

**NATIONAL INVENTORY OF
PCB'S IN USE AND PCB WASTES IN STORAGE
IN CANADA**

SUMMARY STATUS REPORT

OCTOBER 1989

EXECUTIVE SUMMARY

This report is the first summary output from the Canadian Council of Ministers of the Environment (CCME) national data base of in-use and waste PCB's.

The PCB inventory is dynamic by nature, as PCB equipment and PCB liquids are continually being removed from use and put in storage, being moved from dispersed to centralized storage locations, or being removed from use or storage for destruction. For this reason, the inventory will be updated semi-annually, and reported on an annual basis.

The data presented in this report are based on reporting requirements instituted over the past year as a result of stringent federal and provincial PCB waste storage requirements having been put in place. This data supersedes all previous inventory information.

The national totals for the main inventory categories are:

- In-use Askarel: **18,600 tonnes** contained in approximately 10,000 transformers, 236,000 capacitors, and 40,000 pieces of miscellaneous electrical and mechanical equipment.
- Waste Askarel: **3,517 tonnes** stored for disposal in either containers or the original equipment (includes fluorescent light ballasts).
- Other PCB-contaminated Wastes: **116,088 tonnes** of PCB-contaminated wastes are stored across Canada including soil, adsorbents, solvents, sludge, and any other PCB-contaminated solids or liquids. Also included in this total are approximately 3,671 tonnes of PCB-contaminated mineral oil containing an estimated 500 kilograms (0.5 tonnes) of PCB's (based on an average contamination level of 150 ppm).

In the past year significant progress has been made in the elimination of PCB's in Canada. In excess of 2,500 tonnes of PCB wastes have been destroyed and over 5,800 tonnes of PCB-contaminated mineral oil have been decontaminated.

Detailed information on specific waste storage sites falling within provincial or territorial jurisdiction can be obtained from the respective provincial or territorial environment offices listed in Appendix A, while information pertaining to specific sites owned or operated by the federal government can be obtained from the respective Environment Canada regional or district offices listed in Appendix B.

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CANADIAN COUNCIL OF MINISTERS OF ENVIRONMENT

BACKGROUND

In September 1988, the Canadian Council of Resource and Environment Ministers (now the Canadian Council of Ministers of Environment) published the first national inventory of PCB waste sites in Canada. The compilation of the national inventory was a considerable task due to the fact that the information had to come from eleven different federal and provincial jurisdictions that often collected different types of information on PCB wastes.

To facilitate more accurate and streamlined reporting, CCREM decided to unify the way in which PCB data was collected, and to establish a national data base system to manage information on PCB wastes as well as PCB's still in use.

CCREM further made a commitment to provide to the Canadian public regular summary updates of the national inventory. This report represents the first such update.

SCOPE

Materials inventoried include:

In-use: askarel filled electrical and mechanical equipment

Wastes: askarel filled equipment, bulk askarel, PCB contaminated mineral oil, fluorescent light ballasts, PCB contaminated soil, and any other PCB contaminated liquids or solids.

- . Quantities of PCB's or PCB contaminated materials are reported in tonnes.
- . Askarels, in-use and waste, and PCB contaminated mineral oil are reported as net weight, i.e., the weight of the equipment casings are not included.
- . Wastes such as soil, debris, sludge, etc. are reported as gross weight.

Note:

Not included in this inventory are in-use PCB-contaminated mineral oil equipment, or in-use fluorescent light ballasts. Studies have estimated that there are up to 5 tonnes of PCB's dispersed at low concentrations in 40 million litres of mineral oil in 300,000 to 350,000 transformers, and as much as 2,500 tonnes of PCB's in 63 million light ballasts in Canada (including waste ballasts).

