NATIONAL INVENTORY
OF
PCBs IN USE AND PCB WASTES IN STORAGE
IN CANADA

1993 ANNUAL REPORT

PREPARED FOR THE CANADIAN COUNCIL OF MINISTERS OF ENVIRONMENT BY:

HAZARDOUS WASTE MANAGEMENT BRANCH
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The National PCB Inventory comprises more than 110,000 PCB-containing items in use or in storage at more than 6,000 locations across the country. The inventory changes continually as PCBs are removed from service and place in storage or destroyed. New storage sites may be established, or existing sites consolidated or closed. Therefore, discrepancies between the information in this inventory and other PCB inventory information may arise from time to time. These discrepancies should be discussed with the appropriate provincial or federal officials listed in Appendices A or B of this report.

This report has been approved for distribution by the Canadian Council of Ministers of the Environment. Copies may be obtained from the Hazardous Waste Management Branch, Environmental Protection Service, Environment Canada, Ottawa, K1A 0H3. Phone: (819) 953-1712. Fax: (819) 953-0509.

Ce rapport est aussi disponible en français sous le titre "Inventaire national des matières utilisées contenant des BPC et des déchets contenant des BPC en entreposage au Canada, décembre 1993, Rapport sommaire", à l'adresse suivante : Direction de la gestion des déchets, Direction générale de la protection de l'environnement, Environnement Canada, Ottawa, K1A 0H3, Téléphone (819) 953-1712. Fax: (819) 953-0509.

Commercial, manufacturing and processing uses of PCBs were restricted in Canada in 1980. These restrictions brought an end to the manufacture of new PCB equipment and to the refilling of existing PCB equipment. The result is that the use of PCB equipment has diminished through attrition. The PCBs removed from service were either destroyed or stored for future destruction.

Despite reductions in PCB use, increases were noted in the inventory of PCBs in use in the early 1980s. These increases are attributed to improvements in the inventory system, such as the inclusion of equipment that was then in service but not identified to regulatory authorities. Although PCB–containing equipment continued to come out of service between 1984 and 1986, the inventories for those years showed that the inclusion of new items in the in–use inventory outweighed the quantities coming out of service. The inventory for askarel in use continued to rise. By 1987, however, the quantities coming out of service were greater than additions to the inventory. Consequently, the quantity of askarel in use (net weight) decreased to 18,570 tonnes. By 1991, the quantity of askarel in use had decreased to 13, 255 tonnes. The downward trend continued in 1993 to 11,505 tonnes.

As of December 1993, there were 3,216 PCB waste storage sites in Canada. Of these, 495 sites were federal and 2,721 were non–federal sites.

NATIONAL INVENTORY HIGHLIGHTS

As of December 1993, the national inventory included:

- 11,505 tonnes (net weight) of in–use askarel (excluding fluorescent lamp ballasts) of which 9,649 tonnes were in transformers, 1,697 tonnes in capacitors, and 159 tonnes in other equipment (Figure N–1 and Table N–1). The total represents a decrease of 983 tonnes from 12,488 tonnes in December 1992.

- 15,247 tonnes (gross weight) of waste askarel and askarel equipment of which 6,131 tonnes were in transformers, 6,415 tonnes capacitors, 2,576 tonnes in bulk storage, and 125 tonnes of other equipment (Figure N–7 and Table N–4). The total represents a decrease of 418 tonnes from 15,665 tonnes in December 1992.

- 2,161 tonnes (net weight) of in–use PCB–contaminated mineral oil of which 2,083 tonnes were in transformers, and 77 tonnes in other equipment (Figure N–4 and Table N–2). The total represents a decrease of 41 tonnes from 2,120 tonnes in December 1992.[1]

- 3,787 tonnes (net weight) of waste PCB–contaminated mineral oil of which 418 tonnes were in transformers, 3,364 tonnes in bulk storage and 5 tonnes in other equipment (Table N–5). This total represents a decrease of 575 tonnes from 4,362 tonnes in December 1992.

