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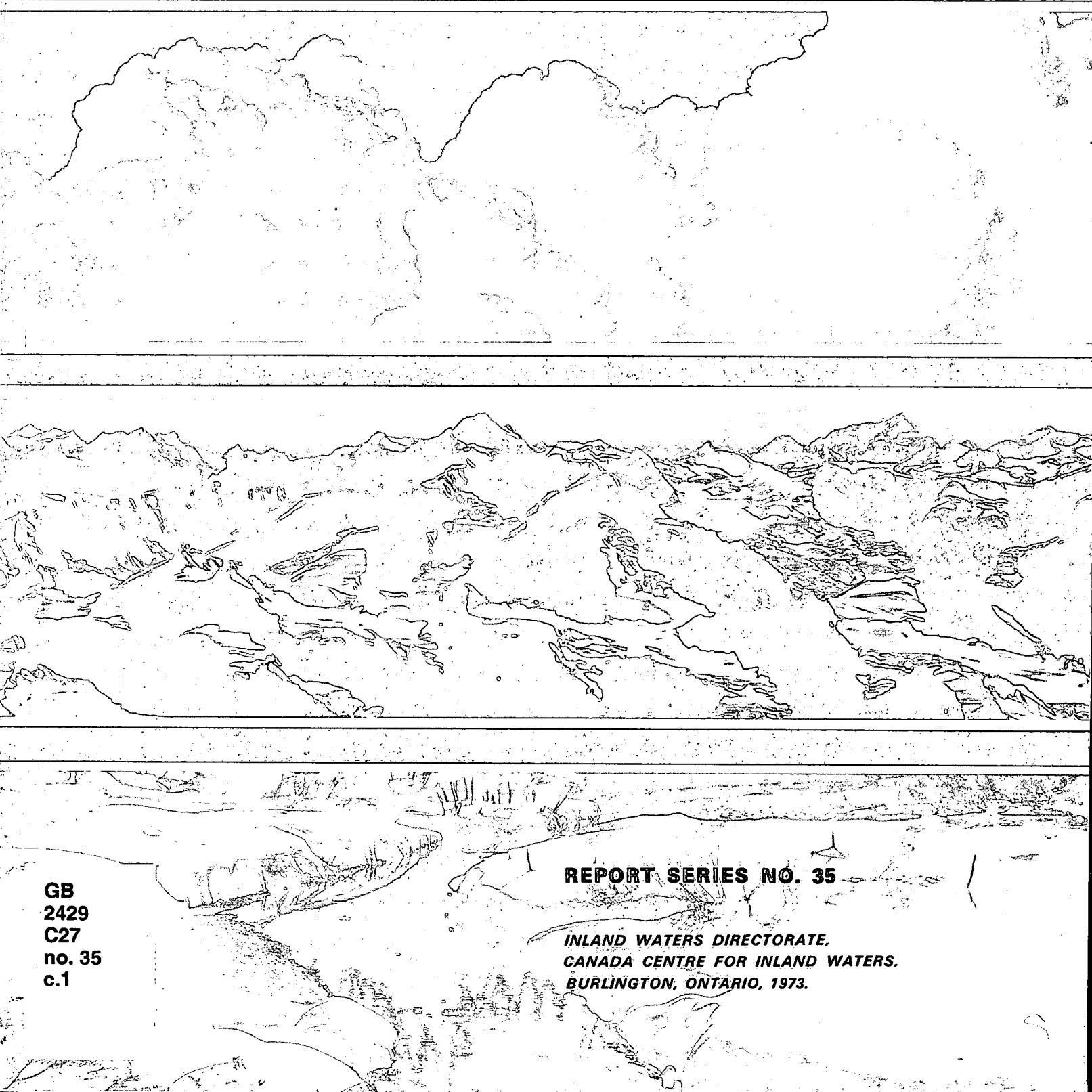
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Environmental Contaminants  
Inventory Study No. 1

Statistics on the Use of Pest Control  
Products in Canada

John N. Thomson



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REPORT SERIES NO. 35

INLAND WATERS DIRECTORATE,  
CANADA CENTRE FOR INLAND WATERS,  
BURLINGTON, ONTARIO, 1973.



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# Environmental Contaminants Inventory Study No. 1

## Statistics on the Use of Pest Control Products in Canada

John N. Thomson

### INTRODUCTION

This study reviews public sources of data pertaining to the use and sales of pest control products in Canada. The various types of data are described, and critically evaluated in terms of their potential usefulness to researchers involved in the study of pest control product use in both an environmental context, and in relation to agricultural management.

The National framework of statistics is examined in detail in the following chapter, Review of National Statistics. Provincial sources of data are appraised in the subsequent chapter, Survey of Provincial Data. An overview of the market for pest control products, and its changes over the past 25 years, is the major emphasis of the concluding summary chapter. Appendices, consisting of tables of some of the more significant data sources, conclude the study. Appendix I provides detailed tables of 25 years of National Sales Figures, and Appendix II offers some of the more useful provincial data.

### REVIEW OF NATIONAL STATISTICS

The statistical service of the Canadian government, Statistics Canada (The Dominion Bureau of Statistics until 1971), regularly publishes information pertaining to the nationwide consumption of pest control products. An annual series dating from 1947, *Sales of Pest Control Products by Canadian Registrants* (catalogue number 46-212), provides sales data for all types of pest control products. In addition, the extensive publications in the Trade of Canada series provide a source of information in regard to the importation of pest control products.

The bulk of the material contained in the annual sales series is incorporated into the extensive tables of Appendix I. Wherever possible, complete tables of individual product sales for the years 1947 through 1971 are listed. A guide to the tables and figures is provided on the first page of Appendix I.

While the annual sales series is the most complete and detailed record available of pest control product sales, it is not without deficiencies. The most serious limitation is that

the data do not cover all pest control product users, only those that are supplied by the registered suppliers. Direct sales to governments, utilities, and other large users, are often not reported in the survey system utilized.

Another major data problem arises from the confidentiality requirements of the Statistics Act. In cases of extreme concentration of sales in a few firms, the Act prevents the publication of detailed sales data. This is a major source of data limitations, as will be seen by the large number of blanked out, or partial figures, in the tables of Appendix I.

In a more general critical sense, the presentation of the sales data in strictly nationwide terms renders detailed analyses of environmental implications impossible. In particular, the relationships between product use and residues uncovered in the environment, and between product use and agricultural productivity, cannot be rigorously explored without further spatial detail regarding product use.

The development of pest control statistics comparable to those for the fertilizer trade, with sales allocated by counties, would be a desirable improvement. Unfortunately, this would further exaggerate the confidentiality problem unless a fundamental rethinking of the concept of confidentiality was simultaneously undertaken.

The import data provided in the Trade of Canada Series are also plagued with problems. The most critical problem concerns the product breakdowns used, with rather broad import classes used, rather than breakdowns by product. In some cases, the classes are broad enough to include more than the pest control products, resulting in overestimation. This study does not attempt to compile estimates on pest control product imports because of this problem.

A further source of import information is provided by the Import Analysis Division, Industry, Trade and Traffic Services Branch, Department of Industry, Trade and Commerce. Three-month detailed analyses of fungicide imports in both 1970 and 1972, and insecticide and redenticide imports in 1971, are available from the Division on request. The provisions of the Statistics Act apply to these reports, and many details are obscured because of the confidentiality limitations previously discussed.

The extreme lack of detailed use data may be at an end as a result of the new pest control registration regulations established in November 1972. The major change in approach is the definition of a restricted class of products that can be used only by permit. Officials within the Department of Agriculture are confident that the more detailed use information required from individual users will in future years be compiled into a data bank for use by both agricultural and environmental management agencies. Hopefully, the present lack of clarity and focus in the national statistics will also be corrected, so that independent researchers will be able to make use of these new sources of data.

### SURVEY OF PROVINCIAL DATA

A survey of provincial data sources on the use of pest control products was initiated largely as a result of the spatial deficiencies in the present federal statistics. As previously discussed, neither provincial nor regional coverage is available in the federal pest control product statistics. Since Canadian agricultural techniques and crops vary widely from region to region, the overall national sales figures are not useful in pinpointing patterns of use potentially hazardous to the environment, or for relating product use with residues accumulating throughout the environment. It was anticipated that provincial data could be a means of overcoming this problem of overly aggregative data.

An initial survey of provincial officials in the fields of entomology, plant products, and public health, was carried out through written and telephoned communications in the summer of 1971. A less exhaustive survey of the more productive sources of information in 1971 was carried out in the summer of 1972 as a follow-up on anticipated new developments.

Most of the provinces have not undertaken pest control programs which include the gathering of sales or use data. In some cases, a data base of permit and registration material exists, but for reasons of scarce manpower, the agencies concerned have not been able to compile this information into convenient statistics.

The provinces of Alberta, Manitoba, and Ontario have compiled province-wide data, but even this information is limited to either some user groups, or to some products, generally the persistent chlorinated hydrocarbon insecticides. A review of these province's activities, and the present situation in each of the other provinces follows this discussion, with the provinces discussed in alphabetical order.

This review of the provincial data is complemented by a number of the tables which make up Appendix II. A listing of these tables is provided on the first page of Appendix II. It is recommended that the following survey be read in conjunction with the relevant tables from the appendix.

#### *Alberta*

A continuing survey of the use of pest control products by licensed applicators in Alberta was instituted during the 1970 season. It is mandatory for all applicants for renewal of Pesticide Applicators Licenses to supply a list of products used in the previous year. The 1970 report has been compiled, and provides a listing of insecticide, herbicide, fungicide, and rodenticide use on a province-wide basis. Unfortunately, farmers and home gardeners are not licensed, and therefore are not included in these statistics.

Earlier reports have included data on the use of some pest control products in Alberta. A 1970 report, Summary Statement on Pesticides and Mercury in Alberta, includes statistics on the use of Dieldrin, Malathion, and Dimethoate in the grasshopper control program for the years 1961-68, and estimates of the acreage of field crops treated with 2,4-D, MCPA, Avadex, and Carbyne, for the years 1968 and 1969.