INVENTORY SUMMARY

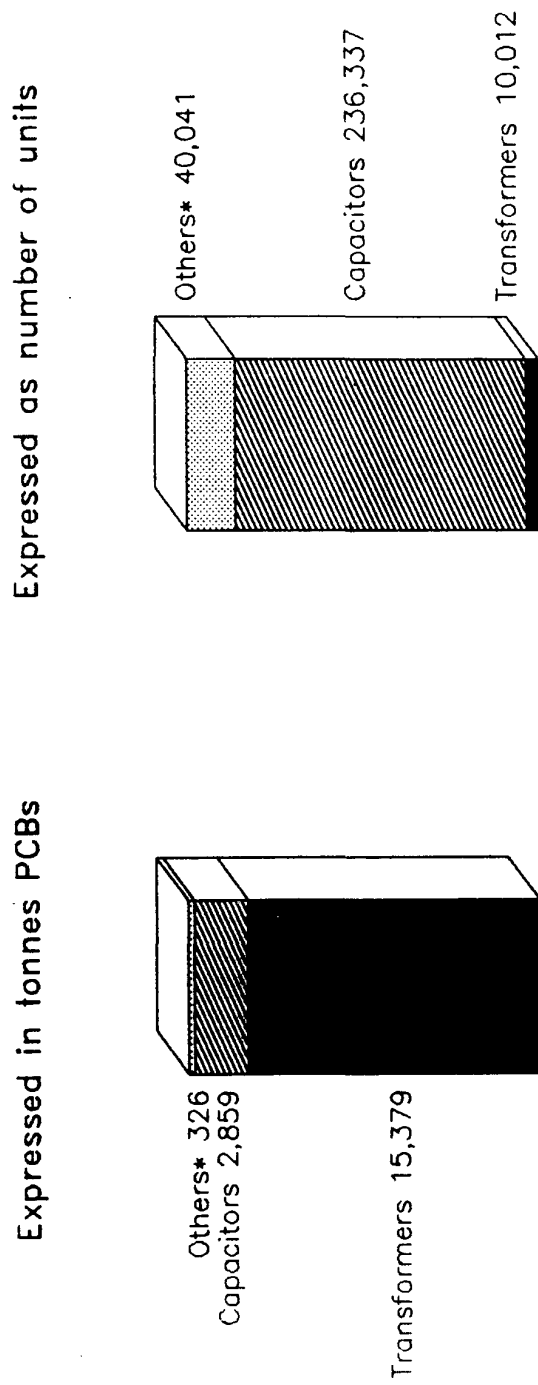
IN-USE ASKARELS

There are approximately 18,600 tonnes of askarels in use in Canada. The bulk of these askarels are contained in electrical equipment (Figure 1). Eighty three percent of this total is contained in approximately 10,000 transformers, another 15% in 236,000 capacitors, and 2% in other miscellaneous electrical and mechanical equipment such as heat transfer, vacuum, and hydraulic equipment.

Figure 2 illustrates the distribution of in-use PCB's by industrial sector. The provincial/territorial distribution of askarels is illustrated in Figure 3.

FIGURE 1

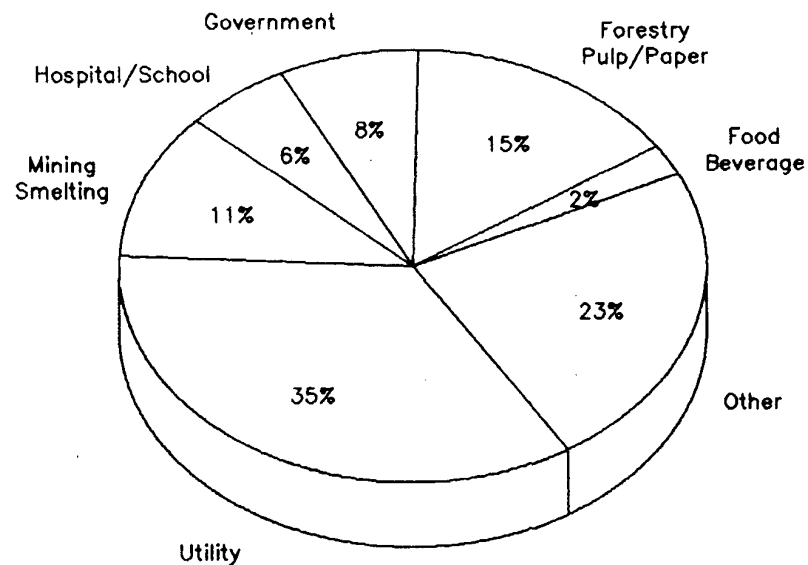
Distribution of In-Use PCB Equipment



Others include electromagnets and other electrical equipment as well as heat transfer, vacuum, hydraulic and other mechanical equipment.*