- 107,991 tonnes (gross weight) of other PCB wastes consisting of 95,718 tonnes of soil, 6,328 tonnes of fluorescent lamp ballasts, 1,581 tonnes of drained equipment, and 4,364 tonnes of other wastes (Table N–6). This represents a decrease of 15, 268 tonnes from 123,259 tonnes in December 1992.

[1]Figures are rounded to the nearest whole number. Actual quantities are represented in the tables referenced.

FEDERAL INVENTORY HIGHLIGHTS

As of December 1993 the federal inventory included:

- 667 tonnes (net weight) of in–use askarel (excluding fluorescent lamp ballasts) of which 585 tonnes were in transformers, 45 tonnes in capacitors, and 37 tonnes are in other miscellaneous equipment (Figure F–1). This total represents a decrease of 63 tonnes from 730 tonnes in December 1992.

- 1,482 tonnes (gross weight) of waste askarel and askarel equipment (Table F–4). This total represents an increase of 223 tonnes from 1,259 tonnes in December 1992.

- 126 tonnes (net weight) of in–use PCB–contaminated mineral oil of which 124 tonnes were in transformers, and 2 tonnes in other equipment (Table F–2). This total represents a decrease of one tonne from 127 tonnes in December 1992.

- 157 tonnes (net weight) of waste PCB–contaminated mineral oil (Table F–5). This total represents an increase of 37 tonnes from 120 tonnes in December 1992.

- 3,724 tonnes (gross weight) of other PCB wastes (Table F–6). This total represents an increase of 126 tonnes from 3,598 tonnes in December 1992.

NON-FEDERAL INVENTORY HIGHLIGHTS

As of December 1993, the non–federal inventory included:

- 10,838 tonnes (net weight) of in–use askarel (excluding fluorescent lamp ballasts) of which 9,064 tonnes were in transformers, 1,652 tonnes in capacitors, and 122 tonnes in other miscellaneous equipment (Figure NF–1). This total represents a decrease of 920 tonnes from 11,758 tonnes in December 1992.

- 13,765 tonnes (gross weight) of waste askarel and askarel equipment (Table NF–4). This total represents a decrease of 641 tonnes from 14,406 tonnes in December 1992.

- 2,034 tonnes (net weight) of in–use PCB–contaminated mineral oil of which 1,959 tonnes were in transformers, and 75 tonnes in other equipment (Table NF–2). This total represents an increase of 41 tonnes from 1,993 tonnes in December 1992.

- 3,631 tonnes (net weight) of waste PCB–contaminated mineral oil (Table NF–5). This total represents a decrease of 611 tonnes from 4,242 tonnes reported in December 1992.

- 104,266 tonnes (gross weight) of other PCB wastes (Table NF–6). This total represents a decrease of 15,394 tonnes from the 119,660 tonnes reported in December 1992.

PROGRESS IN PCB DESTRUCTION

Between December 1992 and December 1993, 2,884 tonnes were destroyed by incineration at the Alberta Special Waste Management Centre, Swan Hills, Alberta (Alberta Ministry of Environment).

Note: 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.

Summary 1993

The table below summarizes the various PCB categories in tonnes:

Category	National	Federal	Non– Federal
Askarel in-use (net weight)	11,505	667	10,838
Askarel in-use (grossweight)	36,212	2,046	34,166
Mineral oil in-use (net weight)	2,160	126	2,034
Askarel waste (gross weight)	15,247	1,482	13,765
Askarel Waste (net weight)	6,266	520	5,745
Mineral oil waste (net weight)	3,787	157	3,631
Other PCB wastes (gross weight)	107,991	3,729	104,266

BACKGROUND

The "National Inventory PCBs In Use and PCB Wastes 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 31st, 1993, and includes information on the amounts of PCBs destroyed in Canada since 1988.

The first national inventory of Canadian PCBs, published by the CCME in 1988, only gave data on PCB wastes in storage. 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.

