# STUDY OF THE PRODUCT SAFETY LABORATORY AND ITS RELATION TO MAJOR CLIENT JURISDICTIONS

- PHASE I -

# STUDY OF THE PRODUCT SAFETY LABORATORY AND ITS RELATION TO MAJOR CLIENT JURISDICTIONS

## PHASE I



Dr. R.D. Bennett
March 22, 1977.

SUMMARY

The original intent of this study was to assess and evaluate the organization and facilities of the Product Safety Laboratory, as well as those of outside laboratories in relation to the needs of the Product Safety Activity. After due consideration of the situation in the Product Safety Laboratory and its inter-actions with its major client jurisdictions, it was decided that the study should be divided into two phases, the first of which would consider the Product Safety Laboratory and its relationship to its client jurisdictions within the Directorate and the second of which would consider the identification, evaluation and qualification of outside laboratory facilities that may be used to service the Product Safety Activity. This report is concerned with Phase I.

Investigation has revealed that, to date, the Product Safety Laboratory has not oriented its efforts to the basic needs of the major client jurisdictions, namely, the Product Safety Branch and the Textile Division, Consumer Fraud Protection Branch. At the time when the study was commenced, the situation had reached the stage where communication between the principals was almost non-existent.

This situation has been the result of two major factors. First, the role, objectives and responsibilities of the Product Safety Laboratory had not ever been defined, nor had they been co-ordinated with those of the major client jurisdictions. Second, the present organizational structure has not been conducive to effective communication between laboratory and client jurisdictions.

In respect of laboratory work load, it has been determined that the Product Safety Laboratory can accommodate the potential client workload, certainly for the next year and possible for the next two years. This fact, together with clear definition of the role, objectives and responsibilities of the Product Safety Laboratory, and the re-structuring of the organization from both an internal and external point of view, will provide the basis for a much improved and more efficient co-ordinated unit.

However, there will be circumstances under which the Product Safety Laboratory will be unable to provide required service to its clients. These circumstances will include situations such as the testing of children's car seats, where highly sophisticated, expensive equipment, which occupies a large amount of space, is required and which cannot be justified for relatively infrequent use.

General recommendations for improving the current situation have been made. It is essential that these recommendations be accepted in principle before proceeding with the consideration of outside laboratory facilities. Without such acceptance, further consideration of outside laboratory facilities within the context of this study would not serve any useful purpose.

## SUMMARY OF RECOMMENDATIONS

EXTERNAL

1. (a) The Product Safety Laboratory should be integrated into the Product Safety Branch so as to improve overall effectiveness within the activity, improve communication between PSL and PSB, and allow for re-allocation of resources to meet overall activity needs.

   (b) PSL resources not utilized should be made available to the Product Safety Branch so as to ensure overall resource utilization within the Activity.

2. The Product Safety Branch should be restructured to accommodate PSL.

3. The PSL should be given a major participatory role in provision or selection of laboratory services in line with the objectives of the major client jurisdictions.

4. Provision should be made for other potential client jurisdictions to utilize laboratory facilities after requirements of the major jurisdictions have been satisfied.

5. The principle of transfer of personnel between PSL, the Compliance Division and the Development Division should be established.

INTERNAL

1. Restructure PSL into two units; an Analytical Section and a Development Section.

2. Each section of PSL should report through a working group leader to a single head of Laboratory operations.

3. Each unit should be staffed by graduates and technicians in appropriate ratios.

4. The principle of transfer of personnel between sections should be established.

5. Roles and responsibilities of each section of PSL should be defined clearly.

6. Responsibilities of the Head of PSL should be defined accurately.

7. PSL staff resources should be allocated proportionately according to needs of client jurisdictions.

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## INTRODUCTION

At the request of the Assistant Deputy Minister, Bureau of Consumer Affairs, a committee was established to undertake a detailed study of the overall capability of the Product Safety Laboratory (PSL) to support the Bureau's product safety programmes in the foreseeable future.

In support of this directive, the committee established to undertake the assignment was made up as follows:

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| Product Safety Laboratory | - J.L. Armstrong |
| Development Division | - V. Gellman |
| Compliance Division | - R. Bushfield |
| Textile Division | - L. Kolasinski |
| Field Operations Services | - P. Michaud |
| Task Leader and Secretary | - D. Osborne |
| Chairman | - R.D. Bennett |

Owing to a reallocation of responsibilities of Mr. Bushfield during the course of the study, Mr. T.J. Wright replaced Mr. R. Bushfield on the Committee.

The objective of the study was to assess the future direction of laboratory requirements for the product safety activity through two phases. This is covered in the terms of reference stated in Appendix A. The first phase deals with the present situation and its related problems and mode of operation; the second, a means of assessing accurately outside laboratory facilities to be used by PSL in the future.

Tasks relating to the terms of reference were assigned consecutively to the members of the committee so as to obtain their viewpoints without confrontation. After careful examination of the various jurisdictional responses it became evident that it would be necessary to resolve

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major concerns raised before moving to the question of outside laboratory facilities. These issues related directly to the responsibility, role and direction of PSL as well as its interface with client branches.

Therefore, given a situation which required immediate attention, it was decided to limit the study to consideration of the first phase before proceeding to study the identification and evaluation of laboratory facilities outside the Bureau. It is essential that the major issues of concern be resolved before the second phase of the study can be considered.

It should be noted that input from Field Operations Services during the first phase has been minimal since the major issues revolve around relationships within the Standards Directorate. However, it is expected that they will be involved to a much greater extent, relative to sampling philosophy and criteria for selection of laboratories, in the second phase of the study.

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APPROACH

The approach adopted for discussion purposes in this report is to examine the organization of the PSL in depth, from both the internal and external points of view.

This report outlines the existing situation, draws conclusions, makes recommendations and discusses the effects on the existing situation if the recommendations are accepted and implemented.

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I EXTERNAL

A. Roles/Objectives

To date, the role and objectives of the Product Safety Laboratory (PSL) and its relationship to the client jurisdictions have not ever been defined adequately. This is largely attributable to the rapid growth and evolution of PSL, as well as the growth and unpredictable direction of development of the laboratory's major client, the Product Safety Branch (PSB).

The undefined role, objectives and minimal forward planning has resulted in a situation where both laboratory and client jurisdictions have developed their own divergent views as to what they perceive the role of the laboratory to be. This situation has created extensive problems in communication and understanding of the basic activity inter-relationship which is so essential to achievement of a co-ordinated approach to the objectives of the Directorate.

Owing to the lack of a proper definition of role and objectives, it was necessary to have detailed discussions with both the laboratory and its clients to obtain their individual views and opinions.

To assist in establishing a proper definition of role and objectives, the benefit and experience of outside laboratories* (both private and public) also was sought.

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*Ontario Research Foundation, Mississauga, Ontario.
Department of National Defence, Hull.
Department of Public Works, Ottawa.
Department of Agriculture, Ottawa.

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B. Role and Objectives As Viewed by the Product Safety Laboratory

Difficulty was experienced in obtaining a clear definition of what PSL understood its present role and objectives to be. However, it was best expressed as a versatile source of analytical and development knowledge, and as a centre of technical expertise, with sophisticated equipment aimed at servicing the following areas:

- Development of regulations;
- Analysis of consumer complaints;
- Participation in the development of international test procedures, etc., through organizations such as ISO;
- Scientific and technical support in respect of regulatory operations of all branches in the Department;
- Provision of expert witnesses for all prosecutions, in related areas of work;
- Co-operating with other departments in projects of mutual interest;
- Identification and assessment of commercial laboratory facilities on the basis of technical competence,
- Overseeing and monitoring the quality and results of project work conducted by outside institutions.

In summary, the laboratory views its role as that of providing and ensuring first class, rapid and reliable laboratory service to the total Department as well as establishing an image of technical expertise and reliability with other government Departments and laboratory organizations in both the private and public sectors. Additionally, PSL feels that all operations either related to, or undertaken by, any laboratory should be supervised by PSL personnel.

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C. Role and Objectives As Viewed by the Client Jurisdictions

Presently the major clients of PSL are the Product Safety Branch (PSB) and the Textile Division (TD) of the Consumer Fraud Protection Branch. Discussion has been limited to these two major clients since they require extensive laboratory service to carry out their programmes effectively.

