

**National Inventory  
of  
PCBs in Use and PCB Wastes in Storage  
in Canada**

**1998 Annual Report**

Prepared for

Canadian Council of  
Ministers of the Environment

by

Toxics Pollution Prevention Directorate  
Environmental Protection Service  
Environment Canada

November 2002

## Foreword

The national PCB inventory is a compilation of PCB-containing items that are in use or in storage at various locations across Canada. The inventory changes continually as PCBs are taken out of service to be placed in storage or destroyed and as new PCB materials are reported. In addition, new storage sites may be established or existing sites consolidated or closed. As a result, differences between the information in this inventory and other PCB inventory information may arise from time to time. These differences should be discussed with the appropriate provincial or federal officials listed in Appendices A and B of this report.

This annual report and reports from previous years are available at Environment Canada's PCB website ([www.ec.gc.ca/pcb/eng/inv\\_e.htm](http://www.ec.gc.ca/pcb/eng/inv_e.htm)). For more information about the national inventory, please contact:

Toxics Pollution Prevention Directorate  
Environmental Protection Service  
Environment Canada  
Ottawa, ON K1A 0H3  
Fax: (819) 997-3068

Ce rapport annuel et ceux des années précédentes sont disponibles en français au site des BPC d'Environnement Canada ([www.ec.gc.ca/pcb/fra/inv\\_f.htm](http://www.ec.gc.ca/pcb/fra/inv_f.htm)). Pour plus d'information sur l'inventaire national, veuillez communiquer avec :

Direction générale de la prévention de la pollution par des toxiques  
Service de la protection de l'environnement  
Environnement Canada  
Ottawa, ON K1A 0H3  
Télécopieur : (819) 997-3068

## TABLE OF CONTENTS

<b>FOREWORD.....</b>	<b>i</b>
<b>1. BACKGROUND .....</b>	<b>1</b>
<b>2. INVENTORY HIGHLIGHTS.....</b>	<b>2</b>
2.1 NATIONAL INVENTORY .....	2
2.2 FEDERAL INVENTORY .....	3
2.3 NON-FEDERAL INVENTORY .....	4
<b>3. PCB WASTE STORAGE SITES .....</b>	<b>5</b>
<b>4. SUMMARY OF NATIONAL PCB INVENTORY DATA FROM 1990</b>	
<b>    TO 1998.....</b>	<b>8</b>

### List of Tables

Table 1: National Inventory of In-use and Waste Askarels.....	3
Table 2: National Inventory of In-use and Waste Mineral Oil .....	3
Table 3: National Inventory of Other Stored Wastes .....	3
Table 4: Federal Inventory of In-use and Waste Askarels.....	3
Table 5: Federal Inventory of In-use and Waste Mineral Oil .....	4
Table 6: Federal Inventory of Other Stored Wastes .....	4
Table 7: Non-federal Inventory of In-use and Waste Askarels .....	4
Table 8: Non-federal Inventory of In-use and Waste Mineral Oil .....	4
Table 9: Non-federal Inventory of Other Stored Wastes .....	5
Table 10: PCB Storage Sites (National) .....	6
Table 11: PCB Storage Sites (Federal) .....	7
Table 12: PCB Storage Sites (Non-federal).....	8
Table 13: Summary of National PCB Inventory Data from 1990 to 1998 .....	9

# 1. Background

The *National Inventory of PCBs in Use and PCB Wastes in Storage in Canada* is an annual report summarizing information in the national PCB inventory database that Environment Canada maintains for the Canadian Council of Ministers of the Environment (CCME). This report presents the status of the PCB inventory as of December 31, 1998.

The first national inventory of Canadian PCBs, which was published by the CCME in 1988, provided data on PCB wastes in storage only. Subsequently, in order to improve the system for reporting on PCBs in Canada and to provide a comprehensive inventory, a national database system was established to include data on both PCBs in use and PCB wastes in storage.

The provision of information for the national database is a joint federal–provincial responsibility. Environment Canada supplies data on in-use PCB-containing equipment, federally regulated PCB wastes, and PCB wastes in Prince Edward Island, Saskatchewan, Yukon, and the Northwest Territories. The provincial governments of Newfoundland and Labrador, Nova Scotia, New Brunswick, Quebec, Ontario, Manitoba, Alberta, and British Columbia supply data on PCB wastes in storage in their respective jurisdictions.

