the necessary incentive for consumers to pursue and deter fraudulent practices.

In the same theoretical competitive model, Mazis implements the First Amendment. The emphasis in this case is on demonstrating that less restrictive deterrents are preferred to more stringent approaches. The rationale for this is the preservation of natural market forces and their inherent efficiency. The degree to which regulation is implemented must be determined by specific industry characteristics. Two polar extremes would be the comparison between non-prescription drugs and homogeneous consumer goods such as toothpaste and soap. These latter products are sold in a highly competitive market. Since in general one brand of soap is as good as another, the choice is usually determined by a subjective opinion. To this end, producers must be able to influence consumers' opinions so as to capture a share of the market. Restrictions on advertising would serve only to create imbalances in the market. Conversely, non-prescription drugs do vary from brand to brand and consumers should have the right to accurate information on these products. To uphold the First Amendment, while at the same time protecting the rights of consumers, the ruling jurisdiction must be sensitive to these issues.

Jurisdictions have evolved, therefore, according to their domain and with varying capacities to deal with markets. This implies that there are optimal scopes to jurisdiction; so that, for example, federal agencies should not be concerned with isolated regional instances. Where jurisdictions may overlap, the one which incurs the lowest cost of compliance, while still maintaining consumer equity, should be applicable. These theoretical ideals thus serve as a benchmark to understand and assess the fine line between ensuring consumer equity and preserving the interests of a free market.

### 5.3 Types and Effects of Differences

Jurisdictions, when considered as spheres of authority, may promote laissez-faire or active involvement, on the part of either legal authorities and governments, or consumers. The methods of deterrence are therefore often jurisdiction specific.

The various forms of action intended to deter consumer fraud can be classified into three basic types: criminal, civil and administrative actions. These three types are addressed following.

#### Criminal Actions

The strongest actions are available under criminal law. To enter this forum the consumer must have a case in tort. That is, there must have been criminal negligence on the part of the company that resulted in physical harm. As remedies, the courts may impose fines and/or imprisonment. Although the penalties under criminal law are more severe than under civil law or administrative action, convictions may be difficult to obtain given that the benefit of the doubt lies with the defendant.

Certain factors militate against criminal actions being brought, however. Sharpe (1981) noted that many frauds which can be successfully sued in a civil action will not result in conviction in a criminal prosecution because of the criminal law's requirement for negligence resulting in personal harm. Further, consumers will frequently prefer to enter the civil forum, where the available remedies are more varied and specific to the individual case, because their concern is to get restitution rather than see a criminal punished. The cases most likely to come to criminal court are those of a particularly flagrant or objectionable nature, where the consumer is motivated by outrage to make an official complaint.

# Civil Actions

Traditionally, the imposed penalty in civil actions has been damages. (From a deterrence point of view, this is the equivalent of a fine in criminal cases; and what is said here about civil damages applies substantially to criminal fines.) However, the level of damages imposed have been so small relative to the nature of the offences, that the deterrence effect is questionable. Of greater deterrence value are the "cease and desist" orders. These may include advertising bans, or other prohibition orders depending on the nature of the offence. The most severe order would be the dissolution of companies, where it is found that conglomerates have acted imprudently, e.g. by price fixing or predatory pricing.

Further along the spectrum of consumer redress is the question of restitution to victims. This offers the greatest incentive for consumers to take action. As mentioned in the previous section (5.2, Theoretical Rationale) the greater the restitution the greater the incentive. In Canada though, restitution tends to be limited to the amount directly attributed to the offence.

In Australia, courts may impose two or more orders on a defendant. These are known as "flexi-orders". Although they are not explicitly referred to by this name in Canada, a court may impose both cease and desist orders and restitution.

### Administrative Actions

Administrative may be undertaken by either federal or provincial government agencies, as the case requires. Usually this is in response to questionable advertising practices. In the case of advertising that fails to reveal the true nature of a product by neglecting to disclose relevant facts, either affirmative disclosure or counter advertising may be used.

An example of affirmative disclosure would be the government requirement of cigarette manufacturers to include a health warning on all advertising.

A recent example of counter advertising is the government sponsored series of television commercials called "Dialogue on Drinking". It provides an instructive example of the development of self-regulation. Some while after the first appearance of the "Dialogue on Drinking" commercials, individual breweries themselves started to issue counter advertising. Their message is substantially the same as the government's, that general moderation and some specific cautions should be exercised when drinking. By pointing out the potential hazards of their product the breweries are subtly promoting it because it is associated with their name, to which the very fact of the counter advertising attaches an image of responsibility and social concern.

Thus, as a result of initial government intervention, self-regulation has evolved; for it is very doubtful that it would have been initiated without the economic pressure of that government intervention. It is to be presumed that government, producers and consumers benefit from the self-regulation. The government no longer has to bear the cost of the counter advertising. The breweries certainly see their counter advertising as economically desirable, once given the economic threat of the government intervention: one member of the breweries' trade association caused considerable acrimony in the association by putting out its own counter advertising – obviously at its own cost, and to gain a competitive advantage – instead of waiting some two to three weeks, as it had agreed, to share the cost of counter advertising put out by the trade association. The consumers receive the same message from the breweries' counter advertising as from the government's; though it is an open question of psychological measurement whether the message has the same impact, given the tendency to trust, and drop one's guard against, the self-accused more than the person accused by another.

As a measure to deal with misleading advertising, companies are often required to either substantiate their claims, or correct them. These forms of action are referred to respectively as advertising substantiation and corrective advertising. The choice of the appropriate approach is usually dependent on the jurisdictional considerations.

Against the background of the three types of action, criminal, civil and administrative, outlined above, we now consider the question of differences between jurisdictions in the way they apply them.

In Canada, jurisdictions are basically divided into federal and provincial spheres of influence. Given the number of provinces, and the amount and complexity of interprovincial trade, there are a number of areas where it is not clear cut which jurisdiction applies to a transaction. Before pursuing a survey of jurisdictional approaches however, it is important to note that many issues are currently under debate and reform. As an example, in 1977 a federal-provincial task force was established to form:

"a common front, to provide a centralized economic research function; to ensure a rational relationship between provincial warranty laws and federal law on such related subjects as hazardous products and packaging and labelling; and to determine with the provinces whether or not there is a need for federal legislation in the warranties/product liability area to cover goods in the flow of inter-provincial trade." (Guss, 1979, p.3) At the federal level a number of departments are involved in the enforcement of market place legislation and the development of alternative voluntary compliance initiatives. At the centre of this jurisdictional envelope is Consumer and Corporate Affairs. Within the Department, responsibility for enforcement and review of standards relating to deceptive or questionable marketing practices is divided amongst different CCA departments/branches, according to category of product (e.g. food and drugs) or commercial activity (e.g. packaging and labelling). The responsibility for some categories is shared with other Federal Departments.

The following table summarizes the division of responsibility for different categories, both within Consumer and Corporate Affairs, and as between the Department and other Federal Departments on a shared basis.

### **Consumer Affairs**

#### Consumer Products Branch

- Agricultural Products Standards (shared with AGRICULTURE CANADA)
- Consumer Packaging and Labelling
- Dairy Products (shared with AGRICULTURE CANADA)
- Textile Labelling
- Precious Metals Marking
- Fish Inspection (shared with FISHERIES AND OCEANS)
- Food and Drugs (shared with HEALTH AND WELFARE)

#### Product Safety Branch

- Hazardous Products (shared with HEALTH AND WELFARE)

#### **Combines Investigation and Competition Policy**

- Combines Investigation

#### UFFI Assistance Program

- Urea Formaldehyde Foam Insulation

#### (NOTE:

The above information is taken in part from Consumer and Corporate Affairs Canada 1984-85 Estimates, Part III, Expenditure Plan, pp. 48-49.)

When in place, provincial agencies tend to complement federal regulations, often fullfilling needs deemed to be of particular interest to the province, by virture of its historical, geographical, industrial, political or social nature. As an example, in Quebec there is a ban on advertising during children's television programing.

In cases where specific legislation or guidelines are not available to deal with consumer fraud issues, redress is often sought through private law. This approach usually involves the question of warranties relating to pure economic loss, consequential economic loss or even personal physical injury.

Except for Quebec (which will be dealt with individually below) the Canadian legal system is based on English Common Law, where there is a "basic notion that the courts should use whatever legal mechanisms are available to them to right the wrongs perpetrated upon a weaker party by a stronger" (A Study on Consumer Misleading and Unfair Trade Practices, Vol. 1. 1971. p. 242). Although this is the underlying idea, its implementation may vary by provincial jurisdiction. Thus, the legal jurisdictional deterrence depends on individual provincial legislation and its accessibility to consumers in cases where federal regulations (and those of other provinces) do not apply.

When following the civil legal redress approach, the most contentious issue is the problem of ex juris; that is, goods being put into service outside the provincial jurisdiction where they were produced, contracted for, or acquired. The problem for the consumer can take two forms: either the province in which service and the resulting harm took place might not find judgement against the supplying party, since supply took place under a different provincial jurisdiction; or the province of origin might not find judgement against the supplying party, since service and resulting harm took place under a different provincial jurisdiction.

In fact, the problem of ex juris is now usually overcome in interprovincial trade, through a variety of legal precedents and manoeuvres developed over time. This acts as an effective deterrent of consumer fraud. If ex juris could be invoked with any substantial success, there would be a clear incentive for manufacturers and suppliers of defective products to market them outside their province.

The whole question of ex jurius is treated by Robert J. Sharpe in Interprovincial Product Liability Litigation: Jurisdiction, Enforcement and Choice of Law (1981), a CCA publication. (Quebec is treated separately by David Appel (1982)).

The most comprehensive coverage is available in Nova Scotia and Prince Edward Island. These provinces will service legal procedings against defendants and their actions anywhere in Canada or the United States. Most other provinces have adopted adequate legislations to overcome the ex juris problem. The exceptions are Alberta, New Brunswick and Newfoundland. These provinces require that special conditions be met and special procedures followed to overcome ex juris. Nevertheless, the recent trend is for all provinces to expand the coverage of assumed jurisdiction.