A 1971 report, Summary of Activities of Agricultural Service Boards and Agricultural Committees Related to the Plant Industry Programs, provides statistics on acreage treated under weed and pest control programs of the Alberta Department of Agriculture. The use of herbicides 2,4-D, MCPA, Carbyne, Avadex, and TCA, is broken down by municipal districts, counties, and irrigation districts. Control programs for coyotes, magpies, and rodents are described in some detail. Insect control programs are described in the same spatial detail as the herbicides.

A 1971 paper by J.B. Gurba, Use of Mercury in Canadian Agriculture, prepared for the Special Symposium on Mercury in Man's Environment, Royal Society of Canada, February 15-16, 1971, Ottawa, describes the response of the Alberta government to the mercury crisis of 1969, and includes an interesting discussion of the changing uses of mercury in agriculture.

#### *Recommended Sources of Information*

Mr. L.K. Peterson,  
Head, Pesticide Chemicals Branch,  
Division of Pollution Control,  
Alberta Department of the Environment,  
Edmonton, Alberta.  
403-425-1130

Mr. J.B. Gurba,  
Head, Pest Control and Crop Protection Branch,  
Plant Industry Division,  
Alberta Department of Agriculture,  
Edmonton, Alberta.

Mr. A.J. Kolach,  
Extension Services Branch,  
Manitoba Department of Agriculture,  
Winnipeg, Manitoba.

#### *British Columbia*

The British Columbia Department of Agriculture possesses limited figures on the province-wide sale of certain pesticides over the last few years. In addition, a major study of pesticide use in the Okanagan basin for the years 1960 through 1970 has been completed for the Canada-British Columbia Okanagan Basin Study, and although not published to date, the report was in limited circulation as of February 1973. The study's use-estimates are based on projections from official recommended practice, the sales records of one of the region's major suppliers, and expert speculation on the changing patterns in the use of insecticides.

#### *Recommended Sources of Information*

Mr. C.L. Neilson,  
Provincial Entomologist,  
Department of Agriculture,  
Province of British Columbia,  
Victoria, British Columbia.

Mr. A. Murray Thomson,  
Study Director, Canada-British Columbia  
Okanagan Basin Study,  
264 Westminster Avenue,  
Penticton, British Columbia.  
604-493-0008

#### *Manitoba*

Since June 1963, Manitoba has maintained records of the agricultural use of the six major chlorinated hydrocarbon insecticides: Aldrin, Dieldrin, Heptachlor, Endrin, DDT, and Lindane. The data are presented in a 1972 report entitled, *Agricultural Usage of Some Chlorinated Hydrocarbon Insecticides in Manitoba, 1963-1971* by A.J. Kolach, Extension Entomologist. The complete tables of the report are included in Appendix II.

#### *Recommended Source of Information*

Mr. D.L. Smith,  
Senior Extension Entomologist,  
Extension Services Branch,  
Manitoba Department of Agriculture,  
Winnipeg, Manitoba.

#### *New Brunswick*

Pest control statistics are not presently compiled, but this situation is subject to change under anticipated new pesticide use legislation.

#### *Recommended Source of Information*

Mr. D.B. Finnermore,  
Entomologist, Plant Industries Division,  
Department of Agriculture and Rural Development,  
Fredericton, New Brunswick.

#### *Newfoundland*

Pest control statistics are not presently compiled because the level of agricultural use of pest control products in the province is not considered significant.

#### *Recommended Source of Information*

Mr. Calvin C. Sparkes,  
Plant Protection Officer,  
Department of Mines, Agriculture and Resources,  
Government of Newfoundland and Labrador,  
St. John's, Newfoundland.

#### *Nova Scotia*

Estimates of the 1970 sales of nineteen insecticides within the province have been prepared, based on the voluntary release of information by major suppliers. Unfortunately some of these sources of information have not provided data for later years, resulting in largely incomplete data for 1971 and 1972.

#### *Recommended Source of Information*

Mr. C.J.S. Fox,  
Entomologist,  
Horticulture and Biology Services,  
Nova Scotia Department of Agriculture and Marketing,  
Kentville, Nova Scotia.  
902-678-7365

#### *Ontario*

The most comprehensive account of the use of pest control products in Ontario is maintained by the Pesticides

Control Service, Ontario Ministry of the Environment (1968-1971, under the Ontario Department of Health). Data on sales of highly toxic pesticides, particularly the chlorinated hydrocarbon insecticides, have been compiled on a county basis for the years 1968 through 1971. Unfortunately the program does not cover all pesticide users, particularly bulk importers, and the county sales do not necessarily reflect county use.

Another source of data is found in the Annual Reports of provincial agencies that have extensive pest control programs. Ontario Hydro, Highways (now Communications and Transportation), and Lands and Forests (now Natural Resources) annual reports provide generally sketchy outlines of such programs. It is interesting to note a marked reduction in detailed description of these programs since the late 1960's, possibly because of increased public sensitivity in this area.

#### *Recommended Source of Information*

Mr. J.G. Kurys,  
Technical and Education Officer,  
Pesticides Control Service,  
Waste Management Branch,  
Ontario Ministry of the Environment,  
1 St. Clair Avenue West,  
Toronto, Ontario.

#### *Prince Edward Island*

Pest control statistics are not presently compiled. However, the province's Pest Control Specialist has expressed interest in the future surveying of the island's pesticide situation.

#### *Recommended Source of Information*

Mr. Frank Houston,  
Pest Control Specialist,  
Department of Agriculture and Forestry,  
Charlottetown, Prince Edward Island.

#### *Quebec*

Provincial statistics on pest control product use are not compiled. However, a 1969 qualitative discussion of insecticide use in Quebec, *Les Insecticides actuellement en Usage au Québec*, by Rodolphe O. Paradis, and published in *Agriculture*, Volume XXVI, June 1969, could be useful in pinpointing potential pesticide problem areas.

#### *Recommended Source of Information*

Mr. André Doyle,  
Head, Pesticide Section,  
Quebec Department of Agriculture,  
555 Henri Quatre Blvd.,  
St. Foy, Quebec.  
514-643-7929

#### *Saskatchewan*

There is no overall survey of pest control product use sales. In some cases, the Department of Agriculture has a virtual monopoly position as pesticide supplier and applicator, and as a result, has excellent knowledge of the patterns of use for a number of pesticides. Dieldrin, Dimethoate, Endrin, Sevin, and Lanate are included in this near monopoly category.

#### *Recommended Source of Information*

Mr. C.F. Barrett,  
Pest Control Specialist,  
Production and Marketing Branch,  
Saskatchewan Department of Agriculture,  
Regina, Saskatchewan.

### SUMMARY

In the 25 years of recorded data between 1947 and 1971, the annual sales of pest control products by Canadian registrants have increased eight fold in current dollars, or at a mean annual rate of increase of 9 percent. In the same period, the Canadian economy's annual total output of goods and services, Gross National Product, has increased seven fold in current dollars<sup>1</sup>, for a mean annual increase of 8.5 percent. In this sense, the pest control product field, in the aggregate, has grown at a rate closely paralleling general economic growth in Canada.

Although this parallelism applies in the aggregate, a closer examination of the data reveals that this overview may be somewhat misleading. Two tendencies in the data are apparent that indicate that the pest control product market is highly unsettled in comparison with the national economy: first, the abrupt changes in sales from year to year, as detailed in Table 1, Appendix I; and secondly, the

<sup>1</sup> Dominion Bureau of Statistics (since 1971, Statistics Canada), National Income and Expenditure Division, *System of National Accounts, National Income and Expenditure Accounts, 1926-1968*, August 1969, p 25-27.



extreme shifts in product composition within the pest control field, as revealed in Figure 2, Appendix I.

The percentage growth in total annual sales has been as high as 43 percent, and downward changes in excess of 20 percent have also been recorded. An analysis of this extreme volatility has not been rigorously undertaken to date, but it is hoped that this study will encourage the development of research efforts in this direction. It should be appreciated that a successful study in this area must be based on relating pest control product use to specific crops and patterns of use, which requires a higher degree of spatial detail in the data base than is presently available.

The second noticeable trend in the data has been the shift in the composition of the pest control market. As well as the introduction of a multiplicity of new products, more basic changes have occurred in the pest control field in the past 25 years involving the general type of products used. The most striking shift, in terms of both absolute and relative change, has been in the emergence of the agricultural herbicides as the largest volume product type, displacing the agricultural insecticides in this position.

From 1947 through 1971, agricultural herbicide sales have grown at a phenomenal average rate of 14.3 percent annually, far outstripping the 6.9 percent annual growth recorded in agricultural insecticide sales. However, in both 1970 and 1971 this trend has begun to reverse, with larger relative increases in the insecticide group.

This extreme volatility in both product composition, and annual fluctuations, naturally has implications of significance for both environmental and agricultural managers. Since the pest control product market is subject to rapid changes, the data requirements for predictive purposes are more critical than for a more stable industry. In addition, the nature of the products, as instruments of environmental manipulation and control, justifies a certain measure of supervisory power being exerted on behalf of the Canadian public. Any meaningful supervisory strategy must begin with a base of knowledge concerning which pest control products are being used, and where. Without this information, pest control product management programs are all too likely to be either ineffectual, or inefficient where effective, resulting in serious confusion in the agrarian community, and undue inefficiency in the vital production of agricultural products.

## **Appendix I**

# **Statistics Canada Data on Sales of Pest Control Products by Canadian Registrants, 1947-1971**

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This is a compilation of data from Statistics Canada (D.B.S.) Annual Series, Sales of Pest Control Products by Canadian Registrants, Catalogue number 46-212.