Data for the report are obtained from several sources. Federal and provincial PCB waste storage regulations require PCB owners to report to government on the amounts of PCB wastes in storage. Data on the amounts of PCBs in use in electrical equipment come from two sources: voluntary reporting by PCB owners, and inspections of PCB equipment for compliance with the federal Chlorobiphenyls Regulations.

The present report gives data for five categories of PCBs, namely:

- in-use askarel,
- waste askarel,
- in-use PCB-contaminated mineral oil,
- waste PCB-contaminated mineral oil, and
- other PCB wastes.

The two askarel categories represent high-concentration PCB liquids. Askarels generally contain between 40% and 80% PCBs and were used in electrical transformers when insulating and fire-resistant liquids were required. Pure PCBs were also used in other types of electrical equipment, such as capacitors and fluorescent light ballasts.

The two mineral oil categories represent liquids containing low concentrations of PCBs. Mineral oil is also used as an insulating fluid in electrical transformers, and some of it has become inadvertently contaminated with PCBs. Generally, the PCB concentration in mineral oil is less than 1000 mg/litre.

The final category, “other PCB wastes,” includes drained PCB transformers, capacitors contaminated with residual PCBs, fluorescent lamp ballasts containing PCB capacitors, and PCB-contaminated soil and other solids (e.g., wood and absorbents).

Most of the in-use and waste askarel and mineral oil in Canada is found in electrical equipment; however, liquid PCB wastes may also be stored in drums or other containers.

In reporting the inventory data, both gross and net weights are used. Net weight refers to the weight of the askarel or mineral oil itself, while gross weight is the total weight of the liquid and the electrical equipment in which it is contained. Other PCB wastes, such as soil, are reported only as gross weights. Both gross and net weights are included in the inventory because when PCB management options are being evaluated, PCB liquids, the various types of PCB equipment, and PCB-contaminated soil may each be managed differently. For example, the entire PCB capacitor may be destroyed, whereas PCB transformers may be cleaned to recycle metal and other components. If askarel is drained from a transformer, the transformer casing and internal components (e.g., wire, wood, and paper) may still represent a PCB waste and, as such, will form part of the PCB waste inventory.

Often the gross weight of electrical equipment is unknown. However, as was outlined in previous inventory reports, the gross weight of the equipment can be estimated if the volume of fluid in the equipment is known. For transformers and other large equipment containing askarel, the gross weight in kilograms is calculated by multiplying the fluid capacity in litres by a factor of 4.5. For askarel-containing capacitors, the comparable factor is 6. PCB-contaminated mineral oil is usually referred to in terms of net weight, because transformers that contain this oil are often reused after being cleaned and retrofilled with clean oil. The net weight of the oil can be calculated assuming a density of 0.9 kg/litre for mineral oil.

The principal components of this inventory report are the national inventory, the federal inventory, and the non-federal inventory. The national inventory represents all PCBs in Canada. The federal inventory includes only those PCBs owned or controlled by federal departments, boards, agencies, and Crown corporations. The non-federal inventory includes only those PCBs owned or controlled by provincial and territorial governments and the private sector. Some highlights from the 1998 inventory report are given in the next section.

## **2. Inventory Highlights**

### **2.1 National Inventory**

As of December 1998, the national inventory of PCBs in use and in storage was as shown in Tables 1–3.

**Table 1: National Inventory of In-use and Waste Askarels**

Item	In-use askarels (net weight, tonnes)	Waste askarels (storage) (gross weight, tonnes)
Transformers	7 717	8 563
Capacitors	1 394	3 805
Other equipment	47	100
Bulk storage	N/A	1 432
Total	9 158	13 900

**Table 2: National Inventory of In-use and Waste Mineral Oil**

Item	In-use mineral oil (net weight, tonnes)	Waste mineral oil (storage) (net weight, tonnes)
Transformers	1 827	331
Capacitors	N/A	N/A
Other equipment	102	3
Bulk storage	N/A	2 108
Total	1 929	2 474

**Table 3: National Inventory of Other Stored Wastes**

Item	Other stored wastes (gross weight, tonnes)
Soil	89 359
Fluorescent light ballasts	1 884
Drained equipment	2 209
Other wastes	2 503
Total	95 955

## 2.2 Federal Inventory

As of December 1998, the federal inventory of PCBs in use and in storage was as shown in Tables 4–6.