The ex-juris problem becomes especially complicated when dealing with international transactions. As an example, a Canadian may be enticed by American advertising received in Canada to trade in the States, and the transaction may prove the advertising to be deceptive. (This sort of occurrence was quite common when socalled water front properties were offered for sale in Florida.)

Canadian courts are powerless to redress such harm occurring in the States; and although the advertising is deceptive and illegal in Canada, and occurs in Canada, the evidence which is necessary to confirm its illegality is outside Canadian jurisdiction. The advertiser's defence is even more strengthened if the advertising is not specifically oriented to Canada, e.g. if it is picked up on cable television from a local U.S. station.

In general there are no codes or conventions to regulate American advertising that reaches Canada, intentionally or otherwise. However, Canadians defrauded by such advertising can be encouraged (by both Canadian and U.S. authorities) to make deterrence-inducing complaints to appropriate U.S. bodies, resulting in investigation of the offending trader.

The fact remains, however, that without reasonably easy access to these legal remedies the deterrent effect will be substantially diminished. Provincial legislation such as Ontario's Sale of Goods Act has simplified the litigation process, and in some instances has improved consumer awareness of legal remedies available. This was accomplished by consolidating into one act all the relevant articles of law related to the sale of goods. The Act is readily available in most bookstores, providing an easy reference to both lawyers and consumers. Often, by simply referring to the Act two disputing parties can resolve their differences.

A good example of jurisdictional differences affecting ease of litigation is provided by the small claims courts. When these were first introducted, the provinces having them had the potential for exerting a greater deterrent effect on small scale fraud than those which did not. Traders in the latter provinces were encouraged in small scale fraud by the reluctance of consumers to incur the cost and time involved in going through the principal court system. Now that small claims courts are in existence countrywide this jurisdictional difference has evened out. A similar difference could arise, however, if some other legal mechanism is set up on the same extended province by province basis; and indeed does now exist in the exclusivity of class actions to Quebec. No survey of provincial and federal jurisdictions can be complete without special attention to Quebec, because of its tradition of positive law deriving from the civil code.

The Quebec civil code was revised in 1977. It was determined that Quebec courts have jurisdiction if:

- "1. the defendant is domiciled in Quebec, or, if the defendant is a legal person, if it was incorporated in Quebec or has its head office, a place of business, or a branch office for disputes relating to its activities in Quebec;
- the cause of action has arisen in Quebec;
- 3. the parties, by an express choice of forum agreement, have submitted to Quebec courts any existing or future dispute between themselves relating to a specific legal relationship; or
- 4. the defendant has submitted himself to the jurisdiction of Quebec courts, either expressly or by contesting on the merits without reservation as to jurisdiction." (David Appel, 1982, p. 10-11)

A Quebec court will enforce a foreign or other (provincial) judgement unless it can be shown: that the ruling authority had no jurisdiction; that the ruling is subject to the normal review process; that the judgement was not enforceable where it was rendered; or that the case would have a different outcome in Quebec. Clearly these poorly defined areas interrupt the continuity of the Canadian legal system and reduce the deterrence of fraud in the forum of interprovincial trade.

One feature of Quebec jurisdiction, unique in Canada, is the availability of class action suits. Class actions are a method of overcoming the disincentive a single consumer faces when attempting to obtain redress from a company. By grouping together consumers with the same complaint, the costs are shared and the company is confronted with a more powerful plaintiff. Class actions rarely end up in court. Typically the mere threat of a class action and the resulting publicity facilitate a settlement out of court. This then is a powerful deterrent to consumer fraud on a large scale, so far available only in Quebec. However, those class action suits that do go to trial will in many instances tie up court rooms for extended periods of time with hard fought litigation; the stakes being high for plaintiff and defendant.

Other provinces in Canada have considered implementing class action acts similar to the Quebec Class Action Act of 1978. However, to date the doctrine of the British courts has applied. This doctrine upholds the privacy of contracts; that is, each transaction between a vendor and buyer is private and cannot be joined with others in a collective law suit. To overcome the inequities that might befall a single consumer involved in a relatively minor incident, the British courts have allowed consumers with the "same interests" to band together in associations and designate one member to sue on behalf of the others. In practice this is tantamount to a class action.

The true form of a class action is used regularly only in the United States and, more recently, Australia. In 1966, the United States passed a federal class actions rule to discourage consumers with "dissimilar" claims against a particular firm from banding together. The resolution of what constituted dissimilar claims was not resolved until 1979. The Supreme Court ruling followed today requires that a group bringing a class action must be restricted to homogeneous claims against the company it is suing. This would imply that, if one group of car owners had engine problems and another group owning the same make of car had transmission problems, they could not join forces to form a common class action. In Canada, as opposed to the United States, there is no jurisdiction that has the legislative power to require manufacturers to recall defective goods with known safety hazards. Although recalls are often carried out on a voluntary basis in Canada, this is usually only after an American recall has been announced. In place of recall legislation, government testing is used to filter out defective products before they reach the market. Therefore the deterrence is limited only to passing the inspection process. This is a good example of jurisdictional difference at the national level; and also of influence of one jurisdiction on another.

# 6. FOREIGN JURISDICTIONS

#### 6.1 Introduction

The previous chapter discussed the jurisdictional differences within Canada and brought in specific examples from the United States and other countries where appropriate. This section does not attempt a detailed comparative analysis of legal systems in place in various countries; nor does it discuss in detail international differences in regard to any particular aspect of consumer fraud legislation (for example it does not discuss differing approaches to small claims courts).

Brief descriptions of the legal systems as they relate to consumers and traders are presented for three countries: the U.S., the U.K., and Sweden. Several general points of comparison are worth noting:

- (i) Only the U.S. compares with Canada in terms of jurisdictional differences within the country. Both the U.K. and Sweden have highly centralized legislative bodies.
- (ii) Sweden is the only one of the three which has, as its underlying philosophy, the stopping of improper activity rather than punishment once the wrong has been committed.
- (iii) The U.K. to a degree, and Sweden in particular, are stressing mediation and negotiated settlements to obtain compliance and resolve consumer/trader disputes. The U.S. appears to rely on legislation and prosecution.
- (iv) Each country appears to be moving in the direction of facilitating redress procedures for the consumer.
- (iv) The Swedish system of fine determination is unique in that the amount of the fine levied is based not only on the nature of the infraction but also on the ability of the company to pay.

A brief description of the systems in place to control consumer fraud follows.

### 6.2 United States

The U.S. does not appear to have a well defined system in place, with specific responsibilities assigned to specific agencies, to states or to Federal departments. The following observations by Sheldon & Zweibel will serve to illustrate the U.S. system in a functional manner.

- There is a significant diversity of regulations among states. Laws are seldom uniform.
- Almost all consumer fraud laws are enforced by the states.
- There seems to be a greater concern with identifying and prohibiting fraud than with devising effective enforcement techniques.
- Little consideration is given to vulnerable consumers.
- Minor frauds are handled at the local level. The states control "important" cases.
- State laws appear to be reflex actions to specific abuses.
- Class actions, small claims courts, and unorthodox remedies (e.g. treble damages awards) are used to encourage small scale consumer litigation.
- "Federal regulation of consumer fraud is a crazy quilt of overlapping and conflicting jurisdictions". Though the FTC has primary responsibility, 27 other agencies pre-empt its actions.
- Federal consumer fraud legislation rarely authorizes private rights of action. The FTC Act, unlike most states' equivalent legislation, does not provide for individual actions. Such private actions as do exist under federal law are limited both in scope and in the remedies available.

### 6.3 United Kingdom

As a relatively "mature" society, Britain has a long history of consumer trade legislation stretching well back into the 19th century, e.g. the Merchandise Marks Acts of 1887-1953, replaced by the Trade Descriptions Acts of 1968 and 1972; and the Sale of Goods Act of 1893, amended by the Supply of Goods (Implied Terms) Act of 1973.

Britain thus has a highly interventionist tradition in its approach to prevention of consumer fraud. (A recent typical example is the switch in some areas of the food industry to government inspection of every item instead of inspection of random samples.)

The danger of such an approach is that society becomes overburdened with the effects of government legislative intervention and enforcement: taxes necessary to finance complex government activity become prohibitively high and trading activity is severely restricted and frustrated by bureaucratic demands and intervention.

Two key features of the current British approach are designed to work against this tendency: simplication of legislation and encouragement of non-legislative inducements to fair trading practice.

The Fair Trading Act of 1973 and the formation of the Department of Prices and Consumer Protection (DPCP) in 1974 have considerably simplified consumer legislation and its enforcement.

The DPCP can be seen as the U.K. equivalent of Consumer and Corporate Affairs Canada, so that a comparison here would be illuminating. The British Information Services publication Fair Trading and Consumer Protection in Britain (1976) and its Addendum (1979) give detailed information on the DPCP and its implementation of the Fair Trading Act.

The new Department centralizes almost all administrative activities previously spread amongst several other Departments. The Fair Trading Act consolidated most of the previous consumer protection legislation.

As well as this simplification, the Act and the DPCP combine to enable legislation of a flexible and pragmatic nature. The Director General of the Office of Fair Trading (set up under the Act as an adjunct to the DPCP) has the power to deal with each new situation as it arises by making a Statutory Order under the Act, creating a new criminal offence without the delay and complexity of creating a new piece of legislation.

There is a heavy emphasis on non-legislative inducement to fair trading in the U.K. Various consumer councils and associations, trade associations and tribunals are encouraged and even created by statute, e.g. the Fair Trading Act created the Consumer Protection Advisory Committee which advises the Director General of the Office of Fair Trading; nationalized industries have consumer councils created by the nationalizing statute; and the Consumer Protection Act of 1980 set up the Consumer Protection Council. Voluntary compliance is encouraged through codes of practice agreed with trade associations.