There is a joint federal-provincial responsibility to provide data for the national database. Environment Canada provides the data on in–use PCB–containing equipment, federally–regulated PCB wastes, and PCB wastes in Prince Edward Island, Saskatchewan and the Yukon and Northwest Territories. The provincial governments of Newfoundland, 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 originate 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. Information on the amounts of PCBs destroyed was obtained from published reports on PCB destruction projects in Canada, and from the owners and operators of commercial PCB treatment and destruction systems.

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 containing from 40 to 80% PCBs were used in electrical transformers where insulating and fire-resistant liquids were required. Pure PCBs were also used in other types of electrical equipment such as capacitors and fluorescent lamp ballasts.

The two mineral oil categories represent low concentrations of PCB liquids. Mineral oil is also used as an insulating fluid in some electrical transformers, some of which have been inadvertently contaminated with PCBs. Generally the PCB concentration in mineral oil is below 1000 ppm.

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 are found in electrical equipment, however, liquid PCB wastes may also be stored in drums or other containers.

The inventory identifies gross and net weights for the askarel and mineral oil categories. Net weights refer to the weight of the askarel or mineral oil, while gross weights represent 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. The inventory includes both gross and net weights because PCB liquids, the various types of PCB equipment, and PCB–contaminated soil may each be managed differently when PCB management options are being evaluated. 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, the gross weight can be estimated if the volume of fluid in the equipment is known.

Gross weights of electrical equipment can be estimated by multiplying the fluid capacity in litres by a factor of either 4.5 or 6, depending on the type of equipment. These factors were derived as follows:

- Transformers and other large equipment. The average density of askarel is 1.5 kg/litre. The average weight ratio of transformer casing to askarel is 2:1. Therefore, the factor is 3 x 1.5 þ 4.5.

- Capacitors and other small equipment. The average weight ratio for capacitors is slightly higher than for transformers; the ratio used in this report is 3:1. Therefore, the factor is 4 x 1.5 þ 6.0.

- PCB–contaminated mineral oil is most often referred to in terms of net weight because the transformers that contain this oil are often reused after being cleaned and retro–filled with clean oil. The gross weight of a mineral oil transformer can be calculated assuming a density of 0.9 kg/litre for mineral oil.

The principal sections 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.

Note: Because 1993 data were not available for Newfoundland, 1992 data were used in this report. The province does not anticipate significant change in its 1993 PCB Inventory.

IN–USE ASKAREL

BY NET WEIGHT

In December 1993, there were 11,505 tonnes of in–use askarel in Canada: 9,649 tonnes (83.9%) in transformers; 1,697 tonnes (14.8%) in capacitors; and 159 tonnes (1.4%) in other miscellaneous electrical and mechanical equipment (Figure N–1). The amount of in–use askarel for 1993 represents a decrease of 983 tonnes (7.9%) from the 1992 inventory of 12,488 tonnes.

Quantities of in–use askarel in all types of equipment showed a noticeable decrease as transformers, capacitors, and other askarel equipment came out of service. The quantity of askarel in transformers decreased by 765 tonnes (7.3%) from 10,414 tonnes in December 1992 to 9,649 tonnes in December 1993. That in capacitors decreased by 212 tonnes (11%) from 1,909 tonnes in December 1992 to 1,697 tonnes in December 1993. In–use askarel in other equipment decreased by 6 tonnes (3.6%) from 165 tonnes in December 1992 to 159 tonnes in December 1993.