FIGURE 2

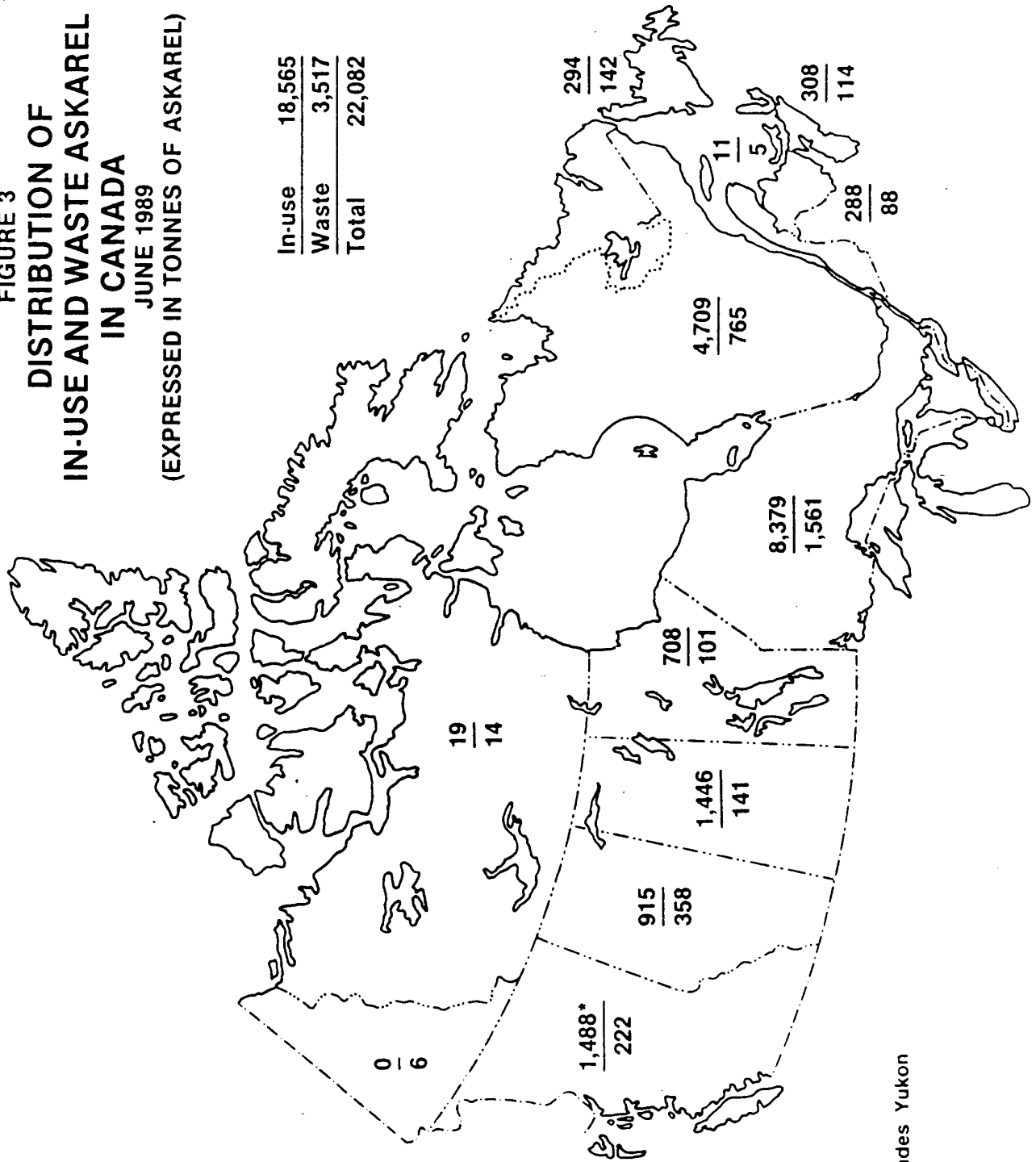
Distribution of In-Use PCBs by Industrial Sector