One of the essential qualities of the tribunals is that they are composed of industry experts. Tribunals hear complaints or appeals by consumers or traders, and their major goal is the achieving of negotiated agreement. As an example: a landlord increases the rent and the tenant appeals to the Rent Tribunal; a Tribunal officer inspects the property; he then meets in his office, quite informally with landlord and tenant who may bring an advisor (a surveyor more likely than a lawyer); he makes a recommendation; and only if that is not accepted by both parties will the case be heard before the full Tribunal.

Another feature of the U.K. of interest in relation to Canada is the integrity of different levels of government. The British Government uses local government (county councils, the equivalent of Canadian provincial governments) to do a large amount of administration of the law. The U.K. does not have within itself the federal/provincial cross-boundary jurisdictional problems that Canada has. Its equivalent problems are in its relationship with other members of the European Economic Community.

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# 6.4 Sweden

A basic tenet informing the Swedish approach is that market economy will only function properly if consumers are able to control transactions by exercising rational choice. Sweden takes the view that, given the weak position of consumers vis-à-vis private enterprise, consumer policy must therefore be to influence the marketplace in favour of consumers. In large measure, emphasis is placed on achieving this through negotiated agreements and recommendations to business.

The negotiation is carried out between government, usually in the form of the Consumer Ombudsman (described more fully below), and business which has attracted a consumer complaint or government attention.

The negotiation can take various forms; for example:

- A telephone call may well suffice if the offender is a smallscale entrepreneur and the case against him is straightforward.
- Correspondence may be exchanged with a firm, and this is the most common form.
- If correspondence is unwieldy, oral negotiations can be used instead.
- Negotiation is also conducted, not with just one firm, but with an entire industry through its trade association. Such negotiation can be on the subject of product standards, or on marketing practices.

Compulsory legislation and intervention strategies provide the legal back up to these efforts.

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The National Board for Consumer Policies (NBCP) is the central agency responsible for consumer affairs. Its three main functions are:

- to influence the market to ensure that goods, services, marketing, and contract terms meet the consumers' needs;
- to influence distribution of goods and services, education, and municipal policies to benefit the consumer;
- to provide information to consumers.

The NBCP's director-general is also the Consumer Ombudsman (KO). His special directive is to ensure compliance with the Marketing Practices Act (MPA) and the Act Prohibiting Improper Contract Terms (APICT). The vast majority of cases brought before the KO are settled by negotiation even though the KO is vested with discretionary power to issue injunctions. Of the 4,950 cases handled by the KO in 1974, 4,649 were handled in this manner.

The KO can also act as prosecutor in the Market Court on behalf of consumers. Only about 2% of cases per annum are brought before the Market Court. The Market Court is the tribunal which specializes in cases within the purview of MPA and APICT. Consumers and private enterprise are represented on the bench, which is headed by a person with judicial experience. The Market Court issues injunctions and enforces fines. Its decisions cannot be appealed.

It is interesting to note that the amount of fine administered by the Market Court is determined by reference not only to the nature of the violation, but also to the size of the offending firm. As has been noted, a very small percentage of cases end up in court. The Swedish system is designed to "put a quick stop to an improper activity rather than to punish a wrong afterward." The Public Complaints Board (PCB) will, at the request of individual consumers who have already sought redress from the trader, settle disputes between buyers and sellers. PCB decisions are recommendations which are not legally binding but the rate of compliance averages 90 percent. Board judgements cannot be appealed but either party may take the case to an ordinary court of law. The Act on Simplified Legal Procedure permits small claims to be handled informally and without legal assistance.

In summation, the Swedish consumer policy has the following characteristics:

- A special, separate legal structure to administer consumer Acts.
- A very strong emphasis on compliance through negotiation and mediation.
- Easy access to consumer redress procedures.
- Simplified access to small claims settlements in the ordinary court system.
- Fines based on the nature of the violation <u>and</u> the size of the offending firm.

#### ISSUE NUMBERS, LABELS AND DESCRIPTIONS

This appendix is primarily for use in conjunction with the Issue/Transaction Tables on PP. 22-25. (The Tables and their functions are explained on P.21).

Immediately following, on P.2 of this appendix, is a summary list of the numbers and corresponding labels used to identify issues in short in the Tables. The list is divided into the four OCG categories of Rationale, Objective Achievement, Impacts and Alternatives.

Following the summary list of numbers and labels, a full glossary gives a detailed description of each issue against its number and label in the summary list.

The issues are based on those given in the two issues documents supplied under the headings of the Consumer Products (CP) and Combines Investigation Act (CIA) Sub-Components. Their numbering follows very closely the numbering of those documents, to which it is related in the summary list on P.2 as well as in the detailed descriptions that follow.

Where there is significant and substantial divergence between the CP and CIA documents, this is noted in both the summary list and the detailed descriptions.

# SUMMARY LIST OF ISSUE NUMBERS AND LABELS

		Original Issue No.	
		СР	CIA
RAT	IONALE		
1. 2. 3. 4. 5.	Trader Awareness Constitutionality Information to Consumers Enforcement Effectiveness Strength of Program Links	1(a), 3 1(b) 2 4 5	1(a), 3 1(b) 2 4, 5(a) & (b) 5(c)
OBJECTIVE ACHIEVEMENT			
6. 7. 8. 9. 10.	Changed Trader Behaviour Changed Consumer Behaviour Other Influencing Factors & Programs Adequacy of Present Techniques Priorities for Activities	6 7 8 9 10	6 7 8 9 10
IMP	ACTS		
11.	Costs of Techniques	11	11
ALTERNATIVES			
12. 13. 14. 15. 16. 17. 18. 19. 20. 21.	Regional Differences Other Enforcers Prosecution Techniques Priority System Alternatives to Prosecution & Legislation Alternatives for Compliance Response to Alternatives Limitations to Alternatives Consumer Orientation of Program Acceptability of Alternatives	12 13 14 15 16(a) (part) 16(a) (part) 17 18 - 19	12 13 14 15 16(a) (part) 16(a) (part) 16(b) 16(c) 17 18

# DETAILED DESCRIPTIONS OF ISSUES

#### RATIONALE

1. Trader Awareness

#### Original Issue Nos.: 1(a), 3

a) Are traders aware of the activities detailed below?

How do they respond when they are:

- directly involved in them?
- indirectly involved in them?

Does this differ by:

- sector?
- level of trade?
- size of trader?

# Activities

1. The existence of legislation and regulations.

- 2. CP An inspection:
- advice
- sampling
- warning(s)
- past performance follow-up
- correction (during the inspection)

<u>CIA</u> Information visits. (Should there be follow-up to this activity?)

- An investigation system for complaint follow-up.
- 4. CP Confiscation.

3.

- 5. CP Voluntary removal.
- 6. Prosecution and resultant clarification of law.
- 7. Publicity re prosecution.
- 8. Fines, expecially size of fines are they large enough to affect behaviour?
- 9. CP Self policing by trade associations.

10. CIA Jail sentences.

- 11. Trader education (broken down into its various forms).
- 12. Consumer education.
- 13. Review of advertisements and (CP) labels.

Is there any follow-up to this activity?

(<u>CIA</u>) Does it help some traders exploit legal subtleties contrary to the intention of the Act?

- b) Are traders aware of the next step that enforcement may take?
- 2. Constitutionality

Original Issue No.: 1(b)

Are the activities detailed under Issue 1a) above acceptable under the new constitution and charter of rights?

CP Should the legislation remain in the domain of criminal law?

How should consumer redress be advanced?

#### 3. Information to Consumers

Original Issue No.: 2

How do consumers respond to the following information sources?

To what extent are consumers reached by them?

#### Information Sources

- 1. Pamphlets re consumer protection laws.
- 2. Seminars re consumer protection laws.
- 3. News releases re prosecution.

Do these get published in general media, or is the media afraid to lose advertisers?

- 4. TV consumer programs re laws and consumer fraud.
- 5. Warnings re specific products or marketing practices.

4. **Enforcement Effectiveness** 

Original Issue Nos.: 4, CP 5(a) & (b)

Are enforcement procedures standardized, uniform and predictable in a) a deterrent sense, e.g. can prosecution be reliably expected after repeated offences?

Are there enough resources to effectively carry out the activities of the program, e.g. do traders expect to be effectively inspected, or to be prosecuted if they are caught committing fraud.

CP Which infractions are likely to be inspected for?

or

CIA Which consumer fraud practices are likely to read to prosecution?

Which infractions/consumer fraud practices are not?

How likely are the inspection/investigation techniques to detect and deter infractions/consumer fraud?

If the likelihood is low, why?

- CIA How can enforcement activities have their effectiveness b) enhanced? e.g. :
  - education of judges
  - purchase of post conviction publicity
  - going for multiple counts
- CIA How reliable are complaints as an indicator of c) misrepresentation?
- 5. Strength of Program Links

Original Issue Nos.: CP 5, CIA 5(c)

What are the weak links in the logic of the program?

How can they be strengthened or replaced by stronger links? - investigation and prosecution?

- (CIA) as between:
  - prosecution and conviction?
  - conviction and penalties?

- conviction and publicity?
#### OBJECTIVE ACHIEVEMENT

#### 6. Changed Trader Behaviour

#### Original Issue No.: 6

What differences in trader behaviour can be observed to be due to the existing behaviour enhancement/enforcement techniques?

What are the indicators that can be used to make this judgement in the future?

Does the response to an additional dollar of enforcement vary with the level of effort?

Are the resource levels adequate to provide a real deterrent?

#### 7. Changed Consumer Behaviour

Original Issue No.: 7

What differences in consumer behaviour can be observed to be due to the existing information techniques?

What are the indicators that can be used to make this judgement in the future?

Does the response to an additional dollar of information effort vary with that increase in the level of effort?

#### 8. Other Influencing Factors & Programs

#### Original Issue No.: 8

What other factors may have influenced trader and consumer behaviour as it relates to compliance?

Are these factors related to other programs?

# 9. Adequacy of Present Techniques

#### Original Issue No.: 9

Are the existing enforcement and information techniques those required to detect infractions/offences and inform traders and consumers?