**Table 4: Federal Inventory of In-use and Waste Askarels**

Item	In-use askarels (net weight, tonnes)	Waste askarels (storage) (gross weight, tonnes)
Transformers	486	109
Capacitors	26	417
Other equipment	15	10
Bulk storage	N/A	51

Total	527	587
-------	-----	-----

**Table 5: Federal Inventory of In-use and Waste Mineral Oil**

Item	In-use mineral oil (net weight, tonnes)	Waste mineral oil (storage) (net weight, tonnes)
Transformers	118	11
Capacitors	N/A	N/A
Other equipment	2	2
Bulk storage	N/A	4
Total	120	17

**Table 6: Federal Inventory of Other Stored Wastes**

Item	Other stored wastes (gross weight, tonnes)
Soil	21
Fluorescent light ballasts	401
Drained equipment	29
Other wastes	73
Total	524

## 2.3 Non-federal Inventory

As of December 1998, the non-federal inventory of PCBs in use and in storage was as shown in Tables 7–9.

**Table 7: Non-federal Inventory of In-use and Waste Askarels**

Item	In-use askarels (net weight, tonnes)	Waste askarels (storage) (gross weight, tonnes)
Transformers	7 231	8 454
Capacitors	1 368	3 388
Other equipment	32	90
Bulk storage	N/A	1 381
Total	8 631	13 313

**Table 8: Non-federal Inventory of In-use and Waste Mineral Oil**

Item	In-use mineral oil (net weight, tonnes)	Waste mineral oil (storage) (net weight, tonnes)
Transformers	1 709	320
Capacitors	N/A	N/A

Other equipment	101	1
Bulk storage	N/A	2 104
Total	1 809	2 425

**Table 9: Non-federal Inventory of Other Stored Wastes**

Item	Other stored wastes (gross weight, tonnes)
Soil	89 338
Fluorescent light ballasts	1 484
Drained equipment	2 179
Other wastes	2 430
Total	95 431

### **3. PCB Waste Storage Sites**

As of December 1998, there were 2 301 PCB waste storage sites in Canada. Of these, 279 sites were federal and 2 022 were non-federal. The sites are divided into seven categories according to the quantities of wastes stored in them (i.e., from <100 kg to ≥10 000 tonnes) (Tables 10–12).

Detailed information on waste storage sites under provincial or territorial jurisdiction can be obtained from the provincial or territorial environment offices listed in Appendix A. Information on specific sites owned or operated by the federal government can be obtained from the Environment Canada regional or district offices listed in Appendix B.



**Table 10: PCB Storage Sites (National)**

Province		< 100 kg	100 kg to < 1 tonne	1 to <10 tonnes	10 to <100 tonnes	100 to <1000 tonnes	1000 to <10 000 tonnes	≥10 000 tonnes	Total sites Total tonnes
Nfld.	Sites	11	14	15	18	3			61
	Tonnes	0.5	4.2	43.1	560.6	503.2			1 111.6
P.E.I.	Sites	2	3		1				6
	Tonnes	0.1	0.9		70.9				71.9
N.S.	Sites	7	16	11	10		1		45
	Tonnes	0.2	5.8	33.8	251.4		2 457.0		2 748.2
N.B.	Sites	2	3	14	1	1			21
	Tonnes	0.1	1.6	55.6	35.1	195.0			287.4
Que.	Sites	101	116	112	60	8			397
	Tonnes	3.9	45.9	457.2	1 680.3	3 128.9			5 316.2
Ont.	Sites	140	265	313	139	19	2	1	879
	Tonnes	5.2	107.3	1 202.2	3 806.4	5 539.5	12 877.5	64 000.0	87 538.1
Man.	Sites	9	65	39	9	2			124
	Tonnes	0.2	23.3	132.5	344.0	473.2			973.2
Sask.	Sites	30	94	40	3				167
	Tonnes	0.5	34.9	91.2	42.3				168.9
Alta.	Sites	21	27	14	17	4			83
	Tonnes	0.7	10.7	56.0	680.2	2 504.7			3 252.3
B.C.	Sites	123	181	128	47	8	2		489
	Tonnes	4.7	74.5	473.3	1 511.5	1 540.2	7 176.8		10 781.0
Yukon	Sites	13	6	1					20
	Tonnes	0.3	1.2	2.2					3.7
N.W.T.	Sites	1	2	5	1				9
	Tonnes	0.0	1.0	26.2	17.2				44.4
Total	Sites	460	792	692	306	45	5	1	2 301
	Tonnes	16.4	311.3	2 573.3	8 999.9	13 884.7	22 511.3	64 000.0	112 296.9

Note: Totals may not add up due to rounding.