**General**

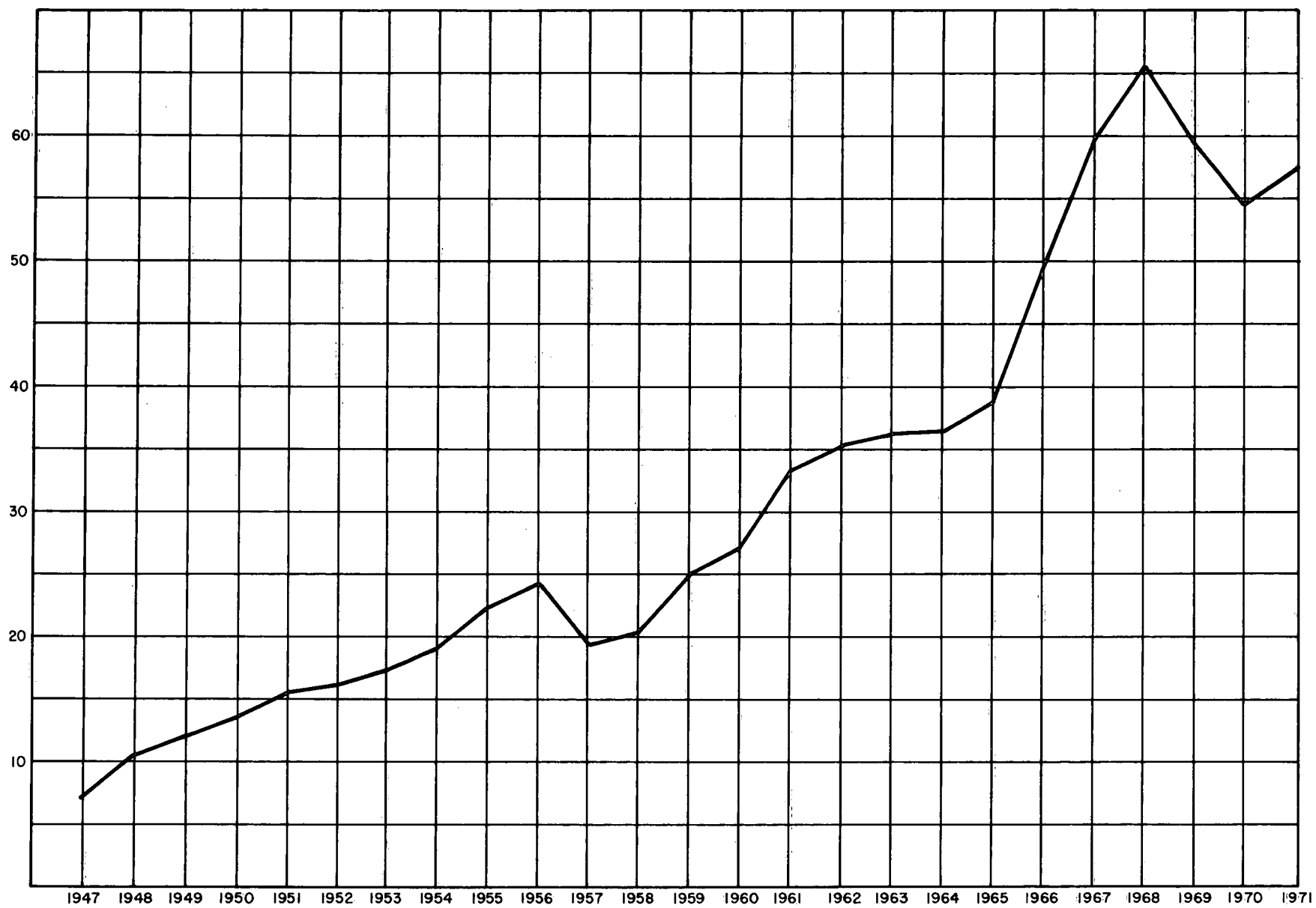


Figure 1. Total sales of pest control products (millions of current dollars).

**Table 1. Sales of Pest Control Products by Canadian Registrants**  
(current dollars, not adjusted to allow for inflation)

Year	Agriculture	Home, Garden and Industrial	Rodenticides	Miscellaneous	Total	Percentage Change
1947	5,431,653	1,560,631	208,200	N/A	7,200,484	-
1948	8,088,065	2,025,342	202,347	N/A	10,315,754	43.3
1949	10,157,850	1,824,897	177,097	N/A	12,159,844	17.9
1950	11,047,711	2,342,597	167,433	N/A	13,557,741	11.5
1951	12,609,869	2,872,066	319,067	N/A	15,801,002	16.6
1952	12,708,168	3,033,133	458,746	N/A	16,200,047	2.5
1953	13,578,097	3,794,652	314,150	N/A	17,686,899	9.2
1954	14,875,539	4,133,356	346,915	N/A	19,355,810	9.4
1955	18,362,471	4,104,352	386,514	N/A	22,853,337	18.1
1956	20,154,866	4,207,678	322,715	N/A	24,685,259	8.0
1957*	14,834,208	4,096,452	344,123	350,000	19,624,783	-20.5
1958	15,355,744	4,207,062	348,792	700,000	20,611,598	5.0
1959	18,986,143	5,404,943	446,886	485,000	25,322,972	22.9
1960	20,156,706	5,785,146	510,599	580,000	27,032,451	6.8
1961	25,043,797	7,426,130	561,110	671,000	33,702,037	24.7
1962	27,832,551	6,783,549	481,739	704,694	35,802,533	6.2
1963	28,709,995	6,295,415	556,633	854,579	36,416,622	1.7
1964	27,216,194	6,696,571	579,126	2,028,436	36,520,327	0.3
1965	29,928,552	6,832,139	602,701	1,666,161	39,029,553	6.9
1966	40,228,441	8,482,672	597,257	226,494	49,534,864	26.9
1967	45,580,964	13,380,095	620,300	N/A	59,581,359	20.3
1968	53,841,018	11,140,427	708,314	N/A	65,689,759	10.3
1969	46,137,461	12,219,446	681,209	N/A	59,038,116	-10.1
1970	39,944,986	14,081,046	608,522	N/A	54,634,554	-7.4
1971	41,865,579	14,892,790	566,329	N/A	57,324,698	4.9

\*Since 1957, the twelve-month reporting period has ended September 30 rather than December 30.

**Table 2. Sales of Insecticides and Herbicides for Agricultural Use**  
(dollars)

Year	Insecticides	Percentage Change	Herbicides	Percentage Change
1947	1,799,381		1,046,248	
1948	1,692,435	-5.9	3,569,510	241.2
1949	2,669,199	57.7	4,676,403	31.0
1950	2,586,563	-3.1	5,762,669	23.2
1951	2,199,372	-15.0	6,926,160	20.2
1952	1,875,755	-14.7	6,246,819	-9.8
1953	2,106,571	12.3	5,699,566	-8.8
1954	3,069,476	45.7	4,720,550	-17.2
1955	3,222,630	5.0	5,730,197	21.4
1956	2,799,088	-13.1	5,974,111	4.3
1957	3,354,196	19.8	6,450,423	8.0
1958	3,697,743	10.2	5,665,977	-12.2
1959	4,742,436	28.3	7,608,144	34.3
1960	4,364,272	-8.0	8,396,160	10.4
1961	7,268,359	66.5	10,294,639	22.6
1962	7,678,765	5.7	11,333,397	10.1
1963	7,642,159	-0.5	12,736,335	12.4
1964	5,354,876	-29.9	14,561,201	14.3
1965	5,110,110	-4.6	17,193,643	18.1
1966	5,000,230*	-2.2	16,082,467*	-6.5
1967	4,814,504*	-3.7	19,672,191*	22.3
1968	7,047,958	46.4	34,671,631	76.3
1969	7,104,980	0.8	27,524,132	-20.6
1970	6,953,269	-2.1	21,285,833	-22.7
1971	8,986,821	29.3	25,804,901	21.2

\*Partial estimates only, since confidentiality requirements prevented publication of disaggregated data in these years.

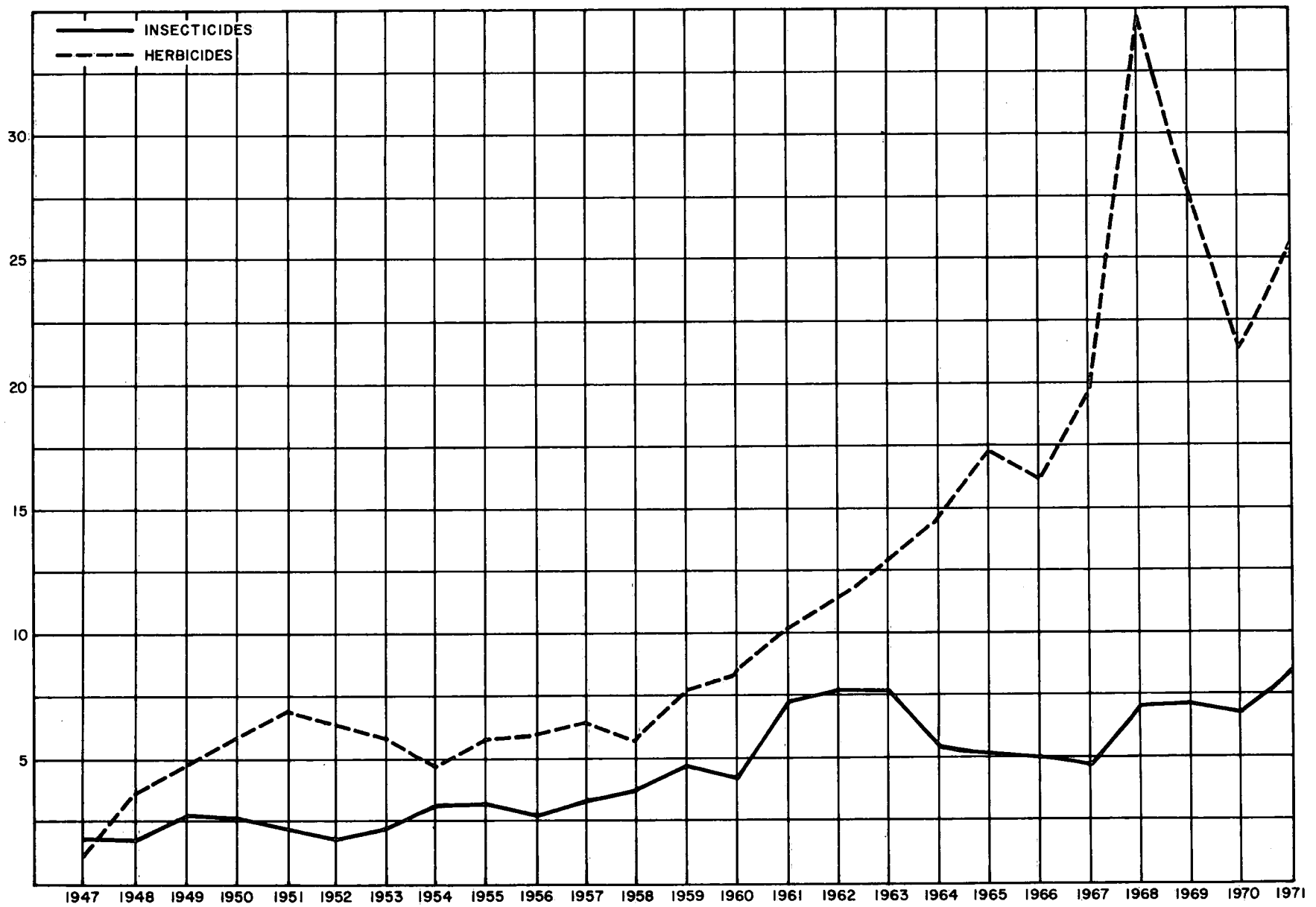


Figure 2. Sales of insecticides and herbicides for agricultural use.