To what extent are they actually being used?

(CIA) Should more monitoring be done?

# 10. Priorities for Activities

Original Issue No.: 10

Are the priorities for inspection, investigation and prosecution being implemented?

If not, why not?

If so, in what sense are they being implemented?

# IMPACTS

11. Costs of Techniques

Original Issue No.: 11

What are the costs to traders in involvement with the present compliance inducing techniques?

What are the costs to government?

What are the costs to cunsumers?

(CP) How do traders react to increased government visibility due to inspections?

#### ALTERNATIVES

12. Regional Differences

Original Issue No.: 12

Should there be regional differences in enforcement methods? e.g. less enforcement effort in regions of stable population make-up?

13. Other Enforcers

Original Issue No.: 13

Is it more, less or equally effective to have provinces doing the enforcement?

Or other departments doing it?

How does the relationship between head and field office impact on the effectiveness?

How could this be improved?

Why is approval of cases centralized?

(CIA) Who should be handling precedent setting cases?

#### 14. Prosecution Techniques

Original Issue No.: 14

Who should carry out prosecutions?

How can prosecutions be more effective?

#### 16. Priority System

Original Issue No.: 15

Does the present priority system for inspections, investigations and prosecutions aim at the largest deterrent effect, with the highest social and economic impact?

Do particular sectors and/or levels of trade and/or sizes of firm respond differently to different enforcement techniques?

Are the types of infractions/offences rated correctly as to consumers' views of seriousness, cost to consumers, and likelihood of infraction/offence?

Should ease of enforcement technique for different types of infractions/offences to be taken into account in allocating resources to enforcement?

Should the regions determine enforcement priorities?

Who is really doing this at the moment? and how?

Should better coordination be achieved? and how?

If priorities are rigidly applied or inflexible, would this give the green light to infractions/offences in low priority areas and sectors?

Should the priority system for enforcement take into account the fact that fraud is thought to be more likely in the following circumstances?

- I. In small transactions (since the consumer is unlikely to complain).
- 2. Where there is a small investment on the part of the trader (so that he does not mind going out of business).
- 3. Where reputation is unimportant to seller.
- 4. Where false claims are difficult to detect and prove as false.
- 5. Where no repeated sales are expected.
- 6. Where competition will not sue (since each competitor is small and no effective trade association exist.
- 7. Where product change is rapid as compared with frequency of purchase.
- 8. In areas of personal, direct contact selling.

#### 16. Alternatives to Prosecution & Legislation

Original Issue Nos.: 16(a) (part)

What alternatives are there to prosecution and criminal legislation? (some examples are given below)

What are their relative merits?

What are their net benefits?

#### Examples of Alternatives to Prosecution

- l. Warnings.
- 2. Notice letters.
- 3. Suspension of administrative privileges.
- 4. Mediation.
- 5. Negotiation of compliance schedules.
- 6. Remedial orders.
- 7. Seizure of equipment.
- 8. Injunction orders.
- 9. Limitation, suspension or revocation of licenses.
- 10. Voluntary payment of fines under a ticketing scheme.
- ll. Performance bonds.
- 12. Administrative fines.
- 13. Government advertising of correct information.
- 14. Relying on the mere existence of a widely advertised law.

#### (CP) Examples of Alternatives to Criminal Legislation

- I. Licensing.
- 2. Pressure from media when firms advertise.
- 3. Provision of clear information by government or subsidy to testing agencies and consumer groups.
- 4. Civil liability rules re product performance.
- 5. Require warranties.
- 6. Contracts.
- 7. Require trial periods and refunds.
- 8. Let trade associations set standards and police them.

- 9. Better Business Bureau.
- 10. Enhance competition.

#### 17. Alternatives for Compliance

Original Issue Nos.: 16(a) (part)

What alternatives are there for bringing about compliance with legislation, and (<u>CP</u>) regulations and standards? (some examples are given below)

What are their relative merits?

What are their net benefits?

# Examples of Alternatives for Compliance

1. (<u>CP</u>) Have other inspecting bodies (e.g. trade associations or paid auditors) carry out inspections.

or

(CIA) Have other enforcement bodies carry out investigations.

- 2. (<u>CP</u>) Self reporting and spot checking.
- 3. Neighbourhood courts.
- 4. Civil liability rules re publicly set standards.
- 5. (<u>CP</u>) Spot checking instead of full coverage.
- 6. Rewards to complainants.
- 7. Encouragement of complainants.
- 8. Performance bonds.
- 9. Concentrate more on large operators and severe problems.

# 18. Response to Alternatives

#### Original Issue Nos.: CP 17, CIA 16(b)

How would traders and consumers in Canada respond to the examples of alternatives given in 16 and 17 above (and to any other alternatives)?

How do they respond elsewhere?

# 19. Limitations to Alternatives

Original Issue Nos.: CP 18, CIA 16(c)

What are the limitations to the use of the examples of alternatives given in 16 and 17 above (and of any other alternatives), e.g. class actions?

#### 20. Consumer Orientation of Program

Original Issue No.: CIA 17

Should the program orient away from consumers to the extent that it does? e.g. by:

- not following up complaints
- making little attempt to embody restitution in penalties (which would be larger if restitution were involved)

Should consumers be funded to sue?

#### 21. Acceptability of Alternatives

Original Issue No.: 18

Which alternatives are most acceptable under the new constitution and charter of rights?

Which are not at all acceptable?

What about acceptability to consumers and traders?

# APPENDIX B

#### BIBLIOGRAPHY

This Appendix contains the bibliography, unannotated, of all literature considered for use in preparing this report.

The bibliography is divided into two parts. The first, whose pages are headed "APPENDIX B(1)", contains all the items read in detail and cited in, or used in preparing, the text of the report. These items are annotated in the separate ANNOTATED BIBLIOGRAPHY.

The second part, whose pages are headed "APPENDIX B(2)", contains all those items scanned but not used in preparing the report.

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#### APPENDIX B(1) - 3

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# CONSUMER AND CORPORATE AFFAIRS CANADA AUDIT, EVALUATION AND CONTROL BRANCH

# **DECEPTIVE MARKETING PRACTICES:**

# LITERATURE REVIEW OF ISSUES FOR THE EVALUATION ASSESSMENT

# ANNOTATED BIBLIOGRAPHY

#### APRIL 3, 1984

Prepared by:

RES Policy Research Inc. 294 Albert Street 4th Floor Ottawa, Ontario KIP 6E6 American Institute for Research. 1977. <u>Consumer Fraud: An Analysis of Impact and Opportunities for Intervention; Phases I, II and III. Prepared for the Community Crime Prevention Division, National Institute of Law Enforcement and Criminal Justice, Law Enforcement Assistance Administration. Washington, D.C.</u>

Descriptive/Empirical

Objectives of study:

Phase I

1.

To describe the nature, scope, characteristics of consumer fraud.

Phase II

To examine the incidence and impact of consumer fraud in order to determine the requirements for prevention and control efforts.

Phase III

To identify intervention strategies for systematically controlling consumer fraud.

Phase I used interviews with representatives of law enforcement agencies, consumer groups and regulatory agencies as well as analysis of 400 cases of consumer fraud to accomplish objective outlined above.

The existing definition of fraudulent activities is difficult and statutes and regulations were not very helpful. Usually, an empirical definition results from investigation of cases and the judgement of practitioners in the field. This phase concluded with an extensive typology of frauds.

Phase II analyzed the cases from Phase I plus 942 additional cases.

Findings: -complex or elegant fraud seldom present

-resolution required extensive consumer effort and time

-most fraud is one-time (few patterns evolved)

-absence of inducement "come-on" seldom cited as reason for purchase

-most transactions are "normal" (assumption made by consumer on honesty)

Phase III used the results of Phases I and II plus ll2 interviews with experts. Seven consumer fraud intervention approaches analyzed in detail including statements on their strengths and weaknesses.

-Deterrence

-Compensation

-Self-enforcement

-Controlling traders

-Improvement of consumer decision-making

-Minimization of losses

-Shifting burden of paying for enforcement to third parties

Issues: All

1

# 2. Andras, Robert H. 1976. <u>Effectiveness Measurement for the Consumer</u> Fraud Protection Branch. Bureau of Consumer Affairs.

# Theoretical

**I**...]

Four indicators to measure the effectiveness of Program.

- 1) Violation rates: pre-inspection, post-inspection and no-inspection.
- 2) "Dollars-at-risk": pre-, post- and no-inspection. Violation rate weighted by the dollar importance of products to consumers.
- 3) Economic loss prevented by Branch actions.
- 4) Economic loss to the consumer.

Problems with loss prevented calculations:

- figures indicate loss prevented but do not relate to size of overall fraud problem
- calculations rely on operational data measurement focuses on effect of inspection activity rather than on programs and policies.

Recommendations are presented for the implementation of an effectiveness measurement system.

Issues: Objectives Achievement

# 3. Appel, David. 1982. <u>Interprovincial Product Liability Litigation:</u> <u>Jurisdiction, Enforcement and Choice of Law in Quebec Private</u> <u>International Law.</u> Ottawa: Consumer and Corporate Affairs Canada.

Descriptive/Theoretical

#### Transactions: Consumers to/from Traders Legal Institutions to/from Consumers Legal Institutions to/from Traders

To complement the study by Sharpe (1982) the paper focuses on jurisdictional issues specific to Quebec. As the only province whose law is not founded on Common Law, Quebec has the potential of being a broken link in the interprovincial jurisdictional linkage.

A clear and descriptive discussion is provided on legislation both in place and proposed. It points out that although Quebec laws are different, the only time another province's decision will not be upheld is if it can be proven that a Quebec court would not have arrived at the same conclusion.

The author concludes that the greatest problem concerning interprovincial recognition and enforcement is the cost born by the plaintiff. This in itself discourages the consumer from enforcing a judgement obtained in another province.

Issues: Program Rationale

# 4. Ash, S.B. 1980. <u>Consumer Satisfaction - Dissatisfaction and Complaining</u> <u>Behaviour: Major Findings and Directions for Action.</u> Consumer and Corporate Affairs Canada, Consumer Research and Evaluation Branch.