The client jurisdictions view the objective of PSL as the provision of necessary laboratory support to the Activity, particularly in the area of analytical or routine compliance testing and furthermore, the provision of a technical viewpoint in the area of regulation development, upon request. In the case of the latter this primarily consists of developing test methods where none presently exist, or undertaking investigation and research on projects which the client jurisdiction feels are specifically suited to PSL. It is worth noting that in almost all cases the client jurisdictions select the laboratory facilities of their own accord without reference to, or advice from PSL.

In summary, the role of PSL is viewed by the client jurisdictions, as that of a commercial laboratory, but one which is less efficient and perhaps less competent than many other similar facilities in the private sector. The client's conception is that PSL should provide service and quick response, but only as the client jurisdiction requires; no more, no less. In providing this service, the client maintains complete responsibility for all functions performed by PSL, criticising them when these functions are not performed to their considered standard.

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D. Role and Objectives As Viewed by Other Government Laboratories

Not being familiar with the situation as it exists between PSL and the client jurisdictions it was difficult for other government laboratories to express an opinion on what the role and objectives of PSL should be. However, there was a definite concensus of opinion that the objectives, the role and responsibilities of PSL must be clearly defined and understood by all parties, i.e., by both PSL personnel and client jurisdictions. Close contact also should be maintained between laboratory and client to ensure that both relate to overall activity objectives.

Basically, it was agreed and stated that the prime objective of any laboratory is to provide fast, reliable, quality service to its users.

E. Organization Structure

Figure I* shows how the existing PSL organization is structured. It is interesting to note how the reporting structure between PSL and major client organizations functions; the Head of PSL reports through the Assistant Director, through the Director, both of Legal Metrology and Laboratory Services, to the Director General of the Standards Directorate.**

It is also worth noting that the position of Chief, Standards Laboratory, is currently vacant, resulting in the Assistant Director having seven individual sections within the organization reporting directly to him. It can be assumed that the amount of time allocated to directing the PSL is proportional to that devoted to the other sections shown on the chart, i.e., amounting to 12% to 15% of the Assistant Director's time.

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*See Figure I, Page 7(a)
**See Figure II, Page 7 (b)