**Agricultural Insecticides**



Table 3.1 Agricultural Insecticides: Sales of Aldrin, Benzene Hexachloride, and Chlordane

Year	Aldrin		Benzene Hexachloride		Chlordane	
	Quantity (pounds)	Value (dollars)	Quantity (pounds)	Value (dollars)	Quantity (pounds)	Value (dollars)
1947	§	§	30,970	4,335	14,798	8,846
1948	§	§	111,051	19,195	59,340	40,426
1949	§	§	§	§	†	501,804
1950	346,437	533,884	†	75,655	†	101,775
1951	50,427	107,346	†	161,497	†	31,487
1952	9,465	30,062	†	186,748	†	27,620
1953	27,830	80,867	†	175,392	†	65,976
1954	§	380,852	†	308,019	†	51,205
1955	§	287,566	†	111,409	†	55,996
1956	§	546,384	†	70,775	†	40,656
1957	§	527,044	†	53,708	†	76,559
1958	§	522,113	71,632	47,613	†	62,785
1959	§	562,746	27,408	47,967	†	57,013
1960	481,262	713,258	18,005	38,940	30,860	76,542
1961	714,756	785,676	22,015	30,547	111,858	119,366
1962	615,592	710,484	30,402	61,500	35,476	61,448
1963	355,583	510,650	24,764	76,368	36,319	63,464
1964	422,729	451,793	11,969	46,085	23,191	67,290
1965	502,323	562,335	13,588	51,339	25,706	72,521
1966	420,766	393,844	12,281*	35,542*	18,174	22,468
1967	432,808	333,339	79,772*	119,584*	20,020*	21,555*
1968	183,057*	262,436*	34,620*	91,563*	22,613*	29,509*
1969	127,034*	201,070*	6,928*	21,285*	39,058*	59,020*
1970	40,919	63,051	6,127*	17,645*	100,524*	106,501*
1971	*	*	*	*	195,204	161,763

\*Incomplete data due to confidentiality requirements of the Statistics Act.

†Data not collected in compatible forms of measurement.

§Data not collected separately for these categories in these years.

Table 3.2 Agricultural Insecticides: Sales of Dieldrin, Dinitro, and D.D.T.

Year	Dieldrin		Dinitro		D.D.T. (without fungicide)	
	Quantity (pounds)	Value (dollars)	Quantity (pounds)	Value (dollars)	Quantity (pounds)	Value (dollars)
1947	§	§	180,620	121,484	†	439,578
1948	§	§	215,902	94,138	†	659,308
1949	§	§	68,465	16,565	†	726,589
1950	§	§	70,422	42,662	†	780,282
1951	§	§	44,387	26,654	†	782,501
1952	§	§	114,841	27,529	†	702,635
1953	†	6,954	36,953	15,533	†	675,405
1954	†	30,306	25,211	7,635	†	745,211
1955	†	18,101	53,916	20,191	†	806,222
1956	†	33,536	99,251	36,496	†	650,104
1957	†	86,994	92,976	30,342	†	645,668
1958	†	114,505	87,081	45,422	†	699,926
1959	†	1,109,139	32,083	12,422	†	715,060
1960	209,629	494,189	46,476	16,813	997,401	696,197
1961	962,790	2,229,477	87,032	24,110	1,341,898	731,657
1962	574,298	1,492,774	16,404	27,965	1,228,843	679,665
1963	179,523	602,074	44,403	26,141	1,397,198	644,230
1964	41,881	126,465	63,868	29,218	1,195,829	582,650
1965	14,805	45,739	58,817	37,657	1,239,042	581,981
1966	4,343*	12,653*	*	*	1,501,897	754,299
1967	9,121*	22,975*	*	*	1,684,500	778,787
1968	6,032*	17,131*	*	*	1,832,989*	823,400*
1969	*	*	*	*	1,972,194*	746,468*
1970	*	*	*	*	631,968	305,083
1971	*	*	*	*	302,426	193,444

\* Incomplete data due to confidentiality requirements of the Statistics Act.

† Data not collected in compatible forms of measurement.

§Data not collected separately for these categories in these years.

Table 3.3 Agricultural Insecticides: Sales of Endrin, Malathion and Methoxychlor

Year	Endrin		Malathion		Methoxychlor	
	Quantity (pounds)	Value (dollars)	Quantity (pounds)	Value (dollars)	Quantity (pounds)	Value (dollars)
1953	§	§	†	17,773	42,268	29,620
1954	§	§	†	305,578	40,029	27,719
1955	§	§	†	779,843	56,437	38,407
1956	§	§	†	322,511	43,509	29,850
1957	§	§	†	364,078	122,813	60,905
1958	238,241	231,068	†	457,708	61,187	45,657
1959	413,603	239,034	†	455,577	89,567	55,599
1960	38,090	193,722	234,796	444,215	92,150	60,604
1961	109,275	422,732	221,721	456,096	52,882	50,377
1962	259,591	828,223	452,251	879,659	82,626	56,726
1963	191,397	585,433	158,123	227,650	62,354	43,887
1964	76,384	223,197	152,955	227,381	90,157	71,155
1965	68,171	165,483	129,869	198,771	44,309	46,752
1966	70,419	154,685	180,093	263,636	65,320*	76,147*
1967	65,510*	143,431*	88,350	155,501	51,481*	48,252*
1968	40,286*	147,759*	250,556	337,309	7,249*	11,099*
1969	72,826*	168,371*	98,297	176,829	33,732*	44,325*
1970	38,291*	145,464*	116,591*	197,402*	129,156	214,163
1971	34,018	121,154	199,906	284,704	269,653	134,943

\* Incomplete data due to confidentiality requirements of the Statistics Act.

† Data not collected in compatible forms of measurement.

§ Data not collected separately for these categories in these years.

Table 3.4 Agricultural Insecticides: Sales of Parathion, Tetra Ethyl Pyrophosphate, Hexa Ethyl Tetra Phosphate and Toxaphene

Year	Parathion		T.E.P.P. and H.E.T.P.		Toxaphene	
	Quantity (pounds)	Value (dollars)	Quantity (pounds)	Value (dollars)	Quantity (pounds)	Value (dollars)
1948	§	1,000	132,190	11,215	§	§
1949	†	99,991*	§	20,075	§	§
1950	†	112,430	§	17,427	§	§
1951	†	172,098	§	19,970	§	§
1952	†	126,486	§	18,135	§	§
1953	†	138,454	§	22,003	§	2,805
1954	†	121,994	§	10,775	§	23,159
1955	†	132,996	§	10,598	§	19,539
1956	†	93,291	§	10,122	§	28,957
1957	†	94,591	§	12,667	§	46,285
1958	†	104,362	§	14,629	§	131,911
1959	†	111,066	§	10,163	§	71,089
1960	90,721*	101,721*	§	9,381	167,245	83,565
1961	58,607*	81,413*	§	11,482	76,536	46,811
1962	43,153*	64,738*	§	9,561	72,606	45,357
1963	46,063*	68,724*	§	6,865	29,913	22,486
1964	36,586*	63,908*	§	8,829	16,013	15,700
1965	57,625*	64,648*	§	9,799	24,717	21,868
1966	39,314	64,953	§	§	11,769	13,370
1967	34,330	60,605	§	§	15,461*	35,162*
1968	42,706	73,014	§	§	6,255*	20,740*
1969	22,318	56,273	§	§	6,345	26,470
1970	25,963	52,748	§	§	6,776	27,459
1971	169,948	69,196	§	§	*	*

\* Incomplete data due to confidentiality requirements of the Statistics Act.

† Data not collected in compatible forms of measurement.

§ Data not collected separately for these categories in these years.

Table 3.5 Agricultural Insecticides: Sales of Arsenicals

Year	Arsenate of Lead		Calcium Arsenate		Other		Total	
	Quantity (pounds)	Value (dollars)	Quantity (pounds)	Value (dollars)	Quantity (pounds)	Value (dollars)	Quantity (pounds)	Value (dollars)
1947	2,895,849	511,672	2,057,234	171,823	7,362,861	258,509	12,315,944	942,004
1948	1,958,370	411,908	908,161	73,733	4,508,930	176,303	7,375,461	661,994
1949	2,410,943	614,814	1,865,920	165,443	5,807,154	240,571	10,075,017	1,020,828
1950	1,331,240	328,171	752,727	78,259	5,494,021	257,210	7,577,988	663,640
1951	1,333,657	382,543	596,480	63,895	6,068,616	269,839	7,998,753	716,277
1952	920,138	271,831	469,665	51,600	4,423,986	209,192	5,813,789	532,623
1953	1,114,252	283,873	608,566	63,591	4,928,062	236,644	6,650,880	584,108
1954	1,268,015	311,361	865,387	77,577	5,071,849	281,924	7,205,251	670,862
1955	1,255,319	308,902	426,852	35,134	5,541,738	232,783	7,223,909	576,819
1956	979,459	249,973	356,190	31,663	4,734,223	194,881	6,069,872	476,517
1957	819,473	211,604	365,898	25,321	4,830,339	219,453	6,015,710	456,378
1958	948,587	245,393	281,584	19,545	2,771,152	106,803	4,001,323	371,741
1959	774,952	213,270	215,290	17,734	2,957,890	130,700	3,948,132	361,704
1960	657,100	180,855	159,554	13,075	2,943,641	129,462	3,760,295	323,392
1961	761,915	215,862	165,156	13,533	3,451,144	184,019	4,378,215	413,414
1962	771,867	201,418	161,622	15,898	3,572,933	184,112	4,506,422	401,428
1963	690,513	182,855	91,793	9,571	2,879,007	152,485	3,661,313	344,911
1964	585,668	154,250	147,620	11,544	2,345,240	127,600	3,078,528	293,394
1965	590,495	154,523	71,018	4,193	1,978,300	114,272	2,639,813	272,988
1966*	423,153	119,594	17,018	1,966	*	*	*	*
1967*	378,222	116,004	57,146	4,628	*	*	*	*
1968*	438,894	155,061	62,366	7,099	*	*	*	*
1969*	384,600	127,564	*	*	*	*	*	259,535
1970	426,530	122,622	1,205,850*	97,509*	*	*	*	252,054
1971	298,790	99,986	not available	not available	1,084,547†	114,727	1,383,327	214,713

\*Incomplete data due to confidentiality requirements of the Statistics Act.