Empirical

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Transactions: Traders to/from Consumers

Study deals with the reasons for consumer satisfaction and dissatisfaction.

Major findings on reasons for dissatisfaction.

<ul> <li>In food and clothing</li> </ul>	-	<ul> <li>product rather than marketing</li> </ul>
In durables	-	inferior quality
In services	-	careless service

- Dissatisfaction is situation rather than consumer specific and relates to product performance rather than marketing
- Resolution of dissatisfaction tends to be through personal rather than direct action.
- Incidence of complaint is proportional to the importance of the purchase and the perceived pay-off.

Seasonal variations are unaccounted for in the study. It was conducted in April/May.

Study was part of a national survey on Consumer Satisfaction - Dissatisfaction. Questionnaire dropped off and picked up. 3,000 dwellings in Canada.

Reliable results. Conclusive for time-period.

Issues: Alternatives: 16, Alternatives to Prosecution & Legislation "require trial periods, warrantees, refunds" and "let trade associations set standards and police them".

4

5. Ayres, G. and Padberg, D. 1975. <u>Alternative Approaches to Consumer</u> <u>Protection</u>. Monogram Produced by the U.S. Department of Agriculture and Economics. Cornell University, Ithaca, N.Y.

Theoretical

Transactions: Legal Institutions to Traders Government to Legal Institutions

Deals primarily with the Fair Packaging and Labelling Act.

Suggests that legislators' lack of knowledge of industry results in ineffective enforcement methods. Complexity of industry requires variation in enforcement regulations, though care must be taken not to be discriminatory between industries.

Definitional problems in law handcuff regulating agencies. Vagueness of terms seriously affect the ability to carry out enforcement.

Also cites inadequate funding for enforcement and lack of coordination between state and federal agencies.

Issues: Objective Achievement, Alternatives.

6. Bourgoignie, Thierry. 1979. New Patterns of Consumer Protection Under Warranty Law: Lessons from the U.S. Magnuson-Moss Warranty Act. Journal of Consumer Policy Summer and Fall: 266-280.

Theoretical

Transactions: Legal Institutions to Traders

Above named Act in 1975 attempted to foresee new patterns of consumer protection under warranty statutes. Combines warranty regulation, information, administration, and litigation procedures (consumer redress).

Act does not require a warranty. If a warranty is offered then it must abide by the Act.

The Uniform Commercial Code offers protection against:

- non-conformity of product
- non-merchantability (fair quality)
- unfitness of product for intended purpose.

MMW Act was an attempt to address some of the problems with the UCC.

Not the final word but seen as a significant first step to increasing consumer protection.

Issues: Alternatives

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7. Brighton, W. 1980. <u>Consumer Infotel: An Evaluation</u>. Consumer and Corporate Affairs Canada, Research and Evaluation Branch.

Empirical

Transaction: Government to Consumers

Cost/benefit evaluation of Infotel pilot project.

Infotel - automated advice accessed by consumers' telephone call.

Cost per call determined to be .70¢ per. Benefits <u>not</u> determined on dollar basis but determined by questioning users of service. Thus, costs are not directly comparable to benefits.

Value received: - hig

- high level of user satisfaction

- majority of users applied information to purchase decision
- users were widely diverse demographically

Overall rating was that project was successful.

Issues: Objective Achievement, Alternatives

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8. British Information Services. 1976 Fair Trading and Consumer Protection in Britain. London: Central Office of Information, No. R6011/76. (Addendum: 1979)

Descriptive/Empirical

Objectives of publication: to describe the overall situation on fair trading enhancement/enforcement and consumer protection in the U.K. Major aspects covered are:

- Government responsibilities
- Legislation to protect economic interests
- Legislation to ensure health and safety
- Legal redress
- Policy in the European Economic Community
- Information and advice to consumers
- Services to aid consumers
- Consumer councils in nationalized industries
- Legislation on monopolies, mergers and restrictive practices
- Competition in the European Economic Community

Key features of the U.K. situation are as follows:

- 1. As a relatively "mature" society Britain has a large amount of legislation stretching back well into the 19th century and before. The Fair Trading Act of 1973, and the formation of a new Department (of Prices and Consumer Protection) in 1974, represented an attempt to simplify legislation and its enforcement. Principally, this is done by:
  - centralization and consolidation of legislation and administration;

and

- flexibility of legislation: the Act gives the Director General of the Office of Fair Trading the power to deal with each new problem as it arises by making Statutory Orders under the Act, creating a new criminal offence without the delay and complexity of creating a new piece of legislation.
- 2. Integrity of different levels of government. The British Government uses local government (county councils and London boroughs) to do a large amount of administration of the law.
- 3. Emphasis on non-legislative inducement to fair trading, by encouragement and even statutory creation of various consumer councils, associations and tribunals; and encouragement of voluntary compliance through codes of practice agreed with trade associations.

4. The U.K. does not have within itself the federal/provisional crossboundary jurisdictional problems that Canada has (see 2. above). Its equivalent problems are in its relationships with other members of the European Economic Community.

A comprehensive work of a descriptive nature, without any hard measurement. A fair bibliography of works which are, again, lacking any hard measurements.

Issues: ALTERNATIVES: All

9. Bureau of Management Consulting, 1978. <u>Study of Consumer Fraud</u> <u>Protection's Label Review Practice</u>. Department of Supply and Services, Project No. 2-2022.

Empirical

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Transactions: Government to Traders Government to Trade Associations

Effectiveness and efficiency of C.F.P.'s label review service which assesses voluntarily submitted labels for compliance.

<u>Voluntarily</u> submitted labels for compliance opinion service. Suggested improvements.

Exclusion of label examination for enforcement or in response to complaints.

Description of practice, e.g. Number of labels reviewed; Costs, errors found.

Headquarters and regional interviews with users of service and agencies in U.S. offering similar service. Examination of results of review. Recommendations for change.

Somewhat dated thus not conclusive. Replicable.

Issues:	RATIONALE:	l, Trader Awareness "trader education (broken down into its various forms)" activity
	IMPACTS:	ll, Costs of Techniques "What are the costs to traders and government in involvement with present complaince including techniques?"

# 10. Cady, J. 1975. <u>Advertising Restrictions and Retail Prices.</u> Cited in Phillips and Calder, 1979.

Empirical

#### Transactions: Government to Traders Government to/from Consumers Traders to Consumers

This investigation assessed the impact of laws which restrict price advertising on retail prescription drugs under the hypothesis that regulations will cause the price of drugs to increase.

Data was collected from 19 States that prohibit advertising and 21 States that permit advertising. The data and a regression model showed that restrictions did cause drug prices to increase. Results however were not conclusive due to a number of extraneous factors that may have contributed to price increases.

Study is conclusive on the issue of extraneous influences on measuring effects of advertising regulations.

Issues: IMPACTS:

#### ll, Costs of Techniques

"What are the costs to consumers in involvement with the present compliance inducing techniques?" (i.e. legislation may have an effect as undesirable as it is unintended) 11. Calais-Auloy, J. 1980. Unfair Contract Terms in French Law Under the Act of January 10, 1978. Abstracted in <u>Journal of Consumer Policy</u>, Summer: 236-237.

Descriptive.

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Transactions: Government to Legal Institutions

Act attempts to repel unfair terms often found in contracts.

Government and <u>not</u> the courts empowered to do this. Government is ssupported by a Commission consisting of 15 members - 3 from consumer organizations and 3 from industry.

Weaknesses in French control system:

- government reluctant to issue decrees
- Commission's recommendations do not have to be published (reduces coercive effect)

Conclusion is that system seems rather inefficient.

Issues: Alternatives.

 Cranston, R. 1979. Access to Justice for Consumers: A Perspective from Common Law Countries. <u>Journal of Consumer Policy</u> Summer/Fall: 291-299

Descriptive/theoretical

Jurisdictions Discussed - U.S., U.K., Australia, Canada

Techniques suggested for overcoming traditional means of consumer protection which depend on consumers' initiatives and financial resources. Techniques include class actions, small claims courts, compensation, action by consumer organizations and agencies.

Conclusion:

Skeptical of role of courts. Too little input from consumers and limited to case-by-case reasoning. Courts have only supplementary role to play in consumer protection.

Issues: Alternatives

# 13. Day, G. and Brandt, W. 1973. <u>A Study on Consumer Credit Decisions:</u> <u>Implications for Present and Proposective Legislation</u>. Cited in Philips and Calder, 1979.

Empirical

#### Transactions: Government to/from Consumers Government to/from Traders

Inference associated with the after-only design, where inferences on legal impact studies are drawn from general expectations about what pretest data would have looked like had it been collected.

Method was used to evaluate the Truth-in-Lending (TIL) Act to aid consumer credit decisions.

1970, survey of 643 California heads of households.

They found that 42% of respondents were more knowledgeable about interest rates as a result of the Act.

Quasi-experimental design and new survey.

Issues: RATIONALE: I, Trader Awareness "the existence of legislation" etc., activities 3, Information to Consumers all "information sources" re legislation and its enforcement 14. Diver, Colin S. 1980. A Theory of Regulatory Enforcement. <u>Public Policy</u> 28:257-299.

Theoretical

Transactions: Government to/from Traders

Focus on the neglect of policy makers to formulate realistic enforcement functions for the regulatory process.

Theory is based on utility maximization approach to predict that complete deterrence is not socially optimal within the framework of U.S. federal agencies.

Complete deterrence is not socially optimal given that the rising marginal cost of deterrence will not offset the falling marginal benefits of deterring violations.

Concedes that perfect rationality is an unattainable ideal beyond human capacity, and attempts at complete deterrence would be counter-productive.

Proposes alternate strategies for enforcement using deductive economic reasoning. Concludes that the strategy must be compatible with both enforcement capabilities and the directions of policymakers.

Issues:

ALTERNATIVES: 15, Priority System

"Does the present system aim at the largest deterrent effect, with the highest social and economic impact?"

