

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

2001 Annual Report

Prepared for

Canadian Council of
Ministers of the Environment

by

Toxics Pollution Prevention Directorate
Environmental Protection Service
Environment Canada

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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). 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). 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

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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, 2001.

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, the Northwest Territories, and Nunavut. 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 2001 inventory report are given in the next section.

2. Inventory Highlights

2.1 National Inventory

As of December 2001, 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	6 890	7 605
Capacitors	1 350	2 167
Other equipment	46	85
Bulk storage	N/A	873
Total	8 286	10 730

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	1 676	250
Capacitors	N/A	N/A
Other equipment	76	22
Bulk storage	N/A	1 449
Total	1 752	1 721

Table 3: National Inventory of Other Stored Wastes

Item	Other stored wastes (gross weight, tonnes)
Soil	87 771
Fluorescent light ballasts	1 824
Drained equipment	1 833
Other wastes	2 191
Total	93 619

2.2 Federal Inventory

As of December 2001, 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	434	81
Capacitors	32	393

Other equipment	14	8
Bulk storage	N/A	26
Total	480	508

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	120	15
Capacitors	N/A	N/A
Other equipment	0	2
Bulk storage	N/A	3
Total	120	20

Table 6: Federal Inventory of Other Stored Wastes

Item	Other stored wastes (gross weight, tonnes)
Soil	144
Fluorescent light ballasts	337
Drained equipment	27
Other wastes	62
Total	570

2.3 Non-federal Inventory

As of December 2001, 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	6 456	7 524
Capacitors	1 318	1 774
Other equipment	32	77
Bulk storage	N/A	847
Total	7 806	10 222

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)
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Transformers	1 556	235
Capacitors	N/A	N/A
Other equipment	76	20
Bulk storage	N/A	1 446
Total	1 632	1 701

Table 9: Non-federal Inventory of Other Stored Wastes

Item	Other stored wastes (gross weight, tonnes)
Soil	87 627
Fluorescent light ballasts	1 487
Drained equipment	1 806
Other wastes	2 129
Total	93 049

3. PCB Waste Storage Sites

As of December 2001, there were 2006 PCB waste storage sites in Canada. Of these, 256 sites were federal and 1750 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	12	15	14	18	3			62
	Tonnes	0.5	4.4	40.4	626.7	503.2			1 175.2
P.E.I.	Sites	1	3			1			5
	Tonnes	0.0	1.0			122.1			123.1
N.S.	Sites	6	14	12	9		1		42
	Tonnes	0.2	4.2	42.2	204.3		2 457.0		2 707.9
N.B.	Sites		3	9					12
	Tonnes		1.2	37.2					38.4
Que.	Sites	100	112	94	43	4			353
	Tonnes	3.7	43.0	403.9	1 326.4	1 407.1			3 184.1
Ont.	Sites	107	209	222	95	15	2	1	651
	Tonnes	3.7	83.4	849.1	2 407.5	4 638.5	12 877.5	64 000.0	84 859.7
Man.	Sites	11	65	35	7	1			119
	Tonnes	0.2	22.8	126.7	186.9	338.7			675.3
Sask.	Sites	26	93	40	3				162
	Tonnes	0.4	34.1	91.2	42.3				168.0
Alta.	Sites	23	14	10	10	4			61
	Tonnes	0.8	5.1	36.4	396.2	1 784.8			2 223.3
B.C.	Sites	116	198	143	46	8	2		513
	Tonnes	4.5	77.3	520.1	1 526.7	1 540.2	7 176.8		10 845.6
Yukon	Sites	12	4	2					18
	Tonnes	0.2	0.8	4.9					5.9
N.W.T.	Sites		3	4	1				8
	Tonnes		1.2	23.1	39.0				63.3
Total	Sites	414	733	585	232	36	5	1	2 006
	Tonnes	14.2	278.5	2 175.2	6 756.0	10 334.6	22 511.3	64 000.0	106 069.8