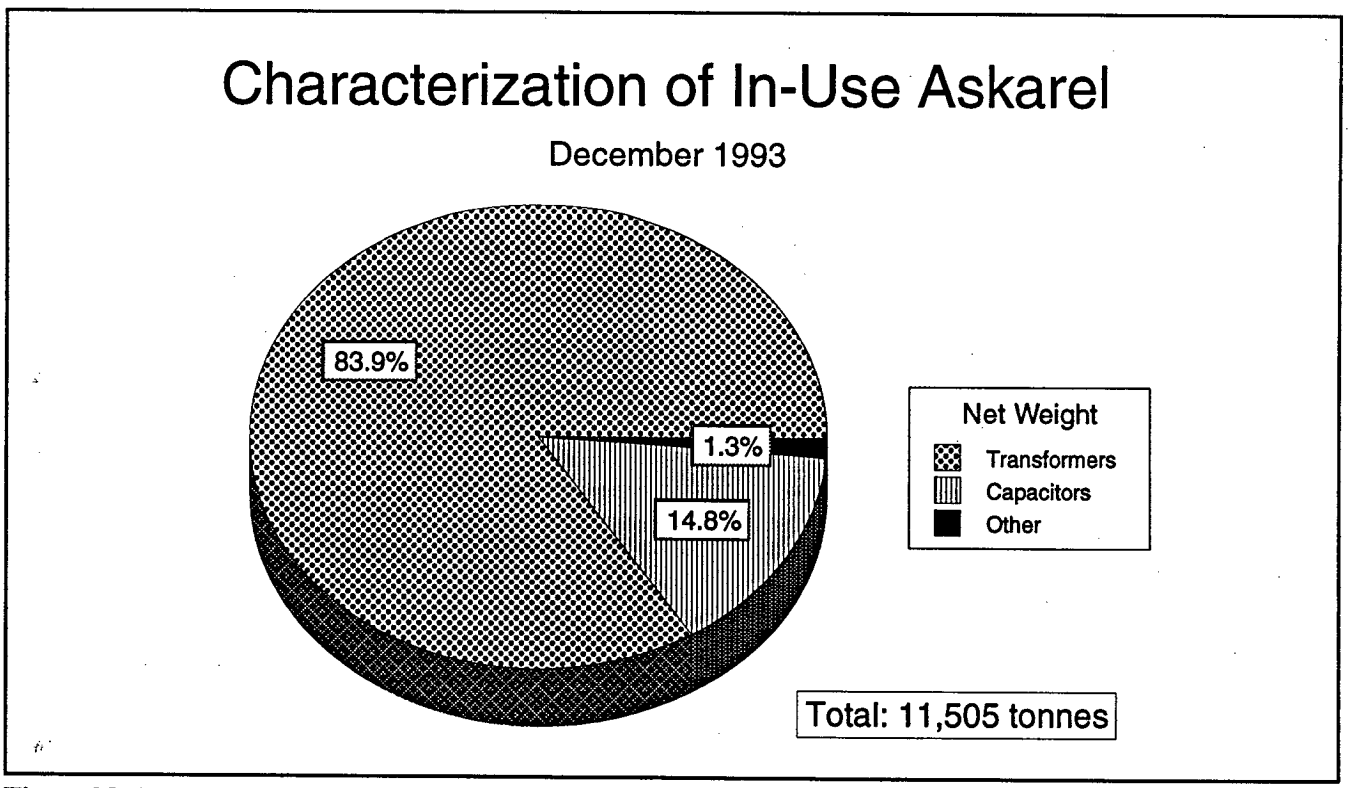

Figure N–1: National In–Use Askarel Net Weight in Tonnes

The trend in the total quantity of in–use askarel shows a gradual increase from 1984 to 1986 (from 17,400 to 18,820 tonnes; Figure N–2 below). Since 1987, however, the trend shows a gradual decrease in the national totals of in–use askarel (18,820 tonnes in 1986 to 11,505 tonnes December 1993).[2] Figure N–3A shows the distribution of in–use askarel by province and territory. Figure N–3B indicates the changes noted in the net weights nationwide of in–use askarel.