15. Federal Trade Commission. 1979. <u>Consumer Information Remedies</u>. Policy Review Session. Washington.

Descriptive/Theoretical

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Transactions: Covers all transactional possibilities

A comprehensive assessment of remedies available to consumer fraud cases available as of 1979 in the United States.

Surveillance techniques are reviewed and assessed under several hypotheses on market power and policy implications.

Conclusions are developed from the expert opinions of the Federal Trade Commission on a wide range of issues relating to consumer information remedies.

Issues: IMPACTS: II, Costs of Techniques "What are the costs (and benefits) to traders, government and consumers in involvement with the present compliance inducing techniques?" (Transactions 1-6)

ALTERNATIVES: 15, Priority System

"Do particular sectors and/or levels of trade, size of firm respond differently to different enforcement techniques?" (Transactions 8, 9, 12)

# Golding, Edward L. 1982. Warranties As Signals of Product Quality When Some Consumers Do Not Seek Redress. Federal Trade Commission Working Paper No. 69.

Theoretical

Transactions: Consumers to/from Traders

Variations in product quality are explored using two groups of consumers. One group will always return faulty goods and the other never returns faulty goods. On this issue it was induced from a mathematical proof that "non-returners" will always buy higher quality goods to reduce risk, when quality can be observed.

Warranty terms are then changed to make it more difficult for goods to be returned. This is based on the assumption that firms will not have to replace defective goods if the warranty is difficult to service.

Within the theoretical framework it is found that companies would prefer the situation where warranties are not acted on either because of consumer behaviour or clauses in the warranty.

As an alternative to companies avoiding warranties, the incidence of reputation capital is explored. Here it is concluded that when firms rely on their past reputation they will honour warranties and minimize "consumer hassles".

Study is conclusive and applicable to Canada.

Issues: Impacts

 Guss, J. Jonathan, ed. 1979. <u>Product Liability: Reflections on Legal</u> <u>Aspects of the Policy Issues</u>. Ottawa: Consumer and Corporate Affairs Canada.

Descriptive/Theoretical

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Transactions: Consumers to/from Traders Legal Institutions to/from Traders Legal Institutions to/from Consumers

A compilation of four independent studies. It provides an introduction to the subject and the issues policy makers address in balancing between overregulation and allowing market failure.

Considerable attention is given to the role of sellers and manufacturers in defining their problems in the context of warranties and liabilities, including the failure of the courts to assess laws equitably. In addition, divisions between civil and tortious liabilities are clearly spelled out as related to defective products.

Although very few conclusions or recommendations are put forward the presentation itself leads to a conclusive understanding of the issues.

Issues: Rationale

 Hilke, J.C. Advertising Predation and the Areeda-Turner and Williamson Rules. Federal Trade Commission, Bureau of Economics, Working Paper No. 18. Washington D.C., 1979, 29 pp., mimeo.

Theoretical

Transaction: Trader-Consumer

The paper presents a conceptual analysis of predatory pricing and examines ways in which concepts and policy proposals from the literature on that subject can be adopted to predatory advertising.

Predatory pricing is pricing by dominant firms in such way as to deny new entrants in a market the chance to reach the minimum scale of efficient production. Predation in advertising is then defined as investment in advertising proximate to the date of new entry, so as to impose additional information costs on consumers, thus increasing the cost of entry.

Hilke concludes that predation in advertising is theoretically to be expected with minimal assumptions (p. 11), and can be measured with a criterion analogous to Williamson's rule for price predation (p. 28). In brief, it is defined as a level of advertising by dominant firms substantially beyond that of some base period, and occurring in close proximity to the time of entry of a new firm.

There is a strong social welfare justification for preventing advertising predation thus defined (p. 25).

Issues: Rationale

Alternatives/Application of CIA.

# 19. Katz, B. and Rose, J. 1976 <u>Information Utilization and Awareness</u> <u>Criterion in Labelling Regulation</u>. <u>Cited in Phillips and Calder</u>, 1979.

Empirical

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Transactions: Government to/from Traders Traders to Consumers Government to/from Consumers

Assesses the probable effects of information disclosure requirements, under the hypothesis that there is little if any long-term impact on buyer behaviour.

From a random sample of New Jersey consumers they found that after four years of light bulb labelling regulation, less than 7% of respondents surveyed were aware of the package label information.

Conclusion that disclosure of information has insignificant long-term impact on buyer behaviour. The assessment may be specific to the particular products and therefore not generally conclusive.

Issues: OBJECTIVE ACHIEVEMENT: 7, Changed Consumer Behaviour "What differences in consumer behaviour can be observed due to the existing information techniques?"

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# 20. Katz, D. 1980. <u>Measuring Deceptive Advertising</u>. Unpublished M.B.A. Thesis, Concordia University, Montreal.

Empirical

Transaction: Government to Traders Traders to Consumers

Measurement of deceptive advertising. Information processing (psychological treatment). There is a lack of a sound conceptual model supported by research.

Empirical measures of deceptive advertising can be achieved through attitudinal information processing approach.

Regulatory failure is due to use of intuitive approach rather than based on conceptual model.

Implication is that enforcement failure is due to lack of solid base.

Showed that deceptive advertising has effect on buying. No actual measures offered.

Controlled experiment. Replication of Olsen-Dover (1975-76) experiment in U.S.

Study replicable but not conclusive.

Issues: RATIONALE: I, Trader Awareness "Review of advertisements" activity OBJECTIVE ACHIEVEMENT: 9, Adequacy of Present Techniques "Are existing techniques those required to detect offences?" 21. La Barbera, P.A. 1983. The Diffusion of Trade Associations Advertising Self-Regulation. Journal of Marketing 47:58-67.

Empirical

Transactions: Traders to/from Trade Associations Government to Trade Associations

Deals with the costs and benefits of self-regulation and the extent of adoption of regulation by individual companies.

Definition of the non-monetary costs and benefits of industry selfregulation for industry, government and consumers.

Mail out questionnaire to 2,000 executive directors of trade associations.

Study is replicable and adaptable to Canada. The results are probably transferrable.

Issues: IMPACTS: II, Costs of Techniques

"What are costs to traders, government and consumers in involvement with present compliance inducing techniques?"

ALTERNATIVES: 16, Alternatives to Prosecution and Legislation

"Let trade associations set standards and police them" alternative to criminal legislation.

22. Law Reform Commission of Canada. 1974. <u>The Meaning of Guilt-Strict</u> Liability. Studies on Strict Liability.

Descriptive/Theoretical

Transactions: Traders to/from Consumers Legal Institutions to/from Consumers Legal Institutions to/from Traders.

Liability under Canadian criminal law is examined in the general context of "what sort of criminal law ought we to have?" This question is distilled down to state that the law must not be oppressive and it should not penalize those who are known to be without fault, because they had no reasonable chance to comply with its provisions.

Continuing on the premise that the present law is unsatisfactory, alternatives to strict liability in regulatory offences are offered. Transferring some regulatory offences from criminal to administrative law would still involve some hardship to the offender. The kind of penalty, though, would be restricted to a monetary levy or restriction on business practice.

The paper concludes that criminal and administrative law should be separated by intent. Criminal liability is, and should be, based on fault, where there is wrongful intention or recklessness. Administrative law should be set to use negligence as the minimum standard of liability.

Issues: Impacts

23. Maynes, E.S. 1979. Consumer Protection: Corrective Measures. <u>Journal of</u> Consumer Policy Summer/Fall: 191-212.

Theoretical

Transactions: Government to/from Traders Government to Legal Institutions Government to Consumers

Deals with the spectrum of measures to address the factors giving rise to demand for consumer protection. Criteria are suggested for assessing corrective measures. Discusses merits and drawbacks of regulatory and legislative approaches.

Seminal article with detailed discussions drawing on the studies of researchers in the field.

Issues: Objective Achievements Alternatives

24. Maynes, E.S. 1979. Consumer Protection: The Issues. <u>Journal of Consumer</u> Policy Spring: 97-109.

Theoretical

Transactions: Traders to/from Consumers Government to/from Consumers Consumers to Consumer Protection Organizations

Five factors giving rise to demand for consumer protection:

- monopoly
- informationally imperfect markets
- consumer dissatisfaction
- underrepresentation of consumers
- desire to shelter vulnerable consumers (e.g. the poor)

Four consumers' rights achieving universal acceptance:

- Right to -safety
  - -be informed -choose
  - -be heard

Issues: Rationale

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### 25. Mazis, Michael B., et al. 1980. <u>A Framework for Evaluating Consumer</u> Information Regulation. Federal Trade Commission Working Paper No. 24.

Theoretical

#### Transactions: Consumers to/from Legal Institutions Traders to/from Consumers

Develops the theoretical rationale for regulation and integrates elements of consumers' behaviour and economics, coupled with the legal framework of the First Amendment in the United States.

This is further developed to show the consequences of overly restrictive information regulation in the context of advertising.

The general conclusion is that milder restrictions are preferred to stronger restrictions on information in advertising. These findings were obtained as a result of the First Amendment, where freedom of speech is to be preserved regardless of costs.

Issues: Rationale:

"To what extent are the objectives and mandate of the program still relevant?"

Impacts and Effects:

"What impacts and effects, both intended and unintended, resulted from carrying out the program?"

26. Nader, Laura ed. 1980. No Access to Law. New York, Academic Press, Inc.

Theoretical/Descriptive

Transactions: Consumers to Traders Consumers to Protection Organizations

Collection of works dealing with alternatives to the American Legal System.

Description of complaints and mechanisms for redress. Common sense approaches to redress are described for a large variety of complaints.

Conclusion is that for every problem there is a "non-legal" solution.

Applicable to Canadian consumers.

Issues: Alternatives.

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26.1 ORI Ltd. 1968. See Orkand, D.S. et al. 1968.

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#### 27. Orkand, D.S. et al. 1968. <u>Consumer Affairs Programme Planning and</u> Analysis Study. Ottawa: Operations Research Industries (ORI) Ltd.