†Includes Calcium Arsenate.

Table 3.6 Agricultural Insecticides: Sales of Botanicals

Year	Rotenone Dust		Others Value (dollars)	Total Value (dollars)
	Quantity (pounds)	Value (dollars)		
1947	671,398	148,934	2,582	151,516
1948	645,864	118,438	4,661	123,099
1949	684,512	130,299	17,218	147,517
1950	674,087	136,370	15,278	151,648
1951	378,824	87,579	12,320	99,899
1952	514,803	124,913	18,287	143,200
1953	535,881	148,836	16,066	164,902
1954	575,335	139,255	32,869	172,124
1955	603,350	145,304	23,793	169,097
1956	533,300	129,862	30,785	160,647
1957	533,863	131,728	56,341	188,069
1958	569,975	147,804	38,955	186,759
1959	534,137	158,259	15,527	173,786
1960	499,432	142,983	604	143,587
1961	513,012	139,477	608	140,085
1962	489,171	138,471	10,457	148,928
1963	439,260	123,601	7,073	130,674
1964	428,282	119,963	8,022	127,985
1965	374,713	116,192	1,292	117,484
1966	187,956	41,416	10,888*	*
1967	193,721	44,297	*	*
1968	191,027	46,197	*	*
1969	181,835	43,591	105,320	148,911
1970	112,843	25,146	95,050	120,196
1971	62,723	10,112	27,830	37,942

\*Incomplete data due to confidentiality requirements of the Statistics Act.

## **Agricultural Fungicides**

Table 4. Fungicides: Sales by Types

Year	Copper	Sulphur	Dithio-Carbamate	Captan	Other	Total
1947	750,330	398,458	56,940	†	†	1,205,728
1948	487,892	348,262	172,038	†	†	1,008,192
1949	1,059,982	341,694	218,681	†	4,644	1,625,001
1950	951,865*	317,757	108,353	†	11,380	1,389,355*
1951	1,011,738*	331,661	145,564	†	58,808	1,547,771*
1952	1,013,019	361,751	352,841	†	169,945	1,897,556
1953	858,428	365,382	472,625	†	382,774	2,079,209
1954	828,663	381,081	307,150	†	613,686	2,130,580
1955	797,096	384,923	531,612	†	1,100,718	2,814,349
1956	672,276	257,384	640,644	†	1,127,108	2,697,312
1957	548,829	180,849	758,974	†	863,614	2,352,266
1958	423,187	192,155	987,474	†	853,550	2,456,366
1959	596,629	230,745	1,060,276	360,485	601,657	2,849,792
1960	562,464	222,754	1,061,725	293,012	502,012	2,642,693
1961	475,414	198,857	1,174,492	454,631	758,307	3,061,701
1962	567,969	280,774	1,114,398	409,913	847,179	3,220,233
1963	442,381	172,608	1,198,915	443,973	763,635	3,021,512
1964	414,459	135,058	1,102,441	247,414	819,132	2,718,504
1965	337,136	110,917	864,492	290,509	894,655	2,497,709
1966	2,203,850	91,740*	1,087,675*	17,689*	767,093*	4,168,047*
1967	116,159*	59,391*	1,113,084*	15,164*	831,041*	2,134,839*
1968	92,749*	66,148*	1,286,806*	12,119*	657,491*	2,115,313*
1969	529,087	73,350*	1,339,174*	6,080*	158,243*	3,639,405
1970	142,235	73,804*	230,860*	15,479*	209,698*	3,061,953
1971	107,796	71,022	742,545*	†	*	2,722,093

\*Incomplete data in these categories.

†Data not collected separately for these categories.

Table 4.1 Fungicides: Sales of Copper Type

Year	Copper Sulphate		Fixed Copper Spray Materials		Other Value (dollars)	Total Value (dollars)
	Quantity (pounds)	Value (dollars)	Quantity (pounds)	Value (dollars)		
1947	2,574,248	221,809	3,951,328	477,118	51,403	750,330
1948	2,981,880	257,704	5,131,965	649,134	41,549	948,432
1949	4,471,811	379,274	4,973,434	640,326	40,382	1,059,982
1950	4,872,906*	383,425*	4,207,332	534,696	33,834	951,955*
1951	4,636,642	493,203	2,718,914	437,267	81,268	1,011,738*
1952	3,727,650	449,331	3,554,560	507,437	56,251	1,013,019
1953	2,718,088	294,336	2,754,658	483,924	80,168	858,428
1954	2,478,416	256,693	3,472,668	472,958	99,012	828,663
1955	1,995,356	272,130	3,298,458	477,719	47,247	797,096
1956	2,127,418	314,568	1,975,319	313,031	44,677	672,276
1957	1,566,180	193,459	1,436,184	312,795	42,575	548,829
1958	1,181,360	113,257	1,538,768	277,697	32,233	423,187
1959	2,516,648	271,319	1,692,906	303,212	22,098	596,629
1960	1,781,737	196,986	1,559,436	340,059	25,419	562,464
1961	869,995	93,556	1,565,812	343,781	38,077	475,414
1962	2,456,396	239,646	1,411,024	303,996	24,327	567,969
1963	1,758,507	186,719	1,068,959	242,640	13,022	442,381
1964	1,576,000	168,992	999,784	231,190	14,277	414,459
1965	823,724	114,207	919,550	214,961	7,968	337,136
1966	16,075,286	2,092,507	287,753	109,769	1,574	2,203,850
1967	*	*	360,423	108,446	7,713	116,159*
1968	*	*	161,431*	90,187*	2,562	92,749*
1969	*	*	153,034*	91,086*	*	529,087
1970	*	*	134,167*	92,747*	*	142,235
1971	*	*	*	*	*	107,796

\*Incomplete data due to confidentiality requirements of the Statistics Act.

Table 4.2 Fungicides: Sales of Sulphur Type

Year	Wettable Sulphurs		Dusting Sulphurs		Liquid-Lime Sulphur		Other Value (dollars)	Total Value (dollars)
	Quantity (pounds)	Value (dollars)	Quantity (pounds)	Value (dollars)	Quantity (gallons)	Value (dollars)		
1947	4,209,409	238,518	910,537	34,885	791,496	119,438	4,617	398,458
1948	3,367,949	200,097	443,565	23,808	627,341	116,214	8,143	348,262
1949	2,666,956	213,247	122,477	8,660	569,712	115,610	4,177	341,694
1950	2,705,506	216,820	153,601	10,570	355,490	75,175	15,192	317,757
1951	2,778,241	250,959	227,663	15,603	258,542	53,985	11,114	331,661
1952	2,521,425	235,778	71,964	4,295	427,213	112,161	9,517	361,751
1953	2,803,808	243,493	83,665	5,378	287,222	104,664	11,847	365,382
1954	2,511,879	233,918	67,795	5,111	468,491	133,745	8,307	381,081
1955	2,646,046	243,850	105,095	10,800	457,209	125,404	4,869	384,923
1956	1,858,909	181,214	54,773	4,075	235,062	69,347	2,648	257,284
1957	1,444,276	148,084	48,083	3,033	83,986	26,765	2,967	180,849
1958	865,256	125,044	46,996	2,693	113,252	38,282	26,136	192,155
1959	703,623	118,448	21,583	1,209	240,681	79,794	31,294	230,745
1960	796,455	112,530	38,925	2,390	275,332	92,660	15,174	222,754
1961	676,817	102,048	45,280	2,694	266,052	81,143	12,972	198,857
1962	536,476	176,533	56,661	3,407	304,627	92,319	8,515	280,774
1963	378,777	72,175	23,550	1,563	282,063	89,133	9,737	172,608
1964	375,689	53,549	4,940	441	235,656	75,759	5,309	135,058
1965	376,309	50,409	42,600	2,757	127,813	46,516	11,235	110,917
1966	394,617	46,604	30,594	2,349	116,906	42,787	*	91,740*
1967	451,858	56,099	40,628	3,292	*	*	*	59,391*
1968	467,739	63,487	26,750	2,661	*	*	*	66,148*
1969	529,774	70,223	30,403	3,127	*	*	*	73,350*
1970	452,640	73,804	*	*	*	*	*	73,804*
1971	383,793	51,289	*	*	*	*	*	71,022

\*Incomplete data due to confidentiality requirements of the Statistics Act.