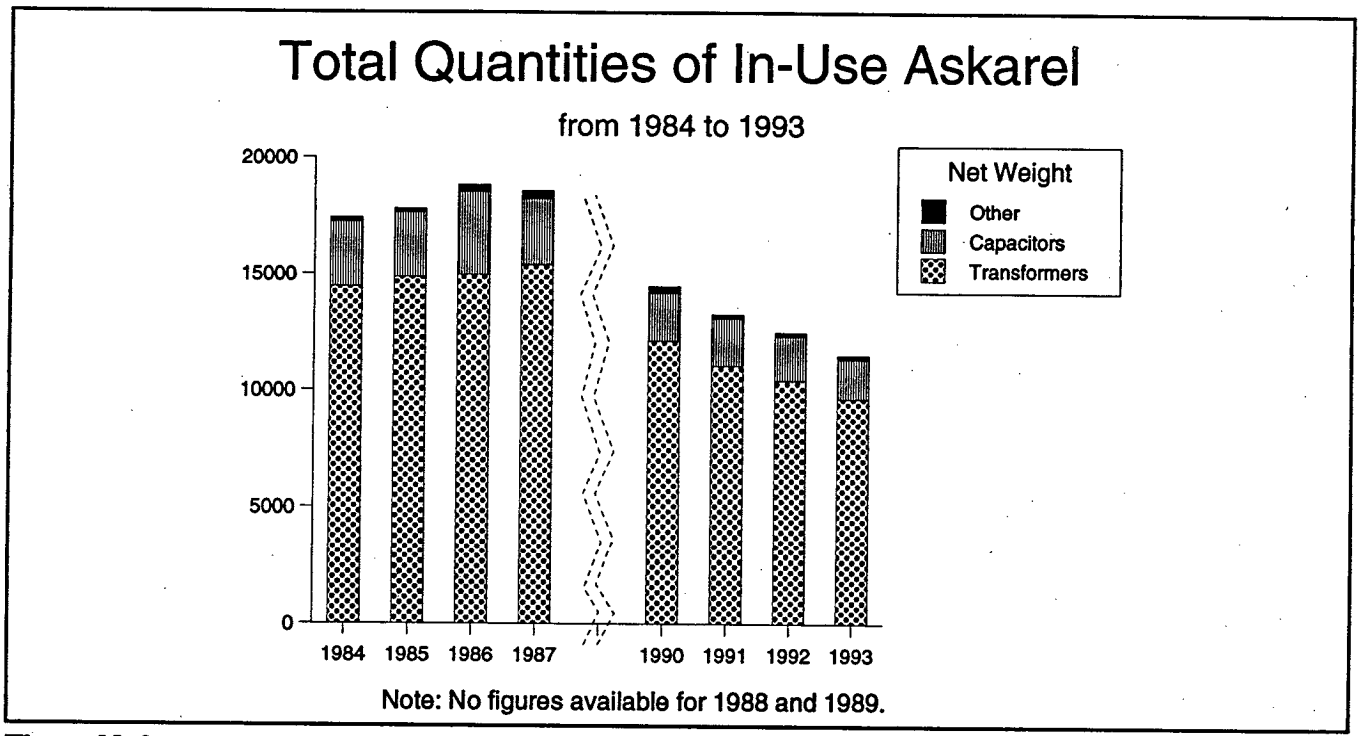

Figure N–2: Total In–Use Askarel 1984–1993 (tonnes net weight)

ITEM	1984	1985	1986	1987		1990	1991	1992	1993
Transformers	14,430	14,850	14,960	15,380		12,110	11,051	10,414	9,649
Capacitors	2,810	2,790	3,560	2,860		2,070	2,020	1,909	1,697
Other	160	150	300	330		270	185	165	159
Total	17,400	17,790	18,820	18,570		14,450	13,256	12,488	11,505

Table N–1: Total In–Use Askarel 1984 – 1993 (tonnes net weight)

[2] Data for 1988 and 1989 were not available. It is assumed that the downward trend which began in 1987 continued in 1988 and 1989. This assumption is based on the fact that the trend continued in 1990 through 1993.