**Table 11: PCB Storage Sites (Federal)**

Province		< 100 kg	100 kg to < 1 tonne	1 to <10 tonnes	10 to <100 tonnes	100 to <1000 tonnes	1000 to <10 000 tonnes	≥10 000 tonnes	Total sites Total tonnes
Nfld.	Sites	1	2	4	1				8
	Tonnes	0.0	0.7	14.6	10.1				25.4
P.E.I.	Sites								0
	Tonnes								0.0
N.S.	Sites	3	5	1	2				11
	Tonnes	0.1	2.1	1.0	38.6				41.8
N.B.	Sites			3					3
	Tonnes			14.4					14.4
Que.	Sites	6	5	5	7				23
	Tonnes	0.1	2.6	20.5	203.0				226.2
Ont.	Sites	8	18	19	5	1			51
	Tonnes	0.2	7.3	67.0	143.8	124.3			342.6
Man.	Sites	1	5	5					11
	Tonnes	0.0	2.3	18.7					21.0
Sask.	Sites	12	65	26					103
	Tonnes	0.0	24.3	42.4					66.7
Alta.	Sites	1	5	4					10
	Tonnes	0.0	2.0	13.2					15.2
B.C.	Sites	26	11	9	4	1			51
	Tonnes	0.5	5.3	31.1	114.3	213.4			364.6
Yukon	Sites	3	1						4
	Tonnes	0.1	0.1						0.2
N.W.T.	Sites	1	2	1					4
	Tonnes	0.0	0.2	9.8					10.0
Total	Sites	62	119	77	19	2	0	0	279
	Tonnes	1.0	46.9	232.7	509.8	337.7	0.0	0.0	1 128.1

Note: Totals may not add up due to rounding.

**Table 12: PCB Storage Sites (Non-federal)**

Province		< 100 kg	100 kg to < 1 tonne	1 to <10 tonnes	10 to <100 tonnes	100 to <1000 tonnes	1000 to <10 000 tonnes	≥10 000 tonnes	Total sites Total tonnes
Nfld.	Sites	10	12	11	17	3			53
	Tonnes	0.5	3.5	28.5	550.5	503.2			1 086.2
P.E.I.	Sites	2	3		1				6
	Tonnes	0.1	0.9		70.9				71.9
N.S.	Sites	4	11	10	8		1		34
	Tonnes	0.1	3.6	32.8	212.9		2 457.0		2 706.4
N.B.	Sites	2	3	11	1	1			18
	Tonnes	0.1	1.6	41.2	35.1	195.0			273.0
Que.	Sites	95	111	107	53	8			374
	Tonnes	3.8	43.3	436.7	1 477.3	3 128.9			5 090.0
Ont.	Sites	132	247	294	134	18	2	1	828
	Tonnes	5.0	100.0	1 135.2	3 662.6	5 415.2	12 877.5	64 000.0	87 195.5
Man.	Sites	8	60	34	9	2			113
	Tonnes	0.2	21.0	113.7	344.0	473.2			952.1
Sask.	Sites	18	29	14	3				64
	Tonnes	0.5	10.6	48.7	42.3				102.1
Alta.	Sites	20	22	10	17	4			73
	Tonnes	0.7	8.7	42.8	680.2	2 504.7			3 237.1
B.C.	Sites	97	170	119	43	7	2		438
	Tonnes	4.2	69.3	442.3	1 397.2	1 326.8	7 176.8		10 416.6
Yukon	Sites	10	5	1					16
	Tonnes	0.2	1.1	2.2					3.5
N.W.T.	Sites		1	3	1				5
	Tonnes		0.8	16.4	17.2				34.4
Total	Sites	398	674	614	287	43	5	1	2 022
	Tonnes	15.4	264.4	2 340.5	8 490.2	13 547.0	22 511.3	64 000.0	111 168.8

Note: Totals may not add up due to rounding.