Table 4.3 Fungicides: Sales of Dithiocarbamates

Year	Nabam		Ferbam		Zineb		Other Value (dollars)	Total Value (dollars)
	Quantity (pounds of Nabam)	Value (dollars)	Quantity (pounds of Ferbam)	Value (dollars)	Quantity (pounds of Zineb)	Value (dollars)		
1947	†	†	†	†	†	†	†	56,940
1948	†	†	†	†	†	†	†	172,038
1949	†	†	†	†	†	†	†	218,681
1950	†	†	†	†	†	†	†	108,353
1951	†	†	†	†	†	†	†	145,564
1952	†	†	†	†	†	†	†	352,841
1953	†	†	†	†	†	†	†	472,625
1954	†	†	†	†	†	†	†	307,150
1955	†	†	†	†	†	†	†	531,612
1956	†	†	†	†	†	†	†	640,644
1957	†	†	†	†	†	†	†	758,974
1958	670,388	161,385	†	†	†	†	826,089	987,474
1959	684,652	171,418	†	†	†	†	888,858	1,060,276
1960	546,801	239,135	250,561	120,932	90,508	61,377	721,175	1,142,619
1961	613,686	251,177	140,480	83,448	44,605	33,689	806,178	1,174,492
1962	505,249	260,008	158,356	91,270	48,047	33,719	729,401	1,114,398
1963	523,205	249,220	138,175	81,993	71,788	40,698	827,004	1,198,915
1964	411,196	275,306	106,982	64,955	57,228	35,411	726,769	1,102,441
1965	514,317	233,875	94,700	58,226	68,126	27,403	544,988	864,492
1966	323,082*	280,034*	80,375	54,296	61,201	25,168	728,177	1,087,675*
1967	307,337	312,449	66,292*	42,086*	*	*	758,549	1,113,084*
1968	241,255	317,764	87,288*	58,230*	50,938*	34,534*	876,278*	1,286,806*
1969	233,619	263,035	82,330*	58,042*	59,825*	40,232*	977,865*	1,339,174*
1970	125,100	151,640	70,045	48,332	*	*	*	*
1971	*	*	48,149	39,864	*	*	702,681*	*

\*Incomplete data in these categories.

†Data not collected separately for these categories.

## **Seed Treatments**

Table 5. Sales of Seed Treatments

Year	Chlorobenzenes		Organic Mercurials		Other Value (dollars)	Total Value (dollars)
	Quantity (pounds)	Value (dollars)	Quantity (pounds)	Value (dollars)		
1947	§	§	601,692	300,070	104,874	404,944
1948	§	§	689,344	409,975	14,394	424,369
1949	§	§	548,400	307,386	33,714	341,100
1950	§	§	506,824	285,071	115,529	400,600
1951	§	§	572,746	322,381	212,691	535,072
1952	155,630	92,702	§	682,063	419,108	1,193,873
1953	155,208	88,992	§	760,549	958,521	1,808,070
1954	145,435	90,085	†	706,587	1,104,069	1,900,741
1955	95,970	55,942	§	610,505	848,213	1,514,660
1956	72,624	43,027	§	554,030	770,706	1,367,763
1957	63,715	39,128	§	522,332	676,886	1,238,346
1958	58,780	34,792	§	620,074	639,725	1,294,591
1959	56,114	36,741	§	714,978	857,072	1,608,791
1960	46,424	29,444	§	995,760	1,296,860	2,322,064
1961	35,945	23,344	†	1,106,247	450,941	1,580,532
1962	21,605	17,164	†	1,468,703	439,671	1,925,538
1963	32,234	16,477	†	1,857,015	516,777	2,390,269
1964	17,316	10,108	†	1,580,748	328,091	1,918,947
1965	12,433	7,581	†	1,834,881	350,805	2,193,267
1966	6,468	4,029	†	1,653,086	991,140*	2,648,255*
1967	*	*	†	1,341,944	574,497*	1,916,441*
1968	*	*	†	1,316,290	675,324*	1,991,614*
1969	*	*	†	598,113	682,766*	1,847,616
1970	*	*	†	379,041	368,598*	1,848,265
1971	§	§	†	119,430*	*	1,353,182

\* Incomplete data due to confidentiality requirements of the Statistics Act.

† Incomplete data in these categories.

§ Data not collected separately for these categories.



## **Agricultural Herbicides**

Table 6.1 Agricultural Herbicides: Sales of 2,4-D, and 2,4,5-T

Year	2,4-D		2,4,5-T		2,4-D and 2,4,5-T	Total
	Quantity (pounds of acid)	Value (dollars)	Quantity (pounds of acid)	Value (dollars)	Value (dollars)	Value (dollars)
1947	762,633	543,724	§	§	§	§
1948	2,189,920	2,496,367	§	§	§	§
1949	1,636,036	3,458,348	§	§	§	§
1950	3,813,632	4,685,228	§	§	§	§
1951	3,684,980	4,993,201	§	§	§	§
1952	3,241,753	4,024,269	§	§	418,287	4,442,556
1953	3,027,314	3,216,373	49,366	76,077	505,244	3,796,694
1954	3,328,951†	3,420,334	58,119	93,188	343,497	3,857,019
1955	3,998,669†	3,886,928	34,114	65,973	429,944	4,382,845
1956	3,950,731†	3,226,456	56,995	108,067	614,932	3,949,455
1957	3,834,822†	3,096,471	96,459	151,753	578,563	3,826,787
1958	3,479,412†	2,666,978	366,812	391,770	584,534	3,643,282
1959	4,278,045†	3,705,790	370,204	409,999	574,433	4,690,222
1960	5,948,193	4,847,640	134,704	184,444	498,088	5,530,172
1961	7,197,787	5,473,596	120,268	204,095	470,348	6,148,039
1962	8,832,785*	5,955,110*	135,976*	206,200*	683,895	6,845,205*
1963	8,631,046*	5,741,101*	80,582*	147,838*	607,349	6,496,288*
1964	7,364,446*	5,591,265*	343,911*	434,334*	684,070	6,709,669*
1965	8,781,507*	6,153,607*	207,897*	267,245*	454,901	6,875,753*
1966	10,194,555	6,130,975	239,761	256,076	673,612	7,060,663
1967	9,824,082	5,911,869	93,219*	112,317*	856,088	6,880,663*
1968	12,126,464*	6,159,965*	275,159*	297,654*	765,116	7,222,735*
1969	13,572,927	6,941,859	74,631*	130,760*	1,750,995	8,824,614*
1970	4,577,435	2,756,052	154,909	170,163	690,752	3,616,967
1971	6,032,836	3,851,637	132,366	147,254	507,750	4,506,641

\* Incomplete data due to confidentiality requirements of the Statistics Act.

† Incomplete data in these categories.

§ Data not collected separately for these categories.

Table 6.2 Agricultural Herbicides: Sales of Carbamates, MCP and MCPA and TCA

Year	Carbamates §		MCP and MCPA		TCA	
	Quantity (pounds)	Value (dollars)	Quantity (pounds of acid)	Value (dollars)	Quantity (pounds of acid)	Value (dollars)
1953	1,397†	2,021†	28,798	47,652	136,467	55,884
1954	11,321†	9,106†	59,749	105,852	146,490	83,417
1955	12,836†	16,207†	82,166	149,264	92,514	44,180
1956	5,401†	10,867†	472,255	685,763	181,754	76,295
1957	7,331†	18,301†	903,711	1,157,324	354,401	144,696
1958	24,998†	34,165†	619,434	717,517	303,458	99,051
1959	42,072†	50,588†	505,388	670,846	336,924	160,491
1960	58,005	31,675	772,880	1,007,773	265,735	91,677
1961	320,227	904,023	840,985	1,189,270	247,332	63,956
1962	209,871	797,778	834,719	965,909	377,966	117,653
1963	237,116	766,318	1,460,231	1,526,686	206,772	89,421
1964	265,676	976,005	1,733,529	1,809,464	579,976	152,295
1965	520,129	1,786,968	2,101,903	2,334,454	562,402	174,389
1966	281,705*	3,038,313*	2,365,174*	2,501,571*	1,130,964	291,666
1967	506,312*	5,356,427*	2,619,110*	2,685,521*	1,293,251	321,050
1968	*	*	2,723,069*	2,705,118*	2,058,339	588,193
1969	*	*	2,651,753*	2,622,528*	922,375	214,902
1970	188,701*	1,980,820*	2,031,896*	1,838,929*	834,276	235,241
1971	*	*	3,031,217	2,524,646	1,327,961	389,416

\* Incomplete data due to confidentiality requirements of the Statistics Act.

† I.P.C. and C.I.P.C. only.

§ Includes: avadex, avadex BW, CIPC, eptam, CDAA, CDED, IPC, tillam, vegedex.

Table 6.3 Agricultural Herbicides: Sales of Arsenicals, Cyanimides and Cyanates, Dinitros, and Borates and Chlorates

Year	Arsenicals		Cyanimides and Cyanates		Dinitros		Borates and Chlorates	
	Quantity (gallons)	Value (dollars)	Quantity (pounds)	Value (dollars)	Quantity (pounds)	Value (dollars)	Quantity (pounds)	Value (dollars)
1947	276,844†	33,771	§	§	10,090	5,066	8,893,713	456,780
1948	2,641,138†	314,353	§	§	661	1,635	13,576,092	690,996
1949	§	§	§	§	§	§	§	§
1950	§	§	§	§	§	§	§	§
1951	§	§	§	§	§	§	§	§
1952	§	§	§	§	§	§	§	§
1953	1,829	2,786	§	§	147,517	37,233	§	§
1954	6,596	8,481	§	§	42,801	60,092	§	§
1955	16,079	15,153	§	§	80,708	60,255	§	§
1956	12,058	15,447	5,631	7,534	27,914	30,161	10,124,480	767,916
1957	11,286	21,625	15,755	7,974	58,881	82,691	7,524,458	690,386
1958	20,311	32,549	299,452	33,917	63,021	77,985	4,325,370	361,918
1959	27,465	56,583	297,687	44,581	112,855	64,897	6,954,103	592,712
1960	16,635	97,167	113,741	29,973	*	*	4,298,558	603,719
1961	34,915	109,508	32,913	26,323	§	83,077	3,898,966	430,513
1962	68,134	118,958	25,048	27,991	§	199,830	3,481,587	419,912
1963	66,080	132,827	153,083	27,553	§	192,436	3,795,786	496,173
1964	72,161	139,875	168,263	28,013	§	210,153	2,696,143	404,588
1965	70,151	137,306	167,924	23,657	§	238,563	3,241,613	369,006
1966	83,214	149,573	*	*	*	*	2,844,465	375,888
1967	99,503	166,915	*	*	*	*	2,110,591*	254,782*
1968	109,953	210,536	*	*	*	*	747,823*	122,726*
1969	125,137	197,833	*	*	*	158,335*	995,850*	132,716*
1970	103,634	182,813	*	*	*	*	1,097,408	188,126
1971	120,194†	30,596	§	§	249,940	250,202	746,258	152,998

\* Incomplete data due to confidentiality requirements of the Statistics Act.

† Quantity expressed in pounds.

§ Data not collected separately for these categories.