# EXISTING INTERNAL ORGANIZATION OF THE PRODUCT SAFETY LABORATORY

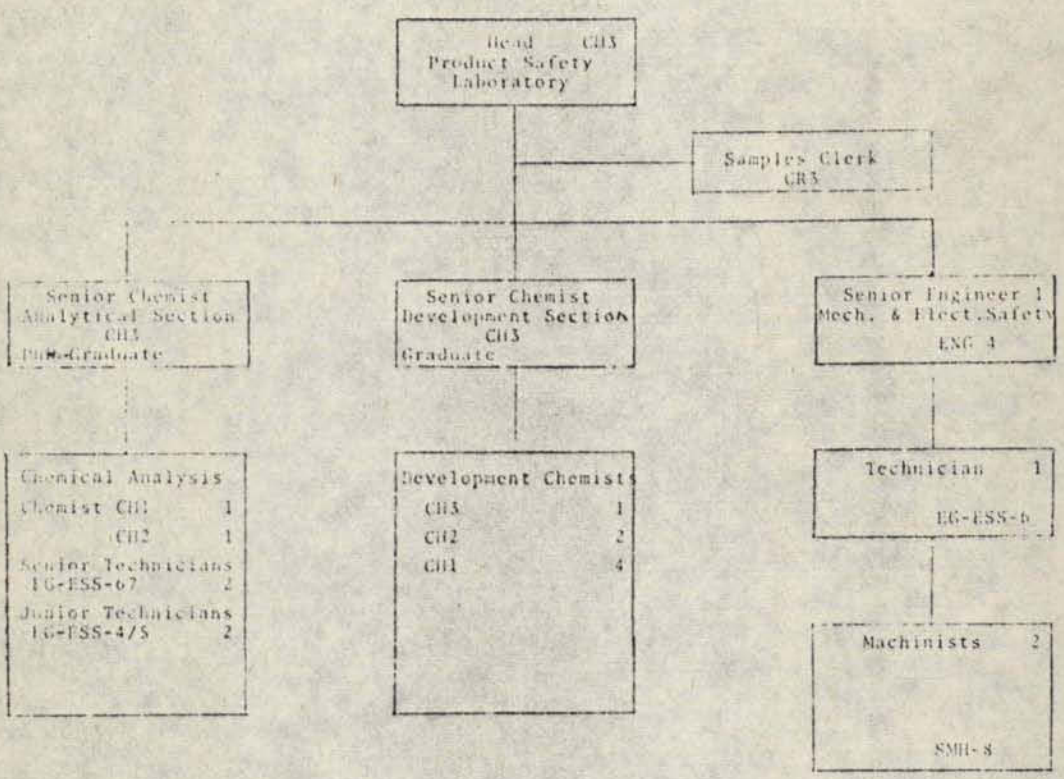


fig 1

# ORGANIZATION OF THE STANDARDS DIRECTORATE

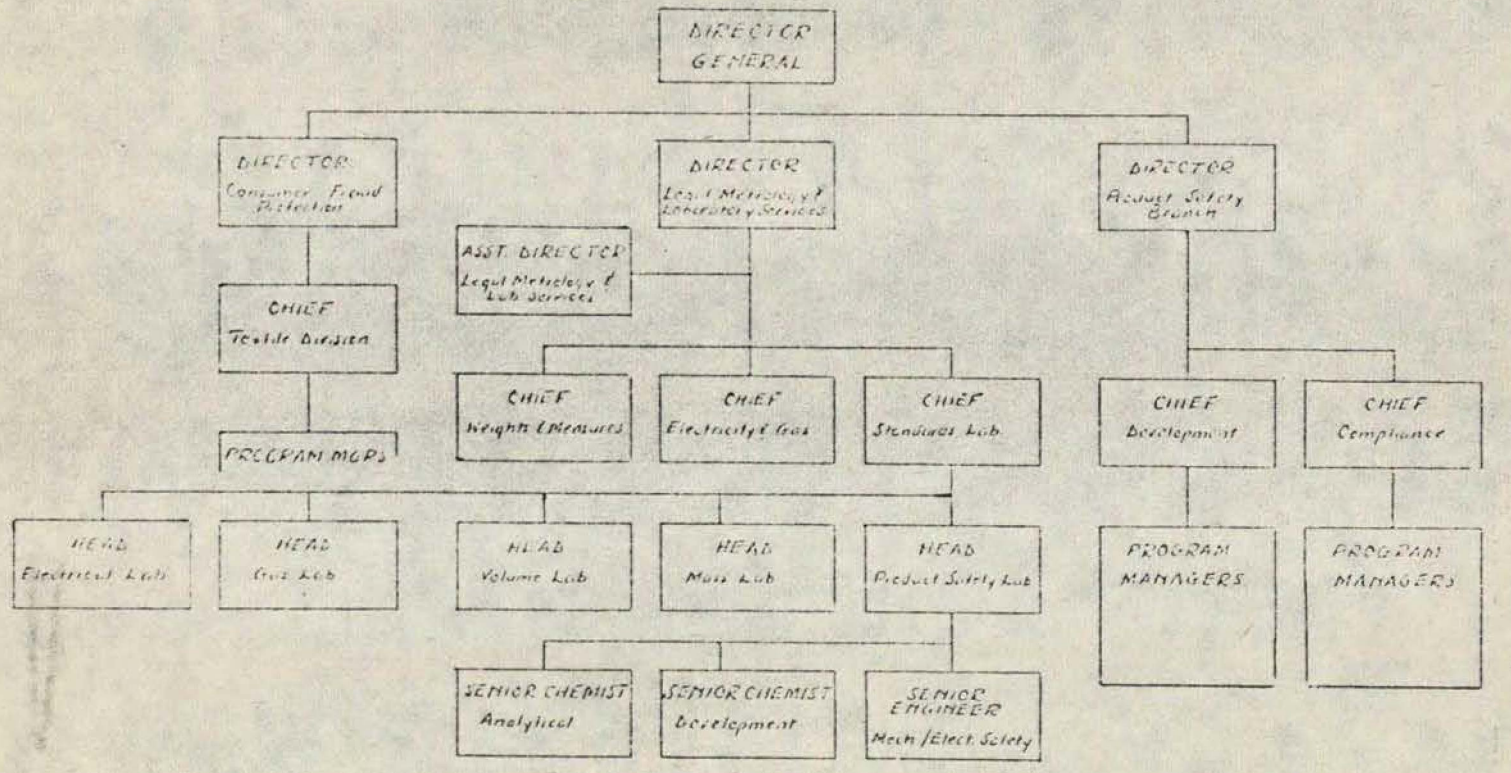


fig II

Both discussion and experience have indicated that functional communication between PSL and the major client jurisdictions occurs at all levels of programme management to either the Head or Section Heads of the PSL. Within the client jurisdictions communication with the laboratory is carried out by each Programme Manager according to his own dictates. It is only when the Programme Manager meets resistance, lack of co-operation or some other deterrent to his programme that the formal organizational response structure is used. To date, PSL staff have relied heavily on these lines of communication for their awareness of project progress in the respective client jurisdictions. Heretofore, there appears to have been a reluctance on the part of programme managers to inform PSL completely on issues of concern, such as consumer complaints, selection of laboratories, progress of development projects and the like.

## F. Requirements of Users

As previously indicated, the two major users of PSL are the Product Safety Branch and the Textile Division, Consumer Fraud Protection Branch. The major portion (90%) of PSL manpower allotment has been assigned to Product Safety Activity useage.

Both client organizations have a mandatory requirement for laboratory services to allow for effective functioning of their activities in both the developmental and regulatory compliance aspects of regulations.

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In particular, developmental laboratory services are required for the establishment of suitable standards and test methods, or for identification of problem areas and prediction of effects of suggested solutions.

Within the area of Regulation Compliance, laboratory services are required to ensure that products, which cannot be inspected or assessed visually, do meet specified standards.

Without adequate laboratory facilities the overall effectiveness of the major client jurisdictions would be severely jeopardized to the point where regulations would become ineffective or unenforceable. In respect of these client activities, it is most important that government laboratory facilities be utilized as much as possible to achieve neutrality of opinion, minimize the possibility of inadvertant leakage of information and maintain minimal costs.*

As far as can be ascertained, the original intent of PSL was to act as a laboratory service unit to PSB and, later, to the Textile Division, Consumer Fraud Protection Branch.

Within the Department there are other potential clients who have expressed an interest in utilizing a minor portion of PSL's facilities; these include Consumer Packaging and Labelling, Food Division and Misleading Advertising, Bureau of Competition Policy.

The needs of these users within the Consumer Fraud Protection Branch are not predicated on laboratory facilities similar to those required by the major client jurisdictions. For the most part, this service can be considered as program expansion into undeveloped areas related to their programs which require some product research.

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*See discussion of Laboratory Services Cost, Appendix C.

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It appears that these potential clients largely feel that it is more beneficial and profitable to utilize outside facilities to fulfill their needs. This feeling is due primarily to the poor representation of PSL by the major client jurisdictions.

Work assignments accepted from other potential users, both internal and external to CCA has been totally at the descretion of PSL. Little control over priorities or selection of workload is exerted by the major client jurisdictions. In effect, PSL has been free to select what it feels it can do best to achieve its own objectives and this is reflected in its definition of its own role and responsibilities. Furthermore, there has not been any mechanism, in the past, whereby PSL has kept the major client jurisdictions advised of its external relations or activities with clients outside the Standards Directorate.

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CONCLUSIONS

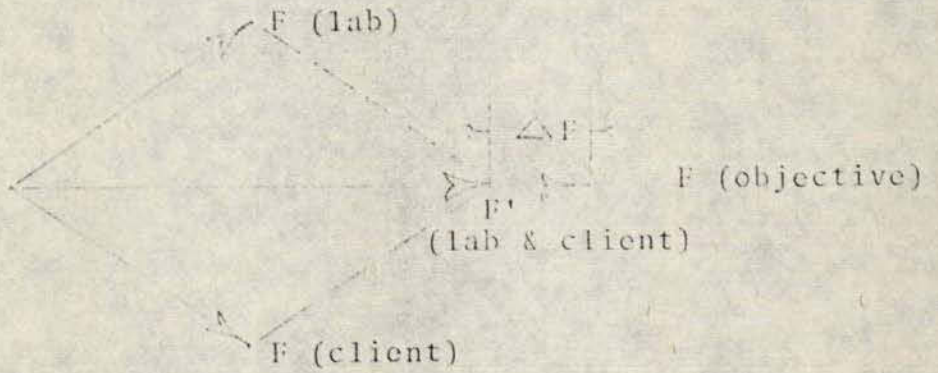
1. *Lack of definition of role/objectives and responsibilities has contributed to an almost complete breakdown of communication between PSL and client jurisdictions.*

   Indications are that both PSL and the client jurisdictions are largely ignorant of each other's activities and how these activities must interact for overall programme effectiveness.

2. *PSL resources are not directed completely towards overall Activity objectives.*

   Major client jurisdictions are reluctant to provide PSL with either the opportunity or the responsibility of undertaking complete responsibility for the laboratory service provided. On the other hand, PSL appears to be extremely selective in the services it elects to provide. This has resulted in the major client jurisdictions having to go elsewhere to obtain effective laboratory service to achieve their programme objectives. This situation has resulted in PSL searching out and undertaking research projects independently of its client jurisdictions in order to justify its own existence. The net result is inefficient and wasteful use of valuable resources, with little success in achieving overall activity objectives.

   To amplify this point, the situation can be viewed pictorially as a resolution of forces being applied in divergent directions, the net result of which is a resultant force insufficient to meet the total objective requirement.




△F - the differential of the objective force due to the divergence of force elements.

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3. *Responsibilities allocated to PSL by client jurisdictions have been minimal since PSL cannot be held accountable for its actions.*

While PSL is free to follow its own dictates and cannot be held accountable by client jurisdictions, nevertheless the client jurisdictions must assume full responsibility for all work performed, including laboratory service, since they represent the Activity in the eyes of the public.

4. *The Development Section, Product Safety Branch is understaffed.*

Examination of the major client (PSB) indicates that the development section has allocated to it five MY's including the chief. The total workload of both the laboratory and compliance sections is directly related to the number of regulations produced, amended or revised by the Development Section of PSB. Furthermore, examination of PSL indicates that there are 11 graduates, 5 at PhD level, on staff, ready and willing to do research to their own dictates. Therefore, it is apparent that an improper balance of personnel resources has created a bottleneck in the Development Division, which has been a contributing factor to the solicitation of work by PSL outside the areas of the major client jurisdictions.

5. *PSL has been concentrating their efforts on research and development at the expense of routine analyses.*

This is readily seen by the large number of PhD's on staff, who, because of their expertise and education, are not likely to be interested in straight forward routine analysis and compliance testing. The fact was supported further by other laboratories whose opinions were solicited. They also indicated that there are many research-oriented laboratories available within the public service making it unnecessary for PSL to enter this field on their own initiative to carry out programs not directly related to the major client activities.

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6. *It is necessary to proceed through five levels of management to the Director General for resolution of conflict.*

Many such conflicts could be resolved at the Chief or Directorate levels of management; certainly they should not necessitate imposition on the time of the Director General.

7. *The Assistant Director, Legal Metrology and Laboratory Services has seven laboratory sections, including PSL, reporting to him.**

According to acceptable management practices such a situation is not effective since on the average the Assistant Director can allocate only 15% of his total time to PSL matters.

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*See Figure II, Page 7(b)

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RECOMMENDATIONS

1. (a) *The Product Safety Laboratory should be integrated into the Product Safety Branch so as to improve overall effectiveness within the activity, improve communication between PSL and PSB, and allow for re-allocation of resources to meet overall activity needs.**

In view of the fact that the major client of PSL is the Product Safety Branch it is recommended that the laboratory report administratively and functionally to this Branch. However, in view of the PSL's location it is proposed that it have a response to Legal Metrology and Laboratory Services in matters related to safety, housekeeping, area and equipment maintenance and machine shop service.