#### 4. Summary of National PCB Inventory Data from 1990 to 1998

National PCB inventory data from 1990 to 1998 are summarized in Table 13.

**Table 13: Summary of National PCB Inventory Data from 1990 to 1998**

ITEMS IN USE	1990	1991	1992	1993	1994	1995	1996	1997	1998
Askarels in use (net weight, tonnes)	14 450	13 256	12 488	11 505	12 245	10 781	9 732	9 447	9 158
CMO* in use (net weight, tonnes)	N/A	N/A	2 043	2 160	2 233	1 775	1 726	1 899	1 929
<b>Total - In use (net weight, tonnes)</b>	N/A	N/A	<b>14 531</b>	<b>13 665</b>	<b>14 478</b>	<b>12 556</b>	<b>11 458</b>	<b>11 346</b>	<b>11 087</b>

WASTE ITEMS (STORAGE)	1990	1991	1992	1993	1994	1995	1996	1997	1998
Askarel waste (gross weight, tonnes)	11 461	14 543	15 665	15 247	14 710	17 294	13 187	17 706	13 900
CMO* waste (net weight, tonnes)	5 110	4 511	4 362	3 787	3 496	3 423	3 270	2 979	2 442
Other PCB waste (gross weight, tonnes)	113 640	122 876	123 258	107 991	115 300	120 735	118 432	106 567	95 955
<b>Total - Wastes (tonnes)</b>	<b>130 211</b>	<b>141 930</b>	<b>143 285</b>	<b>127 025</b>	<b>133 506</b>	<b>141 452</b>	<b>134 889</b>	<b>127 252</b>	<b>112 297</b>

Waste storage sites (number)	3 089	3 106	3 130	3 216	3 278	2 857	2 823	2 857	2 301
---------------------------------	-------	-------	-------	-------	-------	-------	-------	-------	-------

\* Contaminated mineral oil.

## **Appendix A: Provincial/Territorial Contacts for Information on PCB Inventories**

### *Newfoundland and Labrador*

Toby Matthews  
Manager  
Waste Management/Pollution Prevention Division  
Department of Environment and Labour  
Government of Newfoundland and Labrador  
P.O. Box 8700  
St. Johns, Newfoundland  
A1B 4J6  
Email: [matthews@env.gov.nf.ca](mailto:matthews@env.gov.nf.ca)  
Telephone: (709) 729-5793  
Fax: (709) 729-1930

### *Nova Scotia*

Dan Hiltz  
Manager  
Bedford Regional Office  
Nova Scotia Department of the Environment  
224-1595 Bedford Highway  
Halifax, Nova Scotia  
B4A 3Y4  
Email: [hiltzde@gov.ns.ca](mailto:hiltzde@gov.ns.ca)  
Telephone: (902) 424-3862  
Fax: (902) 424-0597

### *New Brunswick*

Réjean Doiron  
Hazardous Waste Inspector  
Technical Approvals Section  
Assessment Approvals Branch  
New Brunswick Department of the Environment  
P.O. Box 6000  
Fredericton, New Brunswick  
E3B 5H1  
Email: [rejean.doiron@gnb.ca](mailto:rejean.doiron@gnb.ca)  
Telephone: (506) 453-3796  
Fax: (506) 453-2390

*Quebec*

Jean-Marc Jalbert  
Chef de service  
Direction des politiques industrielles  
Ministère de l'Environnement et de la Faune du Québec  
Édifice Marie-Guyart, 9<sup>e</sup> étage (Boîte 71)  
675, boul. René-Lévesque est  
Québec (Québec)  
G1R 5V7  
Email: Jean-Marc.Jalbert@mef.gouv.qc.ca  
Telephone: (418) 521-3950 ext. 4878  
Fax: (418) 644-3386

*Ontario*

Steven Radcliffe  
Waste Management Branch  
Ontario Ministry of the Environment  
135 St. Clair Avenue West, 7th Floor  
Toronto, Ontario  
M4V 1P5  
Email: steven.radcliffe@ene.gov.on.ca  
Telephone: (416) 314-4170  
Fax: (416) 325-4437