Other* Includes Cement, Chemical Manufacturing, Electrical, Petroleum, Metal Refining, Rubber, Textile, and Other Industrial Sources

Total In-Use PCBs: 18,565 tonnes

FIGURE 3
DISTRIBUTION OF
IN-USE AND WASTE ASKAREL
IN CANADA
 JUNE 1989
 (EXPRESSED IN TONNES OF ASKAREL)



* Includes Yukon

PCB WASTES

PCB Waste Storage Sites

In June 1989 there were a total of 3,013 PCB waste storage sites in Canada. The distribution of federally and provincially regulated sites by jurisdiction is provided in Table 1.

TABLE 1
NUMBER OF PCB WASTE STORAGE SITES
FEDERAL, PROVINCIAL AND TERRITORIAL
JUNE 1989

PROVINCE/ TERRITORY	FEDERAL	PROVINCIAL/ TERRITORIAL	TOTAL
NEWFOUNDLAND	21	39	60
PRINCE EDWARD ISLAND	5	9	14
NOVA SCOTIA	36	45	81
NEW BRUNSWICK	27	36	63
QUEBEC	144	485	629
ONTARIO	93	1,202	1,295
MANITOBA	41	44	85
SASKATCHEWAN	28	104	132
ALBERTA	63	34	97
BRITISH COLUMBIA	72	447	519
YUKON	6	10	16
NORTHWEST TERRITORIES	15	7	22
TOTALS	551	2,462	3,013

Askarels

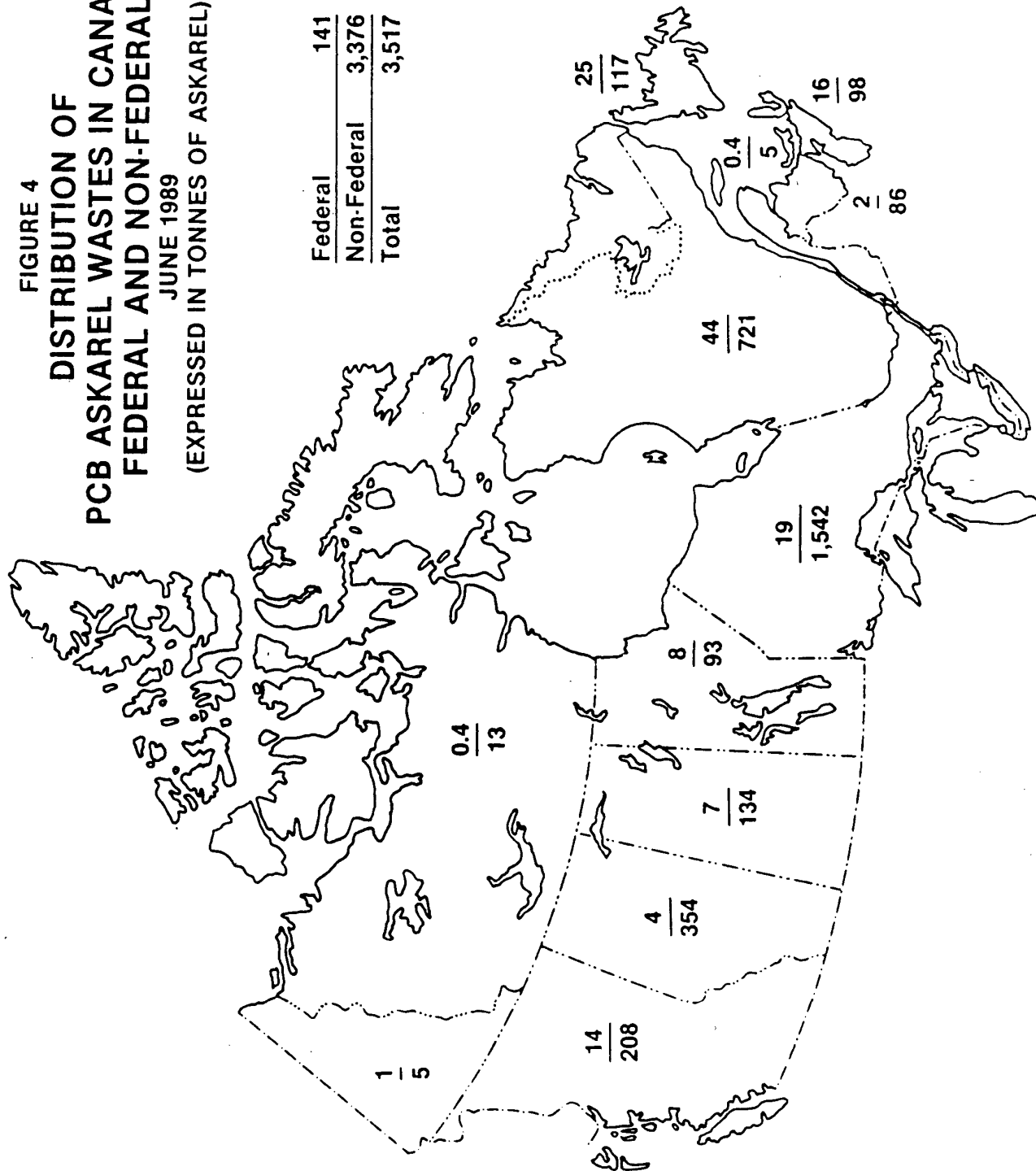
There are approximately 3,517 tonnes of waste askarels currently in storage (Figures 3, 4 and Table 2). These askarels are contained in transformers, capacitors, light ballasts, various other types of electrical equipment, and in bulk containers.