(b) *PSL resources not utilized should be made available to the Product Safety Branch so as to ensure overall resource utilization within the Activity.*

Technical resources in PSL, especially at the PhD levels, should be available, at need, for allocation to the development section of PSB. Similarly, technical resources of PSB also can be deployed to assist the laboratory during peak periods. An exchange program of this nature would result in improved use of available technical resources, better appreciation of the overall objectives through actual experience and improved communication through having viewed the problems from a different standpoint.

2. *The Product Safety Branch should be restructured to accommodate PSL.*

To accommodate the integration of PSL into the Product Safety Branch it is recommended that PSB be restructured as shown on the chart of Figure IV. This organizational layout maintains the number of line groups responding to the Director at four rather than adding PSL as simply another functional group.

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*See Figure IV, Page 14(a)

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PROPOSED ORGANIZATION OF THE
PRODUCT SAFETY BRANCH TO ACCOMMODATE
INTEGRATION OF THE PRODUCT SAFETY LABORATORY

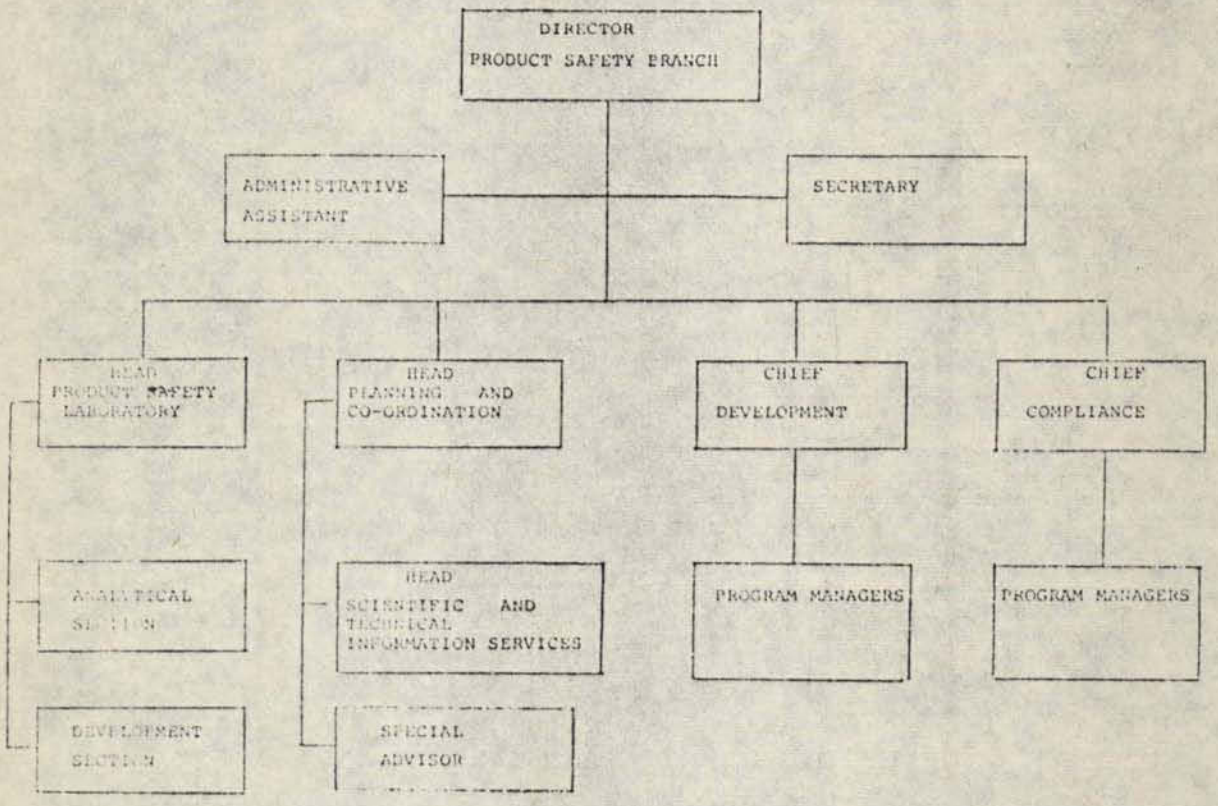


Figure IV

It seems logical to group these functions into one section under the Head of Planning and Coordination, since the services provided by Scientific and Technical Information Service, Legal and Administrative are in support of compliance and development. Furthermore, in addition to providing the necessary support service to the activity, this change will ensure effective communication and co-ordination of tasks between the major sect-ons of Compliance, Development and Laboratory.

3. *The PSL should be given a major participatory role in provision or selection of laboratory services in line with the objectives of the major client jurisdictions.*

The foregoing recommendation assumes acceptance of the principle of integration of PSL into the Product Safety Branch.

The role of PSL should be to provide complete service to the product safety function in respect of routine analytical work, routine compliance testing, analysis of official samples and any required work associated with development projects aimed at developing new regulations or revising existing regulations in the field of consumer safety. Additionally, it is mandatory that the laboratory complement of equipment and the balance of training, that is, the level of expertise and education of the laboratory personnel, is adequate to the job in hand and is maintained to the degree necessary to constitute an authority in the field and to inspire both credibility and reliability in the minds of its client jurisdictions.

Since the laboratory has the expertise and capable technical personnel, their charge should be not only to complete the work required of them in routine analysis, testing of official samples or development work, but also to pass judgement on the results obtained and to make observations and express opinions concerning all aspects of the work entrusted to them. Comments or discussion of this nature should be included as a matter of course on all laboratory reports and should be offered freely through informal communication during the course of any investigation.

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Because of the expertise and skills available through laboratory personnel the responsibility logically rests with the PSL to identify, evaluate and qualify outside laboratory facilities that may be used on a contract basis for either routine or long range development projects. This implies also the responsibility for monitoring the methodology and expertise of such facilities both by periodic inspection and round robin testing in the areas in which they are involved.

Laboratory personnel must be aware of and familiar with the objectives and the general programme goals of the Product Safety Branch, as stated in Appendix B.

With these considerations in mind, every effort possible must be made to orient PSL towards the needs of the major client jurisdictions. It is therefore essential that the proper mix of graduate and technician must be established to provide effective service. This is dealt with in the section on the internal organization.

4. *Provision should be made for other potential client jurisdictions to utilize laboratory facilities after requirements of the major jurisdictions have been satisfied.*

It is recommended that, besides providing the necessary laboratory support to the Product Safety Branch and to the Textile Division of Consumer Fraud Protection Protection Branch, provision should be made to permit other jurisdictions in the Department to have access to laboratory service on a low priority basis.

However, it is recommended that their requests be accommodated only after the major clients (PSB and TD) requirements have been satisfied. Furthermore, any request for laboratory work of this nature should be approved in advance by the Director, Product Safety Branch.

Only in cases where potential clients are willing to provide their own resources (MY and funding) should consideration be given to advancement of these priorities. Under these conditions, it is recommended that the Director of PSB and the Director of the potential client jurisdiction work out an appropriate arrangement.

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II INTERNAL

A. Existing Situation

The internal organization of PSL as shown in Figure I is comprised of graduates, technicians and machinists. The graduate category includes personnel at the PhD, Master and Bachelor level in both chemical and engineering disciplines. Examination of the proportions of graduates to technicians indicates a ratio of 1 to 0.5.

PSL staff undertakes both analytical and compliance testing as well as investigational and research work as was discussed in the previous section on external organization.

Organizationally, PSL has been divided into three major sections namely:

(1) an Analytical Section;

(2) a Development Section, and

(3) a Mechanical and Electrical Safety Section.

Basically, each section undertakes the type of work indicated by its title, although it was noted that there is a large amount of overlap in responsibilities between each section.

It is noteworthy that the machinists in the Mechanical and Electrical Safety Section do not work specifically for PSL, but appear to be included in the PSL organization strictly as a matter of administrative convenience. In other words, the machinists provide service to Legal Metrology and Laboratory Services (LMLS) as a whole.

Support staff are not directly responsible to the internal organization of PSL but are considered as part of

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the Legal Metrology and Laboratory Support Services. In this respect, these support positions provide the necessary service to five sections of the total laboratory organization.