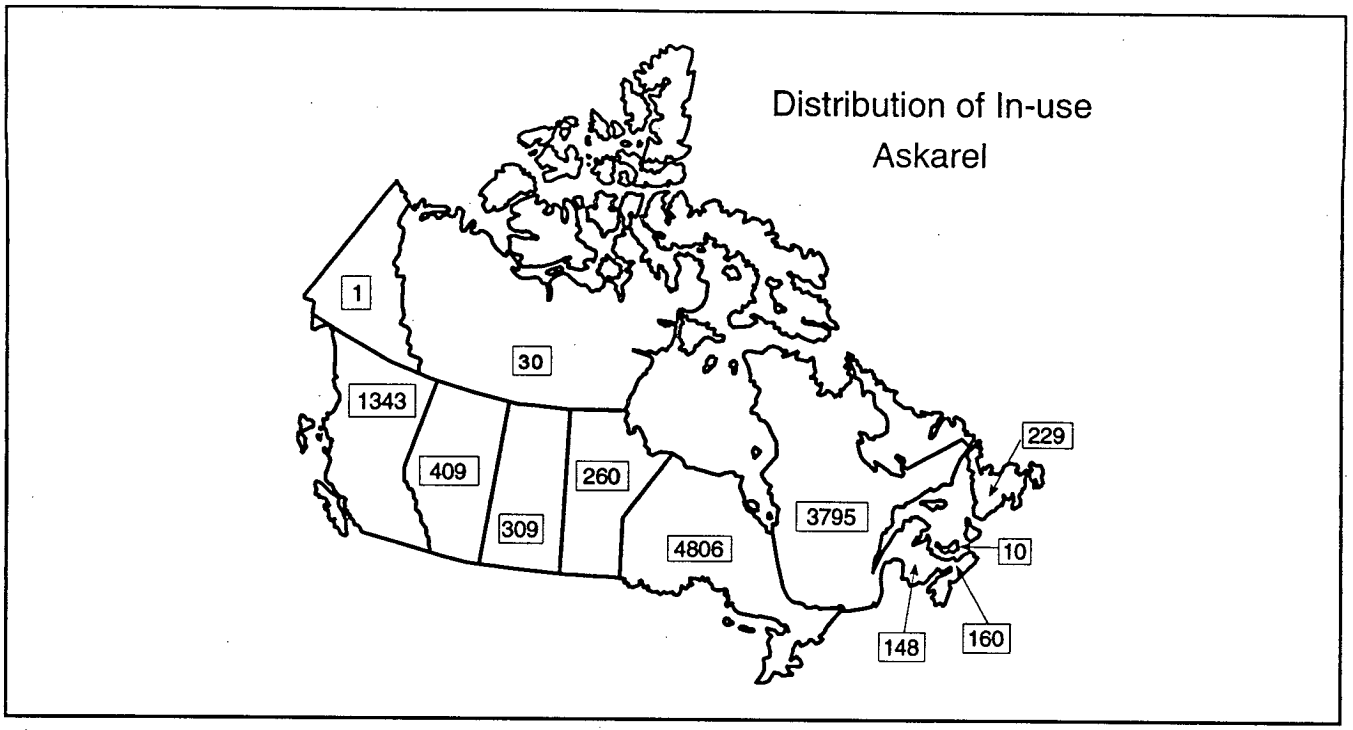

Figure N–3A: Distribution of In–Use Askarel (tonnes net weight)