**TABLE 2
TONNES OF ASKAREL STORED AT
FEDERAL, PROVINCIAL AND TERRITORIAL PCB WASTE STORAGE SITES
JUNE 1989**

PROVINCE/ TERRITORY	FEDERAL	PROVINCIAL/ TERRITORIAL	TOTAL
	TONNES	TONNES	TONNES
NEWFOUNDLAND	25	117	142
PRINCE EDWARD ISLAND	+	5	5
NOVA SCOTIA	16	98	114
NEW BRUNSWICK	2	86	88
QUEBEC	44	721	765
ONTARIO	19	1,542	1,561
MANITOBA	8	93	101
SASKATCHEWAN	7	134	141
ALBERTA	4	354	358
BRITISH COLUMBIA	14	208	222
YUKON	1	5	6
NORTHWEST TERRITORIES	+	13	14
TOTALS	141	3,376	3,517

+ less than 0.5 tonnes

FIGURE 4
 DISTRIBUTION OF
 PCB ASKAREL WASTES IN CANADA
 FEDERAL AND NON-FEDERAL
 JUNE 1989
 (EXPRESSED IN TONNES OF ASKAREL)



Federal	141
Non-Federal	3,376
Total	3,517

Other PCB-contaminated Wastes

In addition to askarels there are a variety of other PCB-contaminated wastes including mineral oil from non-askarel transformers, soil, debris, and other PCB-contaminated liquids and solids (Figure 5, Table 3).

The total weight of "other" PCB wastes is approximately 116,088 tonnes. Much of the material in this category remains untested as to the concentration of PCB's, therefore the quantity of PCB's contained therein is unknown.

The quantities of mineral oil in the current waste inventory indicate a total of approximately 3,671 tonnes of oil containing an estimated 500 kilograms (0.5 tonnes) of PCB's (based on an estimated average of 150 ppm PCB).