## B. Internal Organization as Viewed by Other Government Laboratories

In discussions with other laboratories it was stressed that utilization of a laboratory to perform routine analytical work as well as research and development work was ineffective if the line of demarcation between the two types of service was not defined sharply. In fact, the role and responsibilities of each group must be defined and understood by all personnel within both the laboratory and client jurisdictions.

Furthermore, it was their opinion that the use of graduate personnel for routine test work was inefficient use of highly-trained technical competence. This is because individuals trained to post-graduate level are interested primarily in research, development and methodology and enjoy a free hand in doing such work at their own speed. Routine sample testing requires fast, repetitive accuracy and is more concerned with speed than with initiative and versatility.

The ratios of graduates to technicians suggested by other laboratory facilities indicated a mean ratio of 1:5 for routine analytical testing and 1:1 for research and development work.

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CONCLUSIONS

1. *In PSL, the ratio of graduates to technicians is much too high.*

   The ratio of graduates to technicians in PSL is grossly weighted in favour of graduates. As indicated, PSL has a current ratio of 1:0.5. It is suggested that the ratio be reduced to between 1:6 and 1:3 depending upon the complexity of work being performed.

2. *The orientation of PSL effort has been directed towards research.*

   To date the PSL has placed major emphasis on research and development work. However, this emphasis does not accommodate the major requirements of the client jurisdictions, who place greater emphasis on their routine analytical testing.

3. *A mixed mode of operation using the same personnel to do routine analytical and development work is neither effective nor efficient.*

   Past operation of the PSL has been largely on a non-selective basis, utilizing all personnel to do routine and developmental work with little regard for discrimination between the two. This, for the most part, is ineffective, not only from a resource utilization point of view, but also from a management point of view. Routine sample analysis should be conducted in a production management mode, whereas development and research work should be conducted in a project management mode. The current situation is extremely difficult to schedule and control.

   Responsibilities of each section, as indicated by the existing organization chart (Figure I) are not specifically defined, with a tendency to overlap, leading to inefficiency and possible duplication of PSL resources.

   Operation of a laboratory where both routine analytical and development work are done by the same personnel on a continuing combined basis is both ineffective and inefficient.

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RECOMMENDATIONS

1. *Restructure PSL into two units; an Analytical Section and a Development Section.*

   It is recommended that the Product Safety Laboratory be divided organizationally into two separate sections each having its own responsibilities; one to be concerned with routine analytical and compliance matters of all kinds and the other to be concerned with matters of development and methodology; the present Mechanical and Electrical Safety Section to be eliminated and the personnel absorbed in the two new sections.

2. *Each section of PSL should report through a working group leader to a single head of laboratory operations.*

3. *Each unit should be staffed by graduates and technicians in appropriate ratios.*

   In the case of the routine analytical and compliance work it is recommended that the section leader be fully qualified with university training, preferably at the post-graduate level. The ratio of graduates to technicians in a routine group should vary between 1:5 and 1:6. Of the technicians, one quarter to one third should be of the senior type who would handle the more difficult aspects of the routine work while the remainder could be of the junior or less experienced type to handle the everyday, normal routine analytical work. The choice of the number of senior technicians depends on the relative volume of more difficult routine work, which, by its nature, requires the attention of more qualified and more experienced personnel. In this group, routine analytical and compliance work would have priority over any other type of work load.

   The sub-objective of the group should be oriented towards that of a production line operation stressing fast, reliable service.

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It is recommended that the section designated to handle research, development and methodology be headed by a working leader at the post-graduate level, preferably a PhD. Because of the nature of the work, the ratio of graduates to technicians should be 1:1 in this section.

4. *The principle of transfer of personnel between sections should be established.*

Within each group there should be a provision that individuals may be transferred temporarily from one group to another depending upon relative work-loads. An arrangement of this nature would provide a capability of emergency response, thus enabling either group to minimize delay in turn-around time in periods of peak demand.

5. *Roles and responsibilities of each section of PSL should be defined clearly.*

This definition will be directly dependent upon the integration of the laboratory with the major client branch as previously discussed.

Assuming that these recommendations are accepted and implemented, a major portion of the responsibilities relating to all functions of Laboratory Service should be allocated to the PSL.

Specifically, the Analytical Section of the PSL should be responsible for all routine testing of samples, including the assessment of whether or not they pass or fail regulations for which there is no subjectivity. Responsibility for laboratory reports should rest with the analyst, whose signature should be the only one required.

Such delegation of responsibility to the PSL will permit streamlining of the sample handling procedure and further reduce turn-around time to the field. This responsibility also should include the disposal of all samples following completion of required test work.

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The Development Section should be responsible for all other aspects related to the laboratory function; including methods improvement in the area of existing regulations, provision of laboratory expertise on committees, guarantee of reliability of the analyses being performed by the Analytical Section, extensive participation in the selection, evaluation, qualification and monitoring of potential laboratories, equipment justification, carrying out analyses on consumer complaints, assisting in the development of regulations, carrying out product research as specified by the client jurisdictions.

6. *Responsibilities of the Head of PSL should be defined accurately.*

The responsibilities of the Head of the PSL would be to ensure overall accountability of PSL personnel, to determine proper allocation of resources to meet required workloads and to maintain co-ordination between client jurisdictions and the PSL.

7. *PSL staff resources should be allocated proportionately according to needs of client jurisdictions.*

The total manpower complement available to PSL is 19 MY's. Assuming the head of PSL is not considered as a working member, but as an administrator, advisor and co-ordinator, there are 18 MY's to be deployed between the Analytical Section and the Development Section.

The proportion of laboratory effort to be allocated to the Analytical Section has been established at 50% of the total MY allotment. This means that 9 MY's and 8 MY's respectively can be devoted to the Analytical and Development Sections. The remaining MY will be absorbed by a sample handling clerk whose responsibility will be to ensure proper expedition and smooth flow of samples through PSL.

The proposed organization is shown in Figure III, Page 22(a). The present and future deployment of PSL resources to accommodate the proposed structure are shown in Appendix D.

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PROPOSED INTERNAL ORGANIZATION OF