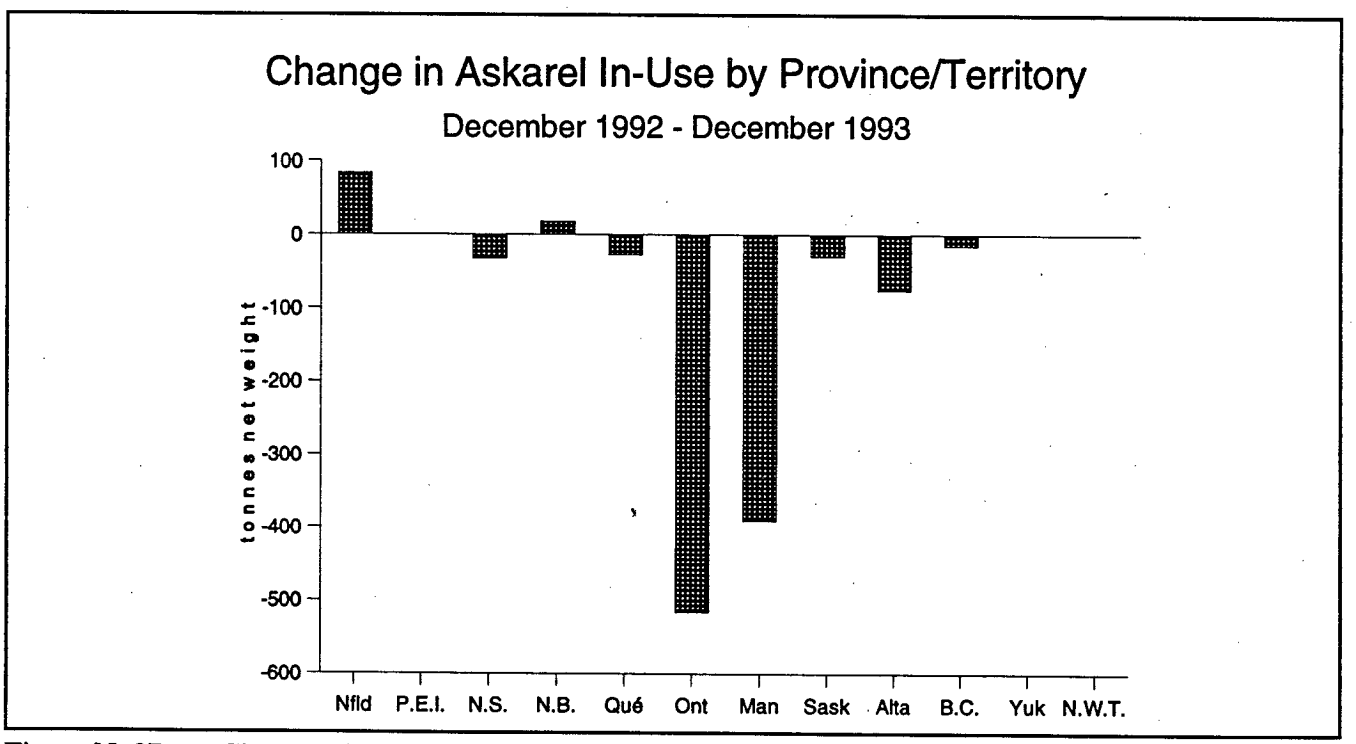

Figure N–3B: Change of In–Use Askarel 1991 to 1993

IN–USE MINERAL OIL

This annual report marks the second year that figures for in–use PCB–contaminated mineral oil in the inventory are reported. In–use mineral oil reports show that most of the contaminated mineral oil, 2,083.5 tonnes (96.4%), is contained in transformers while the remainder (77.5 tonnes, 4%) is contained in other equipment. Distribution of in–use mineral oil is detailed in Figure N–4 and Table N–2 below.