Empirical

Transactions: Consumers to/from Traders Standards/Certification Bodies to/from Consumers Standards/Certification Bodies to/from Traders

Conducted a nationwide Canadian survey on retail food inspection to generate a cost benefit analysis. The purpose was to demonstrate the applicability of cost benefit studies as an established resource allocation technique.

Sault Ste. Marie was used as a control, since at the time of the study no inspections had been carried out in that jurisdiction. Thus the validity of the model was based on the representativeness of Sault Ste. Marie.

It concluded that retail food inspection has averted economic loss sixty times greater than the costs of inspection and enforcement. The difficulty of quantifying consumer confidence is also discussed.

This study is replicable, but probably very costly if data is not readily available.

Issues: Rationale Objective Achievement

## 28. Oster, Sharon, M. 1980. Analysis of Some Causes of Interstate Differences in Consumer Regulation. <u>Economic Inquiry</u> 18:39-53.

Empirical

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Transactions: Government to/from Traders Traders to/from Consumers

Four regulations covering credit, prescription drugs advertising, mobile home sales, and door-to-door sales.

Attempted to explain, on a cost/benefit basis, what contribution consumers and traders make in the evolution of regulations.

Industry specific to the four industries listed. Data from mid-seventies from: Office of Consumer Affairs; U.S. Federal jurisdictions; consumers; and industry-U.S. federal agency.

Bivariate econometric model, found that both consumers and industry (although to a lesser extent) play a role in regulation formulation. New analysis with old data.

Possibly replicable if data exists, conclusive to the extent of accepting the econometric analysis.

Issues: IMPACTS: II, Costs of Techniques "What are the costs to traders and consumers in involvement with the present compliance inducing techniques?" (and the benefits? and with future as well as present techniques, i.e. legislation?) 29. Padberg, Daniel I. 1977. Non-Use Benefits of Monetary Consumer Information Programs. Journal of Consumer Policy 1:5-15.

Empirical

57

Transactions: Government to/from Traders Traders to Consumers Government to/from Consumers

Labelling of consumer products in the context of specialized food system. Unit pricing, open dating, non-use benefits and consumer protection.

Consumers value the labelling requirements but seldom use the information. Appears to act as a confidence builder whereby a third party does the surveillance. No indication that consumers purchasing behaviour is changed as a result.

Unintended success of the program in that, although consumers did not seem to use the information, it served to increase producers' accountability.

Time lag between availability of information and consumers' use of it is offered as explanation for non-use.

Study is conclusive and applicable to Canada.

Issues: Objective Achievement: 7, Changed Consumer Behaviour "What difference in consumer behaviour can be observed due to the existing information techniques?"

#### 30. Phillips, L.W. & Calder, B.J. 1979. "Evaluating Consumer Protection Programs: Part I. Weak but Commonly used Research Designs". Journal of Consumer Affairs 13 No. 2: 157-185.

All research evaluating consumer protection laws uses quasi-experimental designs (approximating a true experiment). Three methods described - all suffer from validity problems.

l. After-only Design

Survey of consumers after passage of law or by studying cases.

Lack of pre-test or pre-laws observations thus no systematic basis for estimating behaviour without law.

Thus cannot test causal hypotheses about law's impact but can suggest hypothesis about effects of reforms.

#### 2. Comparison Group Design

Attempt to correct above with addition of a complete group which should not have been affected.

Question is raised on the comparability of the groups on other dimensions; e.g. study of consumers at store showing unit pricing were more likely to try unknown, cheaper brands than consumers at store not showing unit pricing. Did consumers pre-select themselves, and those who were already predisposed to lower prices seek out the store which provided them with the opportunity to exercise this?

3. Before-After Design

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Superior to 1 and 2 though unlikely to show if the effect was due to law.

- Bias due to repeated testing different, due to obsolete process.
- Changes in measuring instrument.
- Lack of control of maturational effects.
- Lack of control of independent historical factors, i.e. intervening and extraneous variables.
- Lack of control of instability artifacts. Random and systematic fluctuations, e.g. seasonality/freshness of food and consumer satisfaction.
- Vulnerability to regression artifacts, i.e. the observed differences may not be due to law but to the likelihood that extreme phenomena may appear less extreme on remeasurement.

31. Phillips, L.W. & Calder, B.J. 1980. "Evaluating Consumer Protection Programs: II. Promising Methods." Journal of Consumer Affairs 14 No. 1:9-36.

Three promising research designs.

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Major threats to internal validity of designs:

-testing or pre-sensitization -instrumentation -instability -statistical regression -history -maturation

- 1. Before After Comparison Group Design Measurement before and after the law PLUS comparison with group not affected by law.
- 2. Interrupted Time Series Design. Extended series of prelaw and post-law observations. Analysis centres on observing interruption or discontinuity due to law.
- 3. Interrupted Time Series Comparison Group Design (multiple time series design). No. 2 plus no law, non-equivalent control jurisdiction.

### 32. Resnick, A.J. & Harmon, R.R. 1983. Consumer Complaints and Managerial Response: A Holistic Approach. Journal of Marketing Winter: 86-97.

Empirical

Transactions: Traders to/from Consumers

How effectively managers could deal with consumer complaints using five model complaint letters.

To compare customer expectations against U.S. managers solutions to complaints.

1982 across the U.S., 112 consumer volunteers and 40 managers from large diversified home product company.

Managers' ability to pacify consumer complaints, that there exists a costeffective way to deal with consumers.

New survey with paid volunteers.

Conclusive.

Issues: IMPACTS: II, Costs of Techniques "What are the costs to traders in involvement with the present compliance inducing techniques?" (i.e. those costs can be reduced with regard to complaints re non-compliance - this suggests:

> RATIONALE: 1, Trader Awareness "trader education (broken down into its various forms)")

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33. Rotenberg, R.H.; Poirier, P.R.; Tremblay, J.A.C. 1978. A Decade After "The Permissible Lie" Have Things in the Ad Business Really Changed? Journal of Consumer Affairs 12:170-175.

Empirical

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Transaction: Government to/from Traders Traders to/from Trade Associations Government to Trade Associations

Goal was to assess advertising executives' loyalty in order of priority to clients, the agency, and consumers.

Found that advertising people suffer from job insecurity due to high turnover rates of personnel and thus feel little or no loyalty to consumers.

Two hundred ad agency personnel in Montreal, 1977 3-page selfadministered questionnaire with follow-up interview.

Found little or no feeling of responsibility to the consumer on the part of ad agency people.

Found that the industry (70%) feels that it should be regulated; and that it is not capable of self-regulation!

New data and results.

Conclusive but could be replicated nation-wide with similar results (probably).

Issues: RATIONALE: 1, Trader Awareness "trader education (broken down into its various forms)" activity

ALTERNATIVES: 16, Alternatives to Prosecution and Legislation

"let trade associations set standards and police them" alternative to criminal legislation.

#### Scheffman, David. 1980. Product Reliability, Warranties and Producer Liability, and Advertising. Federal Trade Commission Working Paper, No. 34.

Theoretical

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#### Transactions: Government to Traders Government to Legal Institutions Legal Institutions to Traders

Consumers operate with imperfect product information and are vulnerable to warranty claims and advertising about reliability. Mathematical models with "utility" functions are used to incorporate legal constraints and different market conditions (i.e. competition, monopoly and intertemporal monopolies).

Based on the 'Common Law' criterion. Principal findings are:

- 1. Misleading advertising may be profitable, whether it under- or overstates reliability. Informative advertising is never profitable (a counter-intuitive finding).
- 2. An unregulated market is inefficient unless the consumer has accurate perceptions of the product; therefore regulation is required.
- 3. Full producer liability prevents efficiency without enforcement and its associated costs; since consumers and producers have incentives to evade regulation.
- 4. A monopolist can perceive how consumers lean, and the market will be more likely to converge to equilibrium, with a perfectly informed consumer, under a monopoly than under a competitive market structure.
- 5. Stability in the market is:
  - directly related to the degree of risk aversion and to the speed of adjustment of consumer perceptions
    - inversely related to the strong effects of advertising
- 6. Product changes serve to confuse consumers; therefore equilibrium is uncertain even without misleading advertising.

The findings are counter-intuitive and should therefore be scrutinized by policy makers. In general, this has a solid theoretical foundation and its departures are carried out with the finesse of well developed mathematical models. Most importantly, it shows the justification for regulation.

#### Issues: Impacts:

What impacts and effects, both intended and unintended, resulted from carrying out the Program?

#### Rationale:

To what extent are the objectives and mandates of the Program still relevant?

#### 35. Schrag, Philip, G. 1972. <u>Counsel for the Deceived: Case Studies in</u> <u>Consumer Fraud.</u> Pantheon Books, New York.

Empirical

Transactions: Legal Institutions to Traders Government to/from Consumers

From author's experience in law enforcement division of NYC Department of Consumer Affairs.

Documentation of frauds encountered, procedural systems in place to fight them, devices adopted when systems failed.

Findings:

- Many deceptions are successful due to perpetration on low socioeconomic status consumers and due to lack of knowledge of redress procedures.
- Due to cost/time of litigation, companies were not afraid that they themselves would be prosecuted. No deterrence effect from knowledge of others being prosecuted.

Suggestions:

- Hold individuals in company responsible.
- Use Swedish Market Court system.

Results questionable on basis of small number of cases, area constraints.

Results are not transferrable but easily adapted.

Issues: RATIONALE: 3, Information to Consumers "How do consumers respond to, and to what extent are they reached by, pamphlets and seminars re consumer protection laws?"

ALTERNATIVES: 17, Alternatives for Compliance "encouragement to complainants"

- 36. Schubert, Jane G. et al. 1977. See American Institute for Research.
- 37. Schubert, Jane G.; Krug, Robert. E.; Rose, Andrew, M. 1978. See American Institute for Research.

38. Seaton, F. Undated. <u>The Impact of Objective Information on Consumer</u> Brand Preferences: <u>An Experimental Investigation</u>. Ph.D. dissertation, published on demand by Xerox University Microfilms, Ann Arbor Michigan, 48106.