PRODUCT SAFETY LABORATORY

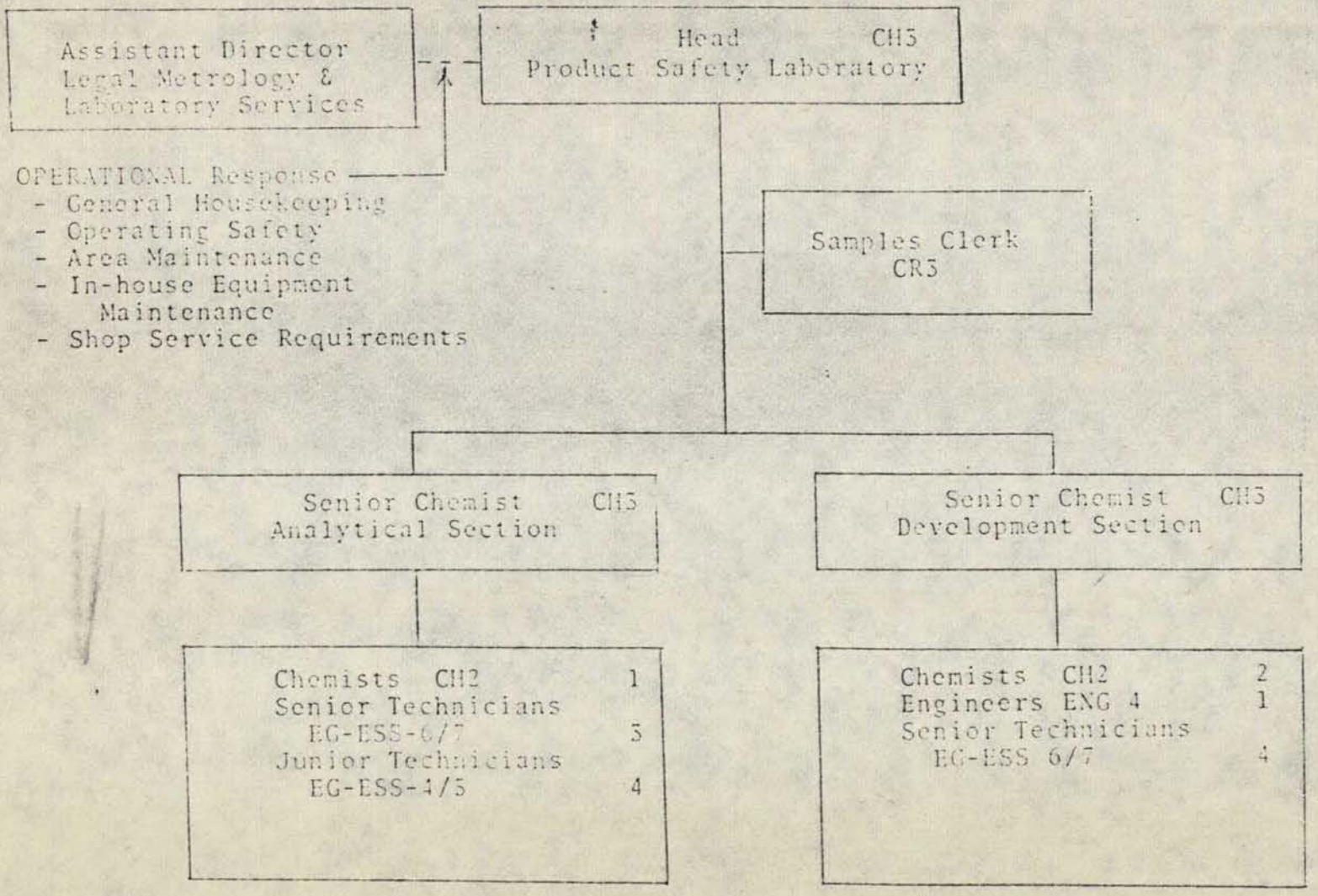


Figure III

8. *The two machinists should be transferred to Legal Metrology and Laboratory Services.*

This transfer is logical since the machinists provide service to the laboratory as a whole.

As discussed in Appendix D, the proposed organizational structure can be accommodated without potential lay-offs of current staff.

9. *The principle of transfer of personnel between PSL, Development Division and the Compliance Division should be established.*

Transfer of personnel in this manner will provide a vehicle for cross-training and will develop mutual understanding of the various aspects of the diverse problems which arise in all three jurisdictions. Such transfer also will engender the co-operative spirit so necessary to the successful achievement of the Activity objectives.

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## EFFECTS ON EXISTING SITUATION OF ACCEPTANCE OF RECOMMENDATIONS

With the acceptance of these recommendations by the Director General, Standards Directorate and ADM, Consumer Affairs, the majority of issues raised in this report will be resolved.

Furthermore, the implementation of these recommendations will bring PSL into proper perspective with the major client jurisdictions, thereby allowing for adequate allocation of resources and will improve drastically the functional communication between client jurisdictions and laboratory staff. It can be stated with confidence that such action will accommodate the requirements of the client jurisdictions, certainly for the next year and possibly for the next two years.

This will permit sufficient time to complete the second phase of the study, which involves the establishment of outside laboratory facilities for the Product Safety Activity.

Furthermore, it will accommodate the new Field Operations approach which is to become part of the Product Safety Activity, thereby allowing for a complete examination of the sampling philosophy in line with laboratory facility requirements.

Besides necessary restructuring within the Product Safety Branch to accommodate PSL, there may be some difficulty in re-orienting program managers in respect of the responsibilities they now have related to laboratory services.

It is suggested that the working relationships between client jurisdictions and PSL be defined and implemented through the Planning and Co-ordination Section, Product Safety Branch.

# TERMS OF REFERENCE

Tasks described in the following were assigned to members of the committee. Items 1 to 4 inclusive comprise Phase I of the study; to define the problems and capabilities of the existing facilities. Tasks 5 to 9 inclusive comprise the second phase of the study; to determine the most acceptable laboratory arrangement to fulfill the future needs of the Product Safety Activity.

Phase II, i.e., Tasks 5 to 9 inclusive, will be completed following a decision concerning recommendations made as a result of Phase I.

## PHASE I

Item

1.(a) Identification and definition of laboratory requirements for:

- Development programs
- Compliance programs
- Textiles programs

(b) Identification of service the Product Safety Laboratory is providing for:

- Development Division
- Compliance Division
- Textiles Division

2. Suitability of the Product Safety Laboratory resources to satisfy identified needs:

- existing equipment
- current methodology
- current response to Development, Compliance, Textiles.

Item

3. Determination of the Product Safety Laboratory capability to handle current product mix:
   - areas of capability/expertise
   - equipment capability
   - work volume capability

4. Determination of proportion of Product Safety Laboratory effort required to keep facilities and methodology up to date.

PHASE II

5. Determination of alternative laboratory facilities best suited to efficiency of total programme:
   - additional resources
   - sampling philosophy

6. Areas of future product mix and areas of future laboratory growth.

7. Utilization of outside laboratory facilities for completion of tasks:
   - in excess of laboratory capacity
   - for which available facilities or expertise are inadequate

8. Criteria for identification and evaluation of outside laboratory facilities.

9. Criteria for control of outside laboratory facilities.

# OBJECTIVES

## PRODUCT SAFETY BRANCH

The Product Safety Branch came into existence initially to administer the Hazardous Products Act. One must not only look at the Act but behind the Act to establish the Branch objectives.

The legislation was directed at health and safety of consumers as they might be placed in jeopardy by a wide range of products. Products coming within the control of the Food and Drugs Act, Pest Control Products Act or the Explosives Act are excluded from the purview of the Hazardous Products Act. While the Act was intended to deal primarily with consumer products, it allows for action against products which are explosive, flammable or toxic without reference to end use. Thus, in addition to consumer concerns, the Act may be used as a vehicle for dealing with products or materials directed at industrial, institutional and agricultural uses.

The legislation is directed at prevention and must rightly be considered a weapon in the armament of that broad discipline known as preventive medicine. The attached memorandum which established the factors which must be considered in priorizing projects is evidence of the strong relationship we have with this field. In this context, the department cannot stand down simply because the Hazardous Products Act may not always be applicable to a specific situation which comes to our attention. If we are to ensure the Bureau objective of a safe market place we have an obligation to use all the tools available which include the following:

1. Combines Investigation Act.
2. Radiation Emitting Devices Act.
3. Motor Vehicle Safety Act.
4. Food and Drug Act.
5. Pest Control Products Act.
6. Packaging and Labelling Act.
7. Environmental Contaminants Act.
8. Powers invested in provincial and municipal officers of health.
9. Provincial electrical authorities.
10. Provincial and municipal fire authorities.

11. Health of Animals Act.

12. Moral Suasion.

13. Education and Information Programs.

The appropriate strategy and tactics must be evolved to allow for the most effective solution of problems within both the word and spirit of the Hazardous Products Act. Within the above context the following objectives are proposed:

1. Create and mandate through the Hazardous Products Act safety standards designed to eliminate or reduce dangers to health or safety or the public.

2. Produce and implement strategies, in concert with other authorities, which will achieve the ends of the Hazardous Products Act where it may not be the most suitable vehicle for a specific situation.

3. Gather and disseminate information relating to product-related hazards and injuries.

4. Implement trader education programs to promote product designs and use of industrial voluntary standards which are in the best public interest with respect to health and safety.

5. Initiate human factors, sociological, medical, engineering, toxicological and other research to provide a broad base for regulatory development and strong well balanced educational and informational programs.

J.W. Black
February 22, 1977.

Government of Canada / Gouvernement du Canada

**MEMORANDUM** **NOTE DE SERVICE**

STDS/JWB/eb

SECURITY CLASSIFICATION - DE SÉCURITÉ

OUR FILE N REFERENCE

YOUR FILE V REFERENCE

DATE
January 13, 1976

TO / A
Chiefs, Section Heads and
Program Managers

FROM / DE
Director
Product Safety Branch

SUBJECT / OBJET
Establishment of program priorities

From time to time in recent weeks, I have had discussions with various members of the staff which have invariably led to questions as to what criteria will be applied in the establishment of priorities for programs within this branch.