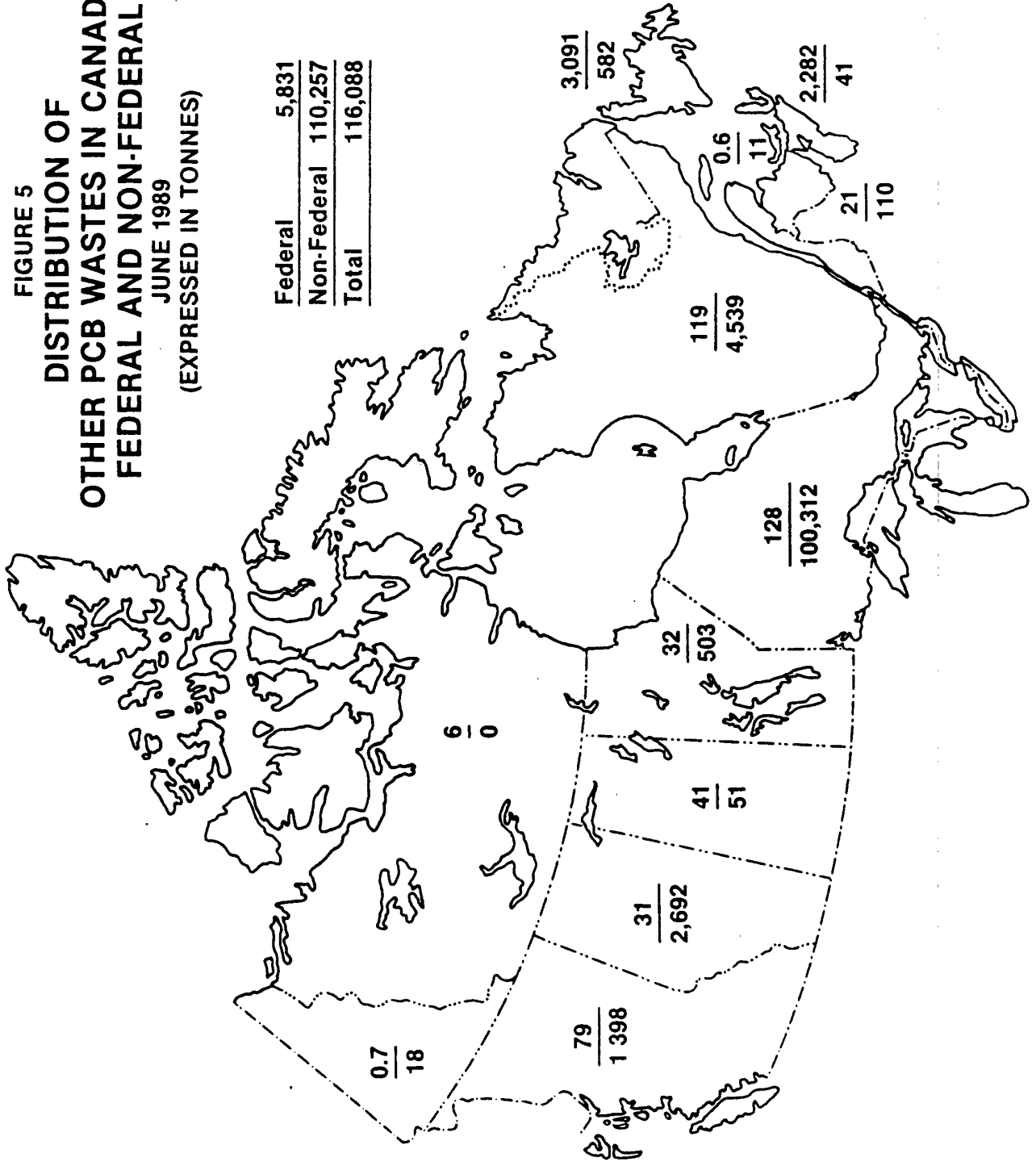
PCB Destruction and Decontamination

In the past year significant progress has been made in the elimination of PCB's in Canada.

Between October 1988 and August 1989, approximately 1,667 tonnes of PCB wastes were destroyed at the Swan Hill's hazardous waste incinerator in Alberta (1,500 tonnes of liquid, 24 tonnes of capacitors and light ballasts, and 143 tonnes of soil).

In the same period, another 867 tonnes of miscellaneous PCB wastes were exported to Britain and France for incineration, and 5,843 tonnes of PCB-contaminated mineral oil were chemically decontaminated. A provincial/territorial summary of these activities is presented in Table 4.