## **Rodenticides**

Table 7. Sales of Rodenticides

Year	Warfarin and Pival Type		Other	Total
	Quantity (pounds)	Value (dollars)	Value (dollars)	Value (dollars)
1947	§	§	§	208,200
1948	§	§	§	202,347
1949	§	§	§	177,097
1950	§	§	§	167,433
1951	§	162,406	156,661	319,067
1952	§	288,104	170,642	458,746
1953	270,721	176,829	137,321	314,150
1954	446,083	251,217	95,698	346,915
1955	431,804	265,636	120,878	386,514
1956	467,973	217,857	104,858	322,715
1957	436,403	243,482	100,641	344,123
1958	477,694	238,999	109,793	348,792
1959	651,243	307,101	139,785	446,886
1960	621,360	366,573	144,026	510,599
1961	820,254	406,953	154,157	561,110
1962	588,741	321,833	159,906	481,739
1963	817,479	372,475	184,158	556,633
1964	873,184	434,208	144,918	579,126
1965	707,325	383,217	219,484	602,701
1966	644,918	264,866	163,456	428,322* (597,257)†
1967	669,180	282,326	208,567	490,893* (620,300)†
1968	727,554	318,752	232,815	551,567* (708,314)†
1969	800,443	324,003	203,297	527,300* (681,209)†
1970	920,126	356,853	152,963	509,816* (608,522)†
1971	not available	179,486	127,203	306,689* (566,329)†

\* Rodenticides for agricultural use only.

† All rodenticides sales.

§ Data not collected separately for these categories.

**House, Garden and Industrial**

**Table 8. Sales of Home, Garden, and Industrial Pest Control Products (dollars)**

Year	Home and Garden	Industrial	Total
1947			1,560,631
1948			2,025,342
1949			1,824,897
1950			2,342,597
1951			2,872,066
1952			3,033,133
1953			3,794,652
1954			4,133,356
1955			4,104,352
1956			4,207,678
1957			4,096,452
1958			4,207,062
1959			5,404,943
1960			5,785,146
1961			7,426,130
1962			6,783,549
1963			6,295,415
1964			6,696,571
1965			6,832,139
1966*	7,736,851	745,821	8,482,672
1967	12,009,562	1,370,533	13,380,075
1968	9,570,436	1,569,991	11,140,427
1969	11,236,831	982,615	12,219,446
1970	12,768,063	1,312,983	14,081,046
1971	13,671,821	1,220,969	14,892,790

\*Home and Garden sales from 1966 on do not include rodenticides.

## **Appendix II**

# **Provincial Data on the Use of Pest Control Products**



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**Emergency Spray Operations against Forest Insects in Canada\***

Province	Acreage	Pest	Chemicals	Year
New Brunswick	1,039,000	Spruce budworm	DDT, phosphamidion	1967
Quebec	150,000	Jack pine sawfly	Sumithion, phosphamidion	1967
Manitoba	1,500	Jack pine budworm	DDT	1967
Newfoundland	480,000	Eastern hemlock looper	Sumithion	1968
New Brunswick	480,000	Spruce budworm	DDT, Sumithion, phosphamidion	1968
Quebec	3,500	Spruce budworm		1968
Ontario	275,000	Spruce budworm	Fenitrothion, phosphamidion	1968
Newfoundland	2,500,000	Eastern hemlock looper	Sumithion, phosphamidion	1969
New Brunswick	2,400,000	Spruce budworm	Fenitrothion	1969
Ontario	25,000	Spruce budworm	Fenitrothion	1969
New Brunswick	4,237,500	Spruce budworm	Fenitrothion	1970
Quebec	24,300	Spruce budworm	Fenitrothion	1970
Quebec	2,700	Jack pine budworm	Fenitrothion	1970
Ontario	22,830	Spruce budworm	Fenitrothion	1970
Ontario	2,250	White pine weevil	Methoxychlor	1970

\*Bergsteinsson, J.L., *Potential Sources of Air borne Pesticides*, P. 9-12. In: *Meteorological Aspects of Pollution in Relation to Agricultural Pesticides*, Canada Committee on Agricultural Meteorology, Research Branch, Canada Department of Agriculture, Ottawa, January 1971.

**Alberta – Use of Pest Control Products by Licensed Applicators, 1970**

Insecticides		Herbicides	
Abate	88 gals.	2,4-D	53,121 gals.
Baygon	77 gals.	MCPA	5,357 gals.
Baytex	10 gals.	2,4,5-T	1,296 gals.
Chlordane	137 gals.	Amitrole	2 gals.
Chlordane Gran	300 lbs.	Atrazine	41,642 lbs.
Co-Ral	2,525 lbs.	Avadex	15 gals.
DDT	28 lbs.	Avadex B.W.	25,000 lbs.
Diazinon	151 gals.	Bromacil	1,098 lbs.
Diazinon W.P.	634 lbs.	Bromoxynil	125 gals.
Dibrom	10 gals.	Carbyne	562 gals.
Dimethoate	36 gals.	Dalapon	900 lbs.
Dowfume	10 gals.	D-Bro Gran	13,450 lbs.
Drinox	3,004 gals.	Dicamba	410 gals.
Dursban	38 gals.	Gramoxone	194 gals.
Dursban Gran	1,161 lbs.	Linuron	114 gals.
Dylox	900 lbs.	Magnacide-H	1,047 gals.
Entex	18 gals.	Phenox	575 gals.
Heptachlor	7,510 lbs.	Reglone	150 gals.
Kelthane	15 gals.	Sodium Arsenite	671 gals.
Korlan	5 gals.	Sodium Chlorate	1,925 lbs.
Lindane	601 gals.	Tandex	698 lbs.
Malathion	1,873 gals.	T.B.A.	51 gals.
Mercury	2,354.1 lbs.	T.C.A.	8,561 lbs.
Methoxychlor Gran	88 lbs.	Telvar	250 lbs.
Neguvon	41 gals.	Tordon	1,204 gals.
Pyrethrum	56 gals.	Tordon Gran	5,275 lbs.
Rotenone	1,435 lbs.	Tropotox	18 gals.
Ruelene	668 gals.	Varsol	2,000 gals.
Tedion	41 gals.		
Tossits	1,147 caps.		
Toxaphene	1,463 gals.		
Vapona	2 gals.		
Rodenticides		Fungicides	
Warfarin	3,358 lbs.	Liqui-San 10L	515 gals.
		Panogen	9,680 gals.

**Manitoba – Total Agricultural Usage of DDT, Endrin, Dieldrin,  
Aldrin and Heptachlor in Pounds of Active Material**

Year	Amounts
1971	1,276
1970	5,895.7
1969	1,931.5
1968	10,486.7
1967	9,003.75
1966	13,958
1965	32,526.6
1964	42,001.4
1963*	6,328

\*Figures are incomplete.

**Manitoba – Agricultural Usage of DDT in Pounds of Active Material**

Insecticide	Year	Field Crop	Vegetable	Farm Building	Beef	Totals
DDT	1971	Not Used	1,165.0	Not Used	20	1,185
	1970	3,743*	1,711*	39.5	25	5,518.5*
	1969	1,640	18	193.7	49.8	1,901.5
	1968	2,332	7,677.8	Not Used	70.9	10,080.7
	1967	4,378	3,448	184	0.15	8,010.15
	1966	7,236	5,133.5	60.5	176	12,606
	1965	10,754	10,625	132.5	170.5	21,682
	1964	6,971.5	12,431	77	49.3	19,528.8
	1963†	641.5	2,583.5	44.5	162	3,404.5

\* Figures have been adjusted.

† Figures are incomplete.

**Manitoba – Agricultural Usage of Endrin  
in Pounds of Active Material**

Insecticide	Year	Field Crop	Vegetable	Totals
ENDRIN	1971	30	Not Used	30
	1970	Not Used	Not Used	
	1969	Not Used	Not Used	
	1968	Not Used	Not Used	
	1967	Not Used	2	2
	1966	4	245	249
	1965	Not Used	300	300
	1964	0.4	101	101.4
	1963†		392	392

\*Figures have been adjusted.

†Figures are incomplete.

**Manitoba – Agricultural Usage of Dieldrin  
in Pounds of Active Material**

Insecticide	Year	Field Crops	Vegetable	Turf	Totals
Dieldrin	1971	Not Used	Not Used	10	10
	1970	Not Used	Not Used	Not Used	
	1969	Not Used	Not Used	Not Used	
	1968	Not Used	Not Used	Not Used	
	1967	0.4	3.2	Not Used	3.6
	1966	Not Used	75	Not Used	75
	1965	Not Used	351	Not Used	351
	1964	38	595	Not Used	633
	1963*	2012	54	Not Used	2066

\*Figures are incomplete.

**Manitoba – Agricultural Usage of Aldrin  
in Pounds of Active Material**

Insecticide	Year	Field Crops	Vegetable	Totals
Aldrin	1971	Not Used	30	30
	1970	Not Used	120.0*	120.0*
	1969	Not Used	Not Used	
	1968	Not Used	406	406
	1967	13.3	744	758
	1966	289	706	995
	1965	25	6847	6872
	1964	0.5	5705	5705.5
	1963†	59	298	357

\*Figures have been adjusted.

†Figures are incomplete.

**Manitoba – Agricultural Usage of Heptachlor  
in Pounds of Active Material**

Insecticide	Year	Field Crops	Vegetable	Totals
Heptachlor	1971	Not Used	Not Used	
	1970	Not Used	Not Used	
	1969	30	Not Used	30
	1968	Not Used	Not Used	
	1967	220	10	230
	1966	33		33
	1965	2460.6	861	3321.6
	1964	15006.5	1026.2	16032.7
	1963†	32	76.5	108.5

†Figures are incomplete.

**Manitoba – Agricultural Usage of Lindane in Pounds of Active  
Material (excluding all seed treatments)**

Insecticide	Year	Beef	Hogs	Totals
Lindane	1971	Not Used	21	21
	1970	2	255.2*	257.2*
	1969	4.2	34.5	38.7
	1968	1.85	6.9	8.75
	1967	2.4	12.1	14.5
	1966	3.5	11.3	14.8
	1965	86.8	9.1	95.9
	1964	6.3	41.7	48
	1963†	Not Used	4.3	4.3

\*Figures have been adjusted.