*Manitoba*

Don Labossiere  
Supervisor  
Dangerous Goods Section  
Manitoba Environment  
160-123 Main Street  
Winnipeg, Manitoba  
R3C 1A5  
Email: dlabossier@gov.mb.ca  
Telephone: (204) 945-7094  
Fax: (204) 948-2420

*Saskatchewan*

Roger Hodges  
Department of Environment and Resource Management  
Government of Saskatchewan  
3211 Albert Street  
Regina, Saskatchewan  
S4S 5W6  
Email: rhodges@serm.gov.sk.ca  
Telephone: (306) 787-9301  
Fax: (306) 787-0197

*Alberta*

Bob Rippon  
Hazardous Waste Program  
Alberta Environmental Protection  
4th Floor, Oxbridge Place  
9820 106th Street  
Edmonton, Alberta  
T5K 2J6  
Email: bob.rippon@gov.ab.ca  
Telephone: (780) 427-0606  
Fax: (780) 422-4192

*British Columbia*

Kul Bindra  
Pollution Prevention and Remediation Branch  
Ministry of Environment, Lands and Parks  
P.O. Box 9342 Stn Prov Govt  
Victoria, British Columbia  
V8W 9M1  
Email: kul.bindra@gems4.gov.bc.ca  
Telephone: (250) 387-3648  
Fax: (250) 953-3856

Note: To obtain information on PCB inventories for Prince Edward Island, Yukon, and the Northwest Territories, contact the Environment Canada regional office in that province or territory (see Appendix B).

## **Appendix B: Federal Contacts for Information on the PCB Inventories**

### *Newfoundland*

Rick Wadman  
6 Bruce Street  
Donovan's Industrial Complex  
Mount Pearl, Newfoundland  
A1N 4T3  
Email: rick.wadman@ec.gc.ca  
Telephone: (709) 772-4269  
Fax: (709) 772-5097

### *Nova Scotia, New Brunswick, Prince Edward Island*

William Moores  
5th Floor, Queen Square  
45 Alderney Drive  
Halifax, Nova Scotia  
B2Y 2N6  
Email: william.moores@ec.gc.ca  
Telephone: (902) 426-2004  
Fax: (902) 426-3897

### *Quebec*

Louis Blais  
105, rue McGill, 4<sup>e</sup> étage  
Montréal (Québec)  
H2Y 2E7  
Email: louis.blais@ec.gc.ca  
Telephone: (514) 283-7311  
Fax: (514) 496-2087

### *Ontario*

Anthony De Marco  
4905 Dufferin Street  
Downsview, Ontario  
M3H 5T4  
Email: anthony.demarco@ec.gc.ca  
Telephone: (416) 739-5887  
Fax: (416) 739-4903

### *Manitoba*

Shannon Kurbis  
123 Main Street, Suite 150  
Winnipeg, Manitoba  
R3C 4W2  
Email: shannon.kurbis@ec.gc.ca  
Telephone: (204) 983-1906  
Fax: (204) 983-0960



*Saskatchewan*

Larry Skibicki  
2365 Albert Street, 3rd Floor  
Regina, Saskatchewan  
S4P 4K1  
Email: larry.skibicki@ec.gc.ca  
Telephone: (306) 780-7005  
Fax: (306) 780-6466

*Alberta*

Leslie Morris  
Twin Atria No. 2, 2nd Floor  
4999-98th Avenue  
Edmonton, Alberta  
T6B 2X3  
Email: leslie.morris@ec.gc.ca  
Telephone: (780) 951-8742  
Fax: (780) 495-2615

*British Columbia*

Emmanuel Mendoza  
224 West Esplanade  
North Vancouver, British Columbia  
V7M 3H7  
Email: emmanuel.mendoza@ec.gc.ca  
Telephone: (604) 666-2736  
Fax: (604) 666-9059

*Northwest Territories*

Magnus Bourque  
P.O. Box 370  
Yellowknife, Northwest Territories  
X1A 2N3  
Email: magnus.bourque@ec.gc.ca  
Telephone: (867) 669-4729  
Fax: (867) 873-8185

*Yukon*

Steve Arrell  
91782 Alaska Highway  
Whitehorse, Yukon  
Y1A 5L7  
Email: steve.arrell@ec.gc.ca  
Telephone: (867) 667-3470  
Fax: (867) 667-7962