FIGURE 5
DISTRIBUTION OF
OTHER PCB WASTES IN CANADA
JUNE 1989
FEDERAL AND NON-FEDERAL
(EXPRESSED IN TONNES)



Federal	5,831
Non-Federal	110,257
Total	116,088

Other PCB Wastes include contaminated mineral oil, soil, debris and other PCB-contaminated liquids and solids

TABLE 3
TONNES OF 'OTHER' PCB-CONTAMINATED WASTES AT
FEDERAL, PROVINCIAL AND TERRITORIAL PCB WASTE STORAGE SITES
JUNE 1989

PROVINCE/ TERRITORY	FEDERAL			PROVINCIAL/ TERRITORIAL			TOTAL		
	TONNES			TONNES			TONNES		
	MINERAL OIL	OTHER SOLIDS AND LIQUIDS	TOTAL OTHER WASTES	MINERAL OIL	OTHER SOLIDS AND LIQUIDS	TOTAL OTHER WASTES	MINERAL OIL	OTHER SOLIDS AND LIQUIDS	TOTAL OTHER WASTES
NEWFOUNDLAND	10	3,081	3,091	22	560	582	32	3,641	3,673
PRINCE EDWARD ISLAND	+	+	1	10	1	11	10	1	11
NOVA SCOTIA	33	2,249	2,282	23	18	41	56	2,267	2,323
NEW BRUNSWICK	1	20	21	36	74	110	37	94	131
QUEBEC	18	101	119	--	4,539*	4,539	18	4,640	4,658
ONTARIO	20	108	128	3,100**	97,212	100,312	3,120	97,320	100,440
MANITOBA	7	25	32	9	494	503	16	519	535
SASKATCHEWAN	0	41	41	0	51	51	0	92	92
ALBERTA	9	22	31	212	2,480	2,692	221	2,502	2,723
BRITISH COLUMBIA	22	57	79	121	1,277	1,398	143	1,334	1,477
YUKON	+	+	1	18	+	18	18	1	19
NORTHWEST TERRITORY	0	6	6	0	0	0	0	6	6
TOTALS	120	5,711	5,831	3,551	106,706	110,257	3,671	112,417	116,088

+ less than 0.5 tonnes

* includes mineral oil and other PCB-contaminated liquid wastes for the Province of Quebec

** includes "other" low level PCB-contaminated liquids for the Province of Ontario

"Other solids and liquids" include: soil, debris, adsorbants, solvents, water, and any other PCB-contaminated solids or liquids.

TABLE 4
QUANTITIES OF PCB WASTES DESTROYED OR EXPORTED FOR DESTRUCTION
AND QUANTITIES OF MINERAL OIL DECONTAMINATED
IN TONNES
OCTOBER 1988 - AUGUST 1989

PROVINCE/ TERRITORY	PCB WASTES DESTROYED	PCB WASTES EXPORTED FOR DESTRUCTION	MINERAL OIL DECONTAMINATED
	TONNES	TONNES	TONNES
NEWFOUNDLAND	0	11	50
PRINCE EDWARD ISLAND	0	0	0
NOVA SCOTIA	0	175	*
NEW BRUNSWICK	0	233	250
QUEBEC	0	442	1,500
ONTARIO	0	3	1,000**
MANITOBA	0	0	1,300
SASKATCHEWAN	0	0	600
ALBERTA	1,667	0	0
BRITISH COLUMBIA	0	3	1,143
YUKON	0	0	0
NORTHWEST TERRITORIES	0	0	0
TOTALS	1,667	867	5,843

* Data unavailable at time of printing.

** Estimate based on the total approximate quantity of oil decontaminated since 1986.

APPENDIX A

PROVINCIAL/TERRITORIAL CONTACTS FOR INFORMATION
ON PCB INVENTORIES

Mr. C. Strong
Director, Environmental Investigations
Department of Environment
Government of Newfoundland and
Labrador
P.O. Box 4750
4th Floor, Confederation Bldg., West
Block
St. John's, Newfoundland
A1C 5T7

Mr. D. Hynick
Chief, Waste Management Planning
Environmental Assessment Division
Department of Environment
Government of Nova Scotia
4th Floor, Joseph Howe Building
P.O. Box 2107 - 1690 Hollis Street
Halifax, Nova Scotia
B3J 3B7

Ms. S. Godin
Hazardous Waste Office
Environmental Protection Branch
Department of Municipal Affairs and
Environment
P.O. Box 6000
364 Argyle Street
Fredericton, New Brunswick
E3B 5H1