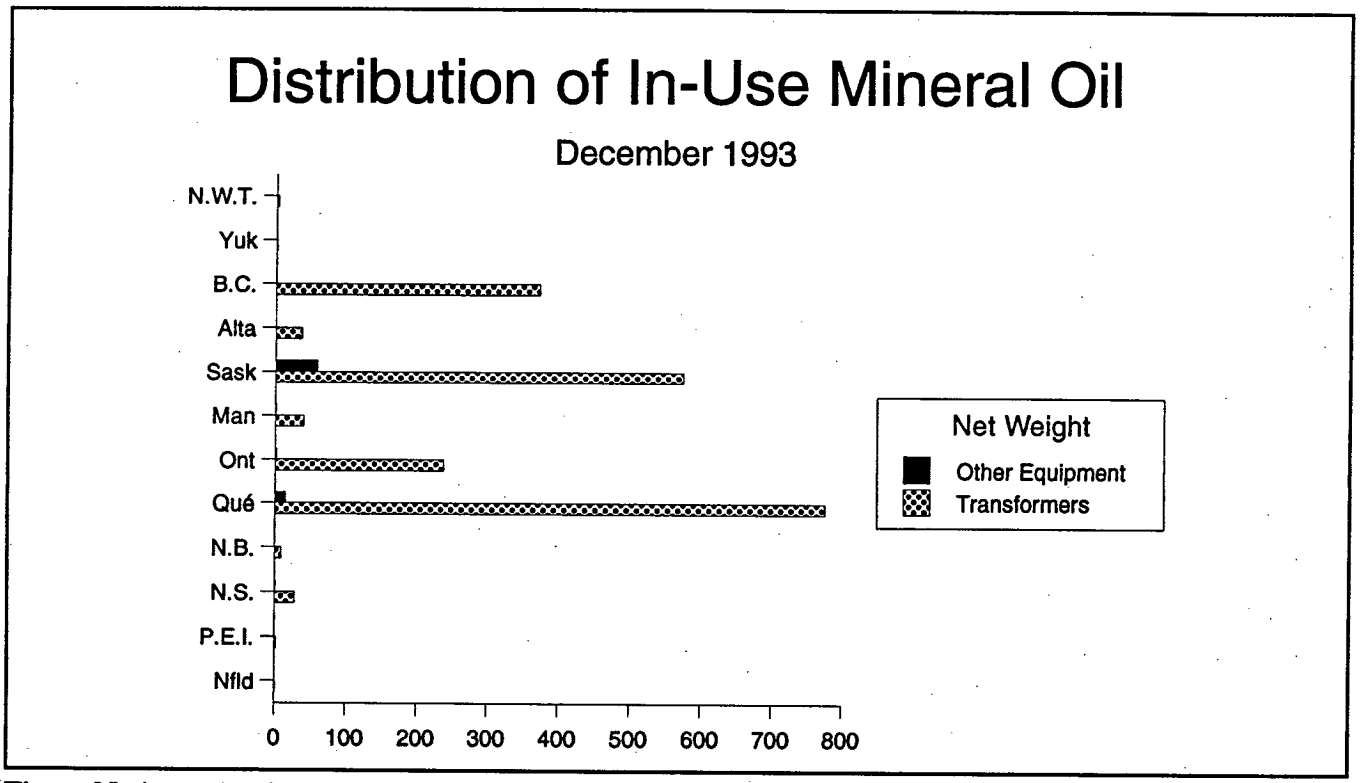

Figure N–4: National Distribution of In–Use Mineral Oil (net tonnes)

ITEM	NWT	Yuk	BC	Alta	Sask	Man	Ont	Que	NB	NS	PEI	Nfld
Transformers	3	1	373	37	575	40	238	776	9	28	2	1
Other equipment	0	0	0	0	59	1	2	15	0	1	0	0
Total	3	1	373	37	634	41	240	791	9.	29	2	1

Table N–2: National Distribution of In–Use Mineral Oil (tonnes net weight)

TOTAL PCB WASTES

In December 1993 there were 127,025 tonnes (gross weight) of PCB wastes in Canada. 15,247 tonnes (12.0%) of these wastes are bulk askarel and askarel–containing equipment; 6,328 tonnes (5.0%) are fluorescent lamp ballasts; 3,787 tonnes (3.0%) are PCB–contaminated mineral oil; 1,581 tonnes (1.2%) are drained askarel equipment; 95,718 tonnes (75.4%) are PCB–contaminated soils; and 4,364 tonnes (3.4%) are miscellaneous PCB–contaminated wastes (Figure N–5).