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	3	3	2				9
	Tonnes	0.0	0.9	11.9	92.4				105.2
P.E.I.	Sites								0
	Tonnes								0.0
N.S.	Sites	1	3	2	1				7
	Tonnes	0.0	0.9	8.1	27.2				36.2
N.B.	Sites			1					1
	Tonnes			5.9					5.9
Que.	Sites	6	6	4	6				22
	Tonnes	0.2	4.0	18.6	191.8				214.6
Ont.	Sites	8	10	13	3	1			35
	Tonnes	0.2	2.8	39.4	89.4	124.3			256.1
Man.	Sites	1	7	5					13
	Tonnes	0.0	3.4	17.2					20.6
Sask.	Sites	12	65	26					103
	Tonnes	0.0	24.3	42.4					66.7
Alta.	Sites	2	4	2					8
	Tonnes	0.1	2.0	3.5					5.6
B.C.	Sites	26	11	9	4	1			51
	Tonnes	0.4	5.2	31.1	90.6	213.4			340.7
Yukon	Sites	3	1						4
	Tonnes	0.1	0.1						0.2
N.W.T.	Sites		1	1	1				3
	Tonnes		0.2	6.8	39.0				46.0
Total	Sites	60	111	66	17	2	0	0	256
	Tonnes	1.0	43.8	184.9	530.4	337.7	0.0	0.0	1 097.8

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	11	12	11	16	3			53
	Tonnes	0.5	3.5	28.5	534.3	503.2			1 070.0
P.E.I.	Sites	1	3			1			5
	Tonnes	0.0	1.0			122.1			123.1
N.S.	Sites	5	11	10	8		1		35
	Tonnes	0.2	3.2	34.1	177.1		2 457.0		2 671.6
N.B.	Sites		3	8					11
	Tonnes		1.2	31.3					32.5
Que.	Sites	94	106	90	37	4			331
	Tonnes	3.5	39.0	385.3	1 134.5	1 407.1			2 969.4
Ont.	Sites	99	199	209	92	14	2	1	616
	Tonnes	3.5	80.6	809.7	2 318.1	4 514.3	12 877.5	64 000.0	84 603.7
Man.	Sites	10	58	30	7	1			106
	Tonnes	0.2	19.4	109.5	186.9	338.7			654.7
Sask.	Sites	14	28	14	3				59
	Tonnes	0.3	9.9	48.7	42.3				101.2
Alta.	Sites	21	10	8	10	4			53
	Tonnes	0.7	3.1	32.9	396.2	1 784.8			2 217.7
B.C.	Sites	90	187	134	42	7	2		462
	Tonnes	4.1	72.1	489.0	1 436.2	1 326.8	7 176.8		10 505.0
Yukon	Sites	9	3	2					14
	Tonnes	0.2	0.7	4.9					5.8
N.W.T.	Sites		2	3					5
	Tonnes		1.0	16.4					17.4
Total	Sites	354	622	519	215	34	5	1	1 750
	Tonnes	13.2	234.7	1 990.3	6 225.6	9 997.0	22 511.3	64 000.0	104 972.1

Note: Totals may not add up due to rounding.

4. Summary of National PCB Inventory Data from 1990 to 2001

National PCB inventory data from 1990 to 2001 are summarized in Table 13.

Table 13: Summary of National PCB Inventory Data from 1990 to 2001

ITEMS IN USE	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Askarels in use (net weight, tonnes)	14 450	13 256	12 488	11 505	12 245	10 781	9 732	9 447	9 158	9 032	8 682	8 286
CMO* in use (net weight, tonnes)	N/A	N/A	2 043	2 160	2 233	1 775	1 726	1 899	1 929	1 915	1 808	1 752
Total - In use (net weight, tonnes)	N/A	N/A	14 531	13 665	14 478	12 556	11 458	11 346	11 087	10 947	10 490	10 038

WASTE ITEMS (STORAGE)	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Askarel waste (gross weight, tonnes)	11 461	14 543	15 665	15 247	14 710	17 294	13 187	17 706	13 900	13 635	12 357	10 730
CMO* waste (net weight, tonnes)	5 110	4 511	4 362	3 787	3 496	3 423	3 270	2 979	2 442	2 474	1 786	1 721
Other PCB waste (gross weight, tonnes)	113 640	122 876	123 258	107 991	115 300	120 735	118 432	106 567	95 955	96 431	94 434	93 619
Total - Wastes (tonnes)	130 211	141 930	143 285	127 025	133 506	141 452	134 889	127 252	112 297	112 540	108 577	106 070

Waste storage sites (number)	3 089	3 106	3 130	3 216	3 278	2 857	2 823	2 857	2 301	2 288	2 090	2 006
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* 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
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
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
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^e 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, the Northwest Territories, and Nunavut, 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^e 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, Nunavut

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