I have given some thought to this matter and thought that I would set down the factors which I have been applying for your general information. These are as follows:

(1) Frequency and severity of injuries

Two major criteria in determining priorities are the frequency and severity of injuries associated with consumer products. All available data including the NEISS hazard index and supplementary data collection systems, such as fire surveys, fire statistics, etc., shall be used to attempt to identify the frequency and severity of injuries. The judgement as to severity shall include an evaluation of the seriousness of the injury.

(2) Causality of injuries

After a determination has been made relative to the frequency and severity of injuries associated with a product, consideration shall then be given to the amenability of a product hazard to injury reduction through standard setting, information and education, or other departmental action. This step, which first involves a judgement of the extent to which the product and consumer behaviour are causally related to the injury pattern, involves sorting product hazards into appropriate remedial categories. Within each remedial category priority shall be assigned to products according to the number of serious injuries that can reasonably be expected to be reduced or eliminated.

...2

(3) Chronic illness and future injuries

Certain products, although not presently associated with large numbers of frequent or severe injuries, deserve priority attention if there is reason to believe that the products will in the future be associated with many such injuries. Although not as susceptible to measurement as other product related injuries and illnesses, these risks shall be evaluated on the basis of the best information available and given priority on the basis of predicted future illnesses and injuries and the effectiveness of departmental action in reducing or eliminating them.

(4) Cost and benefit of action

Consideration shall be given to the cost of action to producers and consumers. Assuming risks of relatively equal priority based on the above criteria, those that are capable of being reduced at small cost should be given priority over those that would require producers to incur large costs, such as massive retooling with a consequent large increase in the price of a product. These costs, as well as effect on utility, convenience supply, movement toward substitutes, etc., should be weighed on a preliminary basis against resulting benefits to society from reduced injuries. In addition, consideration shall also be given to the most efficient use of Branch and other departmental resources.

(5) Unforeseen nature of the risk

Other things being equal, consideration should be given to the degree of consumer awareness both of the hazard and of its consequences. Priority can then be given to unforeseen and unforeseeable risks arising from the ordinary use of a product.

(6) Vulnerability of the population at risk

Children, the elderly, and the handicapped are often less able to judge or escape certain dangers in a consumer product or in the home environment. Because these consumers are, therefore, more vulnerable to danger in products designed for their special use or frequently used by them, the department will usually place a higher priority, assuming other factors are equal, on preventing product related injury to children, the handicapped, and senior citizens.

...3

(7) Probability of exposure to hazard

We may also consider several other things which can help to determine the likelihood that a consumer would be injured by a product thought to be hazardous. These are the number of units of the product that are being used by consumers, the frequency with which such use occurs, and the likelihood that in the course of typical use the consumer would be exposed to the identified risk of injury.

(8) Additional criteria

Additional criteria may arise that the staff believes warrant consideration. I would encourage the inclusion of such criteria for consideration in establishing priorities.

It is recognized that incontrovertible data related to the criteria identified in this policy statement may be difficult to locate or develop on a timely basis. Therefore, it may not be feasible to require extensive documentation on each and every criterion before making a decision.

If there are any thoughts or views on the above, I would appreciate being advised of these.

J.W. Black

c.c. M. McCabe
H. Bardon

P.S. It is recognized that the above factors will in many cases be recognized in our recently developed decision-making procedures.

LABORATORY SERVICES COSTS

It is to the total advantage of the Directorate to utilize PSL to the fullest extent possible. This fact is true from both the cost and time element point of view. Support of one laboratory staff member, including salary overhead, and administrative expenses is of the order of $50,000 annually. Thus, the cost of service from an outside laboratory must take this factor into account, resulting in a higher cost per analysis unless the volume of such analyses is sufficient to keep the staff member fully occupied. The time factor also must be considered since response from an outside laboratory, of necessity, must take into account that laboratory's schedule of priorities and its ability to fit the particular assignment into the schedule. In other words, it is more efficient in terms of both time and money to utilize PSL facilities to the greatest extent possible.

## DEPLOYMENT OF PSL RESOURCES TO ACCOMMODATE RESTRUCTURE OF PSL ORGANIZATION

The following Figures I, II and III show, respectively,

(a) The present organizational structure of PSL;

(b) The line response of PSL and its place in the organizational structure of Legal Metrology and Laboratory wervices and the Standards Directorate;

(c) The proposed organizational structure of PSL.

The breakdown of the current laboratory complement of personnel is shown in Figure V as well as the mechanism of transfer of personnel required to meet the proposed organizational structure.