†Figures are incomplete.

**Ontario: Sales of Selected Pesticides**

Location	Calcium Arsenate		Lead Arsenate 3% Concentration		Sodium Arsenate	Cyano Gas	Methyl Bromide
	1970	1971	1970	1971	1971	1971	1971
Algoma						1	4
Brant			876	242.68		16	25
Bruce			524	56.16		9	48
Carleton	146	10.2	1172	74.88			918
Cochrane			96				
Dufferin			96	18.72		47	
Dundas			96	18.72			
Durham			342	1112.41		112	40
Elgin			1588	2107.07			27
Essex			348	277.9		10,425	266
Frontenac						61	54
Grenville		3.2	24	10.82			
Grey		40.72	2774	427.05		1	48
Haldimand			52			17	3
Halton		11,169.08	144	86.58		18	4246
Hastings			1492	267.15			48
Huron		13.52	432	159.12			
Kenora							24
Kent			296	143.52			
Lambton			48	66.3		2	44
Lanark	40	1.6					24
Leeds		12.3		6.24		13	
Lennox & Addington		0.6					
Lincoln			548	5522.4		2	48
Middlesex			812	953.86		130	812
Muskoka District							
Niagara Region		0.6		5238.32		7	
Norfolk			2195	93		62	
Northumberland			1050	1231.62		30	24
Ontario		6.8	5206	499.59		136	72
Oxford			6539*	6013.68		8	
Peel			2384	28.86		12	2347
Perth			112	32.79		2	
Peterborough		102.5	2438*	16.56			72
Prescott							
Prince Edward		50.1	1836	3.12			4
Renfrew	230	11.13	96	31.98			8
Simcoe			480	8.58		22	493
Victoria			220*				
Waterloo		1560.	1392	599.36		13	24
Welland			48			64	197
Wellington		18.8		67		13	48
Wentworth		106.29	2496	1997.82			396
York (Metro Toronto)		48.16	1680	827.92		106	752
York			432	168.48		24	108
Metro Toronto					12.75		
<b>TOTAL</b>		<b>13,161.00</b>	<b>40364</b>	<b>28,410.26</b>		<b>11353</b>	<b>11224</b>

\*2% concentration.

N.B. All figures are expressed in pounds.

Ontario: Sales of Aldrin and Chlordane by County (pounds)

County	Aldrin		Chlordane			
	1968	1969	1968	1969	1970	1971
Brant	29,670	255		13.2	76	80.24
Bruce	4,750		11.4	1.2	1.2	
Carleton				37.6	19.4	150.15
Cochrane						0.16
Dufferin	28,200			1,012.3	402.24	101.28
Dundas				16		
Durham	1,500	427.5				70.48
Elgin	333,000	4,600		36	3.68	799.4
Essex	576,900	3,900		3.55	34	1,564.24
Frontenac		325		18		
Grenville	8,710					4.5
Grey				9.6	16.2	12.9
Haldimand	250	42			7.2	
Haliburton				10	18	
Halton	16,757	54.3		1,423.5	251.28	205.12
Hastings	1,850	119.9				6.1
Huron	16,800	70		6.4	76.8	254
Kent	584,300	3,550				12,459.12
Lambton	384,600	3,068		8	10.8	615.16
Lanark						
Leeds					1.92	1.28
Lennox & Addington						
Lincoln	23,150	1,416.35		245.9	346.1	159.44
Manitoulin			0.64			
Middlesex	554,500	1,135.2		51.4	23.26	1,175.52
Muskoka	30		11.6	15.3	18	7.21
Niagara Region						2,099.92
Nipissing	350	6		105	3.6	
Norfolk	6,700	338		115	25.43	88
Northumberland	2,000	848		9.6	15.1	25.75
Ontario	9,290	15		0.16	1.26	17.3
Oxford	405,500	1,831		12.8	18	10,640.76
Parry Sound	4,800				19.2	
Peel		1,280		49	77.1	142
Perth	19,600	195.2		6.4	0.16	1,160
Peterborough		10		216.3	21.6	3.6
Prescott				16		0.16
Prince Edward	1,710	8.2			3.2	
Renfrew					0.16	11.25
Russell				2.6		
Simcoe	181,900	2,009.4	104.32	188.77	306.2	155.78
Sudbury		17	1.6	7.5		
Thunder Bay	7,350	3.5				
Victoria						
Waterloo	29,000	50.5				19.04
Welland	6,200	1,160.7		32.66	75.7	21.2
Wellington	5,000				3.92	18.24
Wentworth	14,310	66.4		390.88	71.2	49.48
York (Metro Toronto)				762.69	382.12	381.64
York (Non Metro)	8,370	55		86.01	27.84	51.84
TOTAL	3,263,447	26,857.15	129.56	4,909.32	2,357.87	32,552.26

N.B. All figures are expressed in pounds.

Ontario: Sales of D.D.T. (by County)

County	1968	1969	1970	1971
Algoma	20			
Brant	32,714	26,802.5	7,469.5	9,752
Bruce	295.66	123.77	160	
Carleton	310	6,912.32	75	
Cochrane		109.5		
Dufferin		488.5		32
Dundas	688	217		
Durham	812	1,911.9	156	732
Elgin	38,540	63,448	6,014	13,098
Essex	7,907	5,650	70	798
Frontenac		686.6		
Grey	4,809.4	6,105.39	1,118	730
Glengarry		40		
Grenville	425	21.5		
Haldimand		440.5		20
Haliburton		2.5		
Halton	817.45	2,912.88		90
Hastings	90.3	2,708.5		190
Huron		59		
Kent	1,337	2,219	40	2,175.21
Lambton	1,330	739		164
Lanark	3,404	38.3		
Leeds	132	24.05		
Lennox & Addington		15.1		
Lincoln		12,421.55	0.2	62
Manitoulin	25			
Middlesex	9,015	11,491.65	244	3,431
Muskoka				
Nipissing		28		
Norfolk	133,236	244,878	54,152	39,476
Northumberland	102	7,278		260
Ontario	787.9	1,829		20
Oxford	40,970	29,318.74	2,270	14,719.25
Parry Sound	30	24		
Peel	323.5	3,449		200
Perth		73.5		32
Peterborough		975.5		
Prince Edward	2,100	2,799.5		528
Renfrew	1,268	1,724.98		
Russell	240	16.25		
Simcoe	8,042.17	9,798.25	2,787	237
Stormont	64	4		
Sudbury	0.25	250		
Thunder Bay		256		
Timiskaming		37		
Victoria	31.5	99.5		
Waterloo		2,317.3	30	
Welland		2,205.52		
Wellington		437		
Wentworth		3,480		4
York (non-Metro)	6,086.69	4,678.74	526.5	
York (Metro-Toronto)	320.5	1,592		
Niagara Region (1971 only)				46
TOTAL	296,274.32	463,138.79	75,112.2	86,796.46

N.B. All figures are expressed in pounds.

**Ontario: Sales of Dieldrin and Endrin (by County)**

County	Dieldrin		Endrin			
	1968	1969	1968	1969	1970	1971
Brant	0.16		20.16	84	12.8	0.32
Bruce	4				1.6	
Carleton			1.6	1.6	0.8	0.8
Dufferin			56	152	154.4	362.4
Dundas			2.4			
Elgin			116.6	56	179.6	404
Essex	203	16	318.7	195	41.6	32.6
Grey			12.8	3.2	1.6	
Haldimand					1	
Halton	19.7	11.1	118.56	155.2	190.4	601.07
Hastings				0.8	6.4	
Huron			6.56			
Kent			33.6		0.32	7
Lambton			62.08	10	17	16
Leeds		0.24				
Lincoln	27	67.2	15.84	16	3.2	
Middlesex			90	4	6.72	50
Niagara Region						12
Norfolk	0.24	6	70.8	276.6	165.4	395
Northumberland		15	12.16	44	2.56	3.2
Ontario			4.1		4.8	
Oxford	0.2		93.17	474	221.2	40
Peel	11.2	1.6	26.78	51.2	73.6	1.44
Perth			3		32	
Peterborough					2.72	
Prescott			7.2			
Prince Edward				36.8		
Simcoe	15	2	152	278.4	1,397.6	413.2
Waterloo				9.6	1.6	
Welland				8	6.4	
Wellington			17.6			
Wentworth	2		379.48	617.6	822.4	522.24
York	11.2		125.3	20.8	110.4	
York (Metro Toronto)	3.2	687	7.2	21.6	8.32	5.87
<b>TOTAL</b>	<b>296.9</b>	<b>806.14</b>	<b>1,753.69</b>	<b>2,516.4</b>	<b>3,566.44</b>	<b>2,867.14</b>

N.B. All figures are expressed in pounds.



Ontario: Sales of Lindane

County	1968	1969	1970	1971
Algoma	2		1	3
Brant		28.88	7	6
Bruce	2		82.5	710
Carleton		26	13.21	20.2
Cochrane	4	250		1.4
Elgin		35	16.5	54
Essex		463.07		72.25
Frontenac		1	3	4.75
Grey	2	156.15	116.25	124.05
Halton		13	5.75	75.5
Huron		199.75	137.5	87.1
Kent		74	3.5	77.9
Lambton		0.6	3.03	
Lanark				0.4
Lincoln		17.25	27	15.5
Middlesex		54.2	31.22	61.52
Muskoka		0.1		
Niagara Region				6.25
Nipissing		44.6		
Norfolk		77	20	82
Northumberland		2	2	56.32
Ontario		1.2	4.08	1
Oxford		21	1	6
Peel	173.37	160	225.49	
Perth		4		15
Peterborough		1.6		
Renfrew			1	
Simcoe	4		1.8	21.44
Sudbury	2	1		15
Temiskaming				0.16
Thunder Bay	2			
Victoria		1.1		
Waterloo			1/64	3.75
Welland		13	1	2
Wellington			2.16	1.75
Wentworth		45.96	23.54	34.31
York		117.58	17.5	43.5
York (Metro Toronto)		257.22	138.98	233.6
<b>TOTALS</b>	<b>18</b>	<b>2,079.63</b>	<b>822.16</b>	<b>2,062.14</b>

N.B. All figures are expressed in pounds.

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