Mr. C. Anctil
Directeur, Direction des substances
dangereuses
Ministère de l'environnement
5^e étage
3900 rue Marly
Ste-Foy (Québec)
G1X 4E4

Mr. H. Wong
Director, Waste Management Branch
Ontario Ministry of Environment
5th Floor, 40 St. Clair Avenue West
Toronto, Ontario
M4V 1M2

Mr. D. Thompson
Head, Waste Management Section
Environmental Control Programs
Department of Environment and
Workplace Safety and Health
Building 2, 139 Tuxedo
Winnipeg, Manitoba
R3N 0H6

Mr. L. Lechner
Director, Air and Land Protection Branch
Department of Environment and Public
Safety
3085 Albert Street
Regina, Saskatchewan
S4S 0B1

Mr. S. Lupul
Head, Industrial Waste Branch
Alberta Environment
5th Floor, Oxbridge Place
9820-106th Street
Edmonton, Alberta
T5K 2J6

Mr. L.T. Hubbard
Manager, Environmental Safety Program
Waste Management Branch
Ministry of Environment and Parks
810 Blanshard Street
Victoria, B.C.
V8V 1X5

Note: To obtain information on inventories for
Prince Edward Island, Yukon, and Northwest
Territories, contact the Environment Canada
Office in that province or territory.

APPENDIX B

FEDERAL CONTACTS FOR INFORMATION ON PCB INVENTORIES

ENVIRONMENTAL PROTECTION SERVICE
ENVIRONMENT CANADA**Regional Offices**

Mr. C. Duerden
EP - Atlantic Region
5th floor, Queen Square
45 Alderney Drive
Dartmouth, Nova Scotia
B2Y 2N6 (902) 426-6141

M. G. Girouard
SPE - Region du Québec
1179, rue de Bleury
Montréal (Québec)
H3B 3H9 (514) 283-6418

Mr. D. Pascoe
EP - Ontario Region
7th Floor, 25 St. Clair Ave. East
Toronto, Ontario
M4T 1M2 (416) 973-1071

Mr. B. Munson
EP - Western and Northern Region
2nd Floor, Twin Atria No. 2
4999-98th Avenue
Edmonton, Alberta
T6B 2X3 (403) 468-8034

Mr. R. Shepherd
EP - Pacific and Yukon Region
3rd Floor, Kapilano 100
Park Royal
West Vancouver, B.C.
V7T 1A2 (604) 666-0370

District Offices

Mr. B. Power
Newfoundland District Office
P.O. Box 5037
St. John's, Newfoundland
A1C 5V3 (709) 772-5488

Mr. A.J. Hiscock
P.E.I. District Office
Room 308, 97 Queen Street
Charlottetown, P.E.I.
C1A 4A9 (902) 566-7042

Mr. I. Travers
Nova Scotia District Office
P.O. Box 21077
4th Floor, 5151, Terminal Road
Halifax, Nova Scotia
B3J 3B7 (902) 426-5601

Mr. G. Lindsay
New Brunswick District Office
Queen Street, P.O. Box 400
Frederickton, New Brunswick
E3B 4Z9 (506) 452-3286

Mr. D. Cameron
National Capital Area Operation
Ontario Region
River Road Laboratories
River Road
Ottawa, Ontario
K1A 1C8 (613) 991-1954

Ms. W. Tibbatts
Manitoba District Office
5th Floor, 269 Main Street
Winnipeg, Manitoba
R3C 1B2 (204) 983-7788

Mr. H. Sommerstad
Saskatchewan District Office
2nd Floor, 1901 Victoria Avenue
Regina, Saskatchewan
S4P 3R4 (306) 780-6001

Ms. P. Erickson
Alberta District Office
2nd Floor, Twin Atria No. 2
4999-98th Avenue
Edmonton, Alberta
T6B 2X3 (403) 468-8005

Mr. M. Bourque
Northwest Territories District Office
9th Floor, Bellanca Building
P.O. Box 370
Yellowknife, N.W.T.
X1A 2N3 (403) 873-3456

Mr. G. Mackenzie-Grieve
Yukon District
Room 225, Federal Building
Whitehorse, Yukon
Y1A 2B5 (403) 667-3401