# EXISTING INTERNAL ORGANIZATION OF THE PRODUCT SAFETY LABORATORY

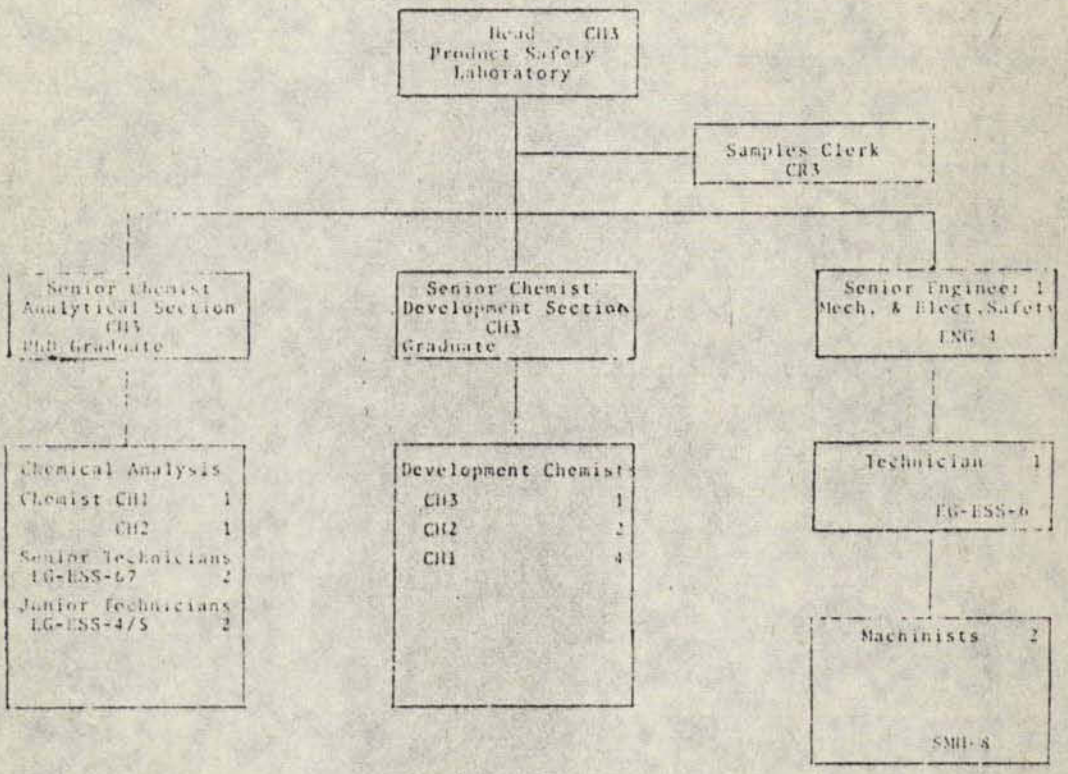


fig I

ORGANIZATION OF THE STANDARDS DIRECTORATE

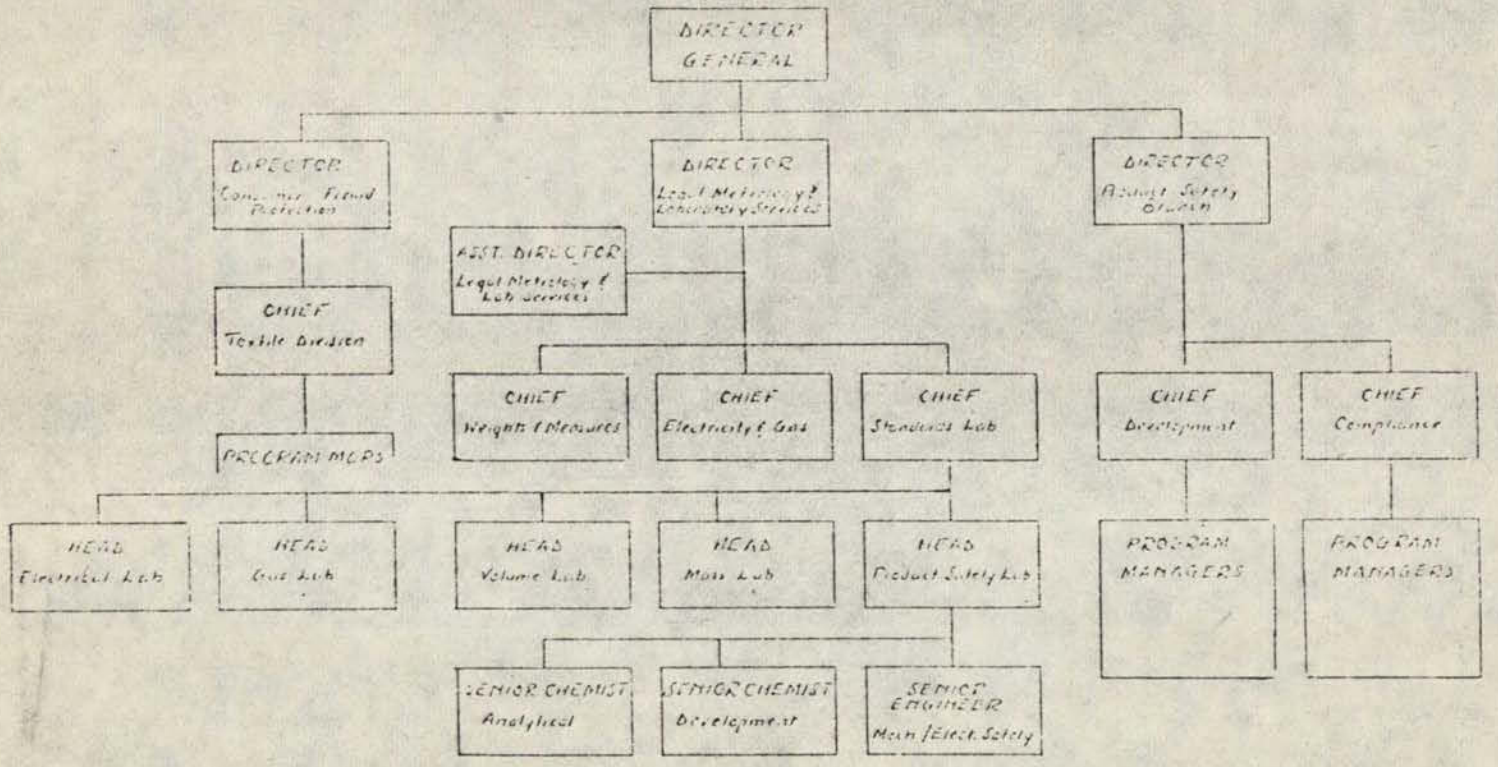


fig II

PROPOSED INTERNAL ORGANIZATION OF
PRODUCT SAFETY LABORATORY

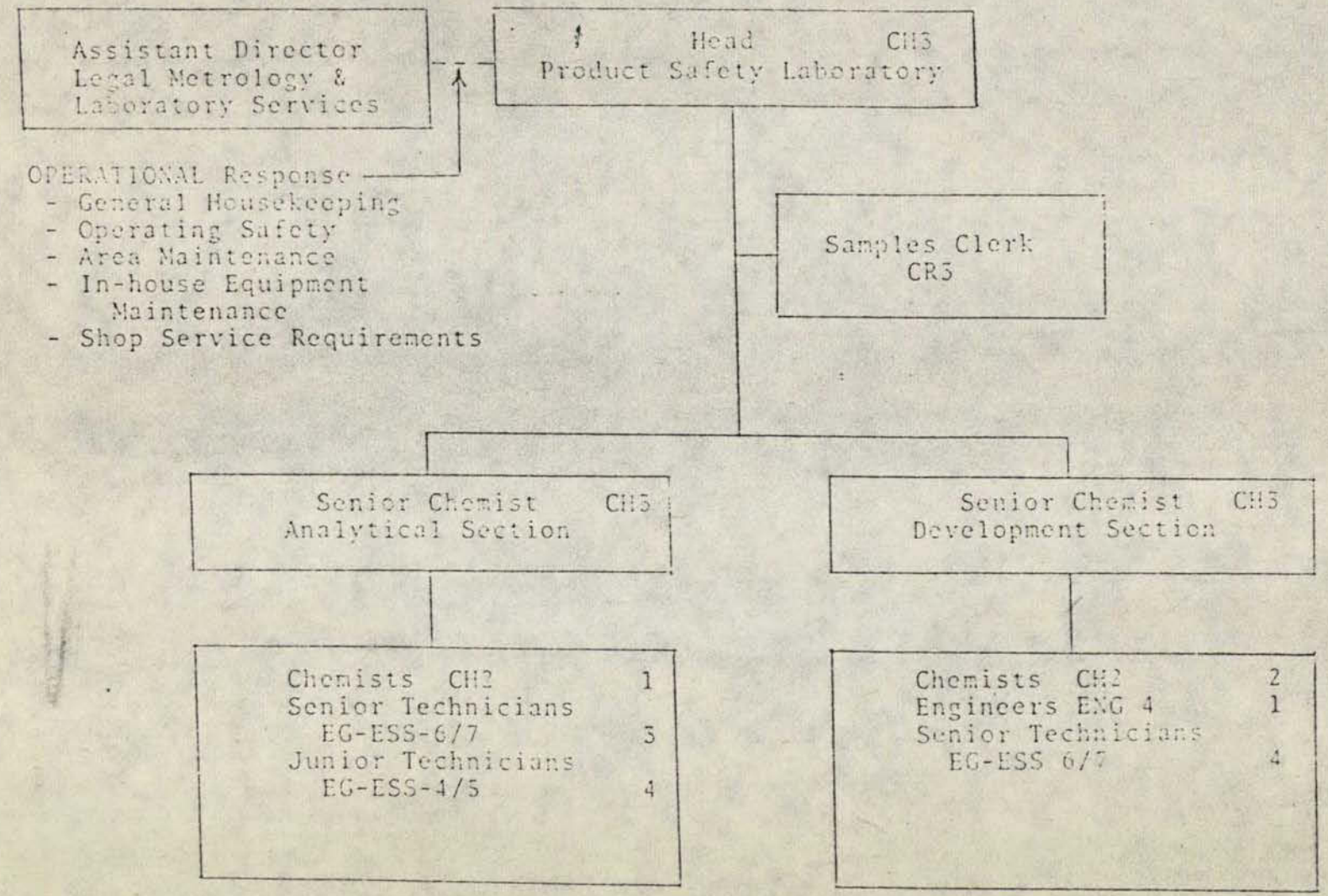


Figure III

CURRENT LABORATORY COMPLEMENT
OF PERSONNEL

| | Senior Chemists - CH3 | Chemists - CH2 | Chemists - CH1 | Technicians - Senior EG-ESS 7 | Technicians - Senior EG-ESS 6 | Technicians - Junior EG-ESS 5 | Technicians - Junior EG-ESS 4 | Engineers - Senior ESS 4 | Clerks - CR5 | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|
| Analytical Section | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | 7 |
| Development Section | 2 | 2 | 4 | | | | | | | 8 |
| Mechanical/Electrical Safety | | | | | 1 | | | 1 | | 2 |
| Administration | 1 | | | | | | | | | 1 |
| Samples Clerk | | | | | | | | | 1 | 1 |
| TOTAL | 4 | 3 | 5 | 1 | 2 | 1 | 1 | 1 | 1 | 19 |

Required to meet proposed complement

(1) Eliminate the Mechanical and Electrical Safety Section.
(2) Transfer 1 ENG 4 to Development Section.
(3) Transfer 1 Technician (EG-ESS-6) to the Analytical Section.
(4) Transfer 1 Chemist (CH1) from the Development to the Analytical Section.
(5) Transfer 2 Machinists (SHM 8) to Legal Metrology and Laboratory Services Organization.

Figure V