Empirical

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Transactions: Government to Traders Traders to/from Consumers

Consumer information and purchasing decisions.

Intelligent, satisfactory purchase decision is increased with objective, reliable information, hence fraud reduction.

Hypothesis supported. Concluded need for legislation and enforcement of information dissemination.

Detailed methodology description.

Reliability high.

Replicable.

Issues: ALTERNATIVES: 16, Alternatives to Prosecution & Legislation "pressure from media when firms advertise" alternative to criminal legislation 39. Shapiro, Alan A. 1980. <u>An Economic Analysis of Consumer Redress</u> <u>Mechanisms</u>. Consumer and Corporate Affairs Canada, Consumer Research and Evaluation Branch.

Theoretical

#### Transactions: Consumers to/from Legal Institutions and Consumer Protection Organizations

Factors influencing consumer complaints and judicial forums are examined within a theoretical context.

Variants of small claims courts, consumer courts, mediation facilities and arbitration facilities are inserted into a simple economic model. These issues are developed further by making different assumptions about consumer behaviour including: risk averse, risk neutral and risk preference.

It is concluded that courtlike structures are unlikely to be of much value to consumers with claims of less than \$100. Given the economic philosophy of the "optimal defect rate" and Pareto optimality, it is further concluded that justice and fairness should take a back seat to resource allocation.

Issues: Alternatives

#### 40. Sharpe, Robert J. 1981. <u>Interprovincial Product Liability Litigation:</u> Jurisdiction, Enforcement and Choice of Law. Ottawa: Consumer and Corporate Affairs.

Descriptive/Theoretical

Transactions: Traders to/from Consumers Legal Institutions to/from Consumers Traders to/from Legal Institutions

A comprehensive work on interprovincial jurisdictions. Both tort and civil claims are discussed in the context of enforceability and choice of law.

In very general terms, the study depicts Canada as having a solid coverage across the country with all provincial jurisdictions interlocking under a federal blanket. However, each province differs in legal proceedings and ease of access to the law, some more subtly than others.

The bulk of this discussion comes under consideration of the ex juris servicing of legal decisions. This scenario is clarified further by an appendix listing the statutes and positions taken by each Canadian province (except Quebec). Quebec is dealt with separately by Appel (1982).

Issues: Rationale

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41. Shay, R. and Shober M. 1973. <u>Consumer Awareness of Annual Percentage</u> <u>Rates of Change in Consumer Installment Credit</u>. Cited in Phillips and Calder, 1979.

Empirical

Transactions: Government to Traders Government to/from Consumers Traders to Consumers

Assessment of the Truth in Lending Act (TIL) based on a nation-wide survey one month before and sixteen months after TIL to measure consumer awareness of consumer finance issues.

Although significant differences are found in the pre-TIL and post-TIL surveys, these differences cannot be isolated to the implementation of the Act. Maturation of consumer's ability to absorb information, coupled with the general rise in consumer interest in credit conditions, appear to have tainted the results.

Conclusive on the issue of maturation of consumer attitudes and applicable to Canada.

Issues: RATIONALE: I, Trader Awareness "the existence of legislation", etc., activities

> RATIONALE: 3, Information to Consumers all "information sources" re legislation and its enforcement

42. Sheldon, J. and Zweibel, G. 1978. <u>Survey of Consumer Fraud Law</u>. Prepared for the National Institute of Law Enforcement and Criminal Justice, U.S. Department of Justice.

Descriptive

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Transactions Government to Legal Institutions Legal Institutions to Traders

Comparison of legal requirements in several countries - U.S., Germany, Israel, Sweden, Canada.

Three aspects of trader-consumer transaction covered:

- l. Bargaining in good faith
- 2. Standard form contracts
- 3. Unconscionability

Issues: Rationale Alternatives

43. Sheldon, Jonathan A., 1978. See American Institute for Research.

44. Sigelman, L. & Smith, R.E. 1980. Consumer Legislation in the American States: An Attempt at Explanation. <u>Social Science Quarterly</u> 61:58-69.

Empirical

#### Transactions: Government to/from Traders Traders to/from Consumers Government to/from Consumers

Whether social, economic, and political variables found in various states account for the adoption, by the states, of U.S. federal regulations.

Three well defined hypotheses:

- 1. The passage of consumer legislation is related to the socio-economic character of the State.
- 2. The passage of consumer legislation is related to the political character of the State.
- 3. The passage of consumer legislation is related to the passage of previous innovative policies.

Data to the end of 1974 on 51 States (including D.C.), Federal compared to States.

Using education, income distribution, political indices and voter turn-out data on a matrix correlation, and a multiple regression model, all three hypotheses were accepted.

Fresh empirical approach with established official data sources.

Replicable in Canada to test same on provincial variations.

Issues: ALTERNATIVES: 12, Regional Differences "Should there by regional differences in enforcement methods?" 45. Stampfl, Ronald, W. 1979. <u>Multi-Disciplinary Foundations for a Consumer</u> <u>Code of Ethics</u>. Paper read at the American Council on Consumer Interests conference, 25-28 April, 1979.

Theoretical/Ethical

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Transactions: Consumers to/from Traders Consumers to/from Government Government to Traders

Basic thesis of the paper is that the rights of consumers, by definition, become the responsibilities of governments and traders. Two levels are legal and moral and imply behaviour that "ought to be". Each discipline interprets this latter in its own way.

Rights of traders, conversely, become consumers' responsibilities.

The overall argument is that the fulfilling of one's responsibilities will ensure ethics in the marketplace.

Somewhat esoteric but basic principles are valid and should be recognized in understanding the process.

Issues: Rationale

46. Star, S. 1978. <u>Consumer Protection in the Used Car Market: Warranties</u> and <u>Inspections</u>. Consumer and Corporate Affairs Canada, Research and Evaluation Branch.

Empirical

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Transactions: Government to Traders Government to Consumers

Two alternatives to protection:

- 1. Mandatory warranties and optional inspections.
- 2. Optional warranties and mandatory inspections.

Logically, the first alternative is inefficient and inequitable. New South Wales data support this. Alternative 2 should provide better protection at a lower cost.

Quebec has drafted a law (1978) to institute the first alternative.

The study was based on interviews with officials and investigation of data. It is not conclusive and not reliable statistically. It is replicable.

Issues: Alternatives Objective Achievement. 47. Trebilcock, M.J. et al. 1976. Proposed Policy Directives for the Reform of the Regulation of Unfair Trade Practices in Canada. <u>A Study on Consumer</u> <u>Misleading and Unfair Trade Practices</u>, Volumes I and II. Department of Consumer and Corporate Affairs.

Theoretical

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Transactions: Government to/from Traders Consumers to/from Traders Legal Institutions to/from Traders

Object of work is to develop a framework for the regulation of misleading advertising and residual unfair trade practices.

Suggests a shift from assessing advertising in light of its deceptive potential to one of providing consumers with satisfactory product information. Flows from the tenet that insufficient information can lead to unwanted purchases as much as false advertising. Ethical argument on responsibility of seller to provide information to buyer. He admits that the practical aspects are more difficult to pin down.

Conclusion: criminal law is ill-fitted for a primary role in regulation of misleading advertising. Recommends administrative approach to advertising control; e.g. affirmative disclosure, advertising substantiation, corrective advertising.

Issues: Rationale Alternatives

#### 48. United States Department of Justice, 1978. <u>Survey of Consumer Fraud</u> Law. Washington D.C.

Empirical

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#### Transactions: Legal Institutions to Traders Government to Legal Institutions

"This report surveys existing consumer fraud law at the federal, state, and local levels, outlining the fraudulent practices this legislation is targeted against and the enforcement strategies utilized". Beginning with a historical perspective, the report then analyses 67 consumer fraud practices that States have sought to control. The survey of fraud practices is then followed by 33 strategies used for control.

The study goes on to discuss local enforcement at the municipal and county levels, followed by a comprehensive discussion of federal law, its agencies and their mandates. The final section deals with foreign approaches, including Canada.

Issues: Rationale Objective Achievement Alternatives 49. Veljanowski, G.G. 1982. The Role of Enforcement in Regulation. <u>Selected</u> Papers from the Annual Conference of the Royal Economic Society and the Association of University Teachers of Economics Guildford pp. 122-128. Survey: Cambridge University Press.

Theoretical

Transactions: Traders to/from Consumers Consumers to/from Legal Institutions Traders to/from Legal Institutions

As a theoretical work it sets out to incorporate enforcement strategies and regulation into positive economic theory and its implied efficiency: as an illustrative example the author refers to health and safety regulations.

It points out that legal rules do not attempt to reduce social harm by a least cost method. As a result economic theory must rationalize its effects. This problem is approached by re-interpreting supply and demand into supply of offences and demand for compliance. In this way legal issues were incorporated into the traditional economic analysis.

In concluding this line of approach however, the author reverts back to the subjective discussion of the agencies. Here it is assumed that they will be conscious of the trade-off between specific compliance and general deterrence to determine their policies.

Issues: Objective Achievement

#### 50. Wheatley, J. and Gordon, G. 1971. Regulating the Price of Consumer Credit. Cited in Phillips and Calder, 1979

Empirical

Transactions: Government to Traders Government to/from Consumers Traders to Consumers

Study to show that changes in economic conditions may give misleading results to an analysis of the effects of consumer regulation.

Focussed on interest rate ceilings imposed on consumer credit in the State of Washington from 1968-69, and the reduction in loans granted to lower income borrowers.

Concluded that both the interest ceilings as well as the depression in the state resulted in the reduction of low income loans.

Conclusive on the issue of extraneous economic factors influencing the effects of consumer regulation.

Issues:

IMPACTS: II, Costs of Techniques

"What are the costs to traders and consumers in involvement with the present compliance inducing techniques?"

(i.e. legislation may have an unexpected effect, or may be only thought to have that effect, which in fact has another, coincidental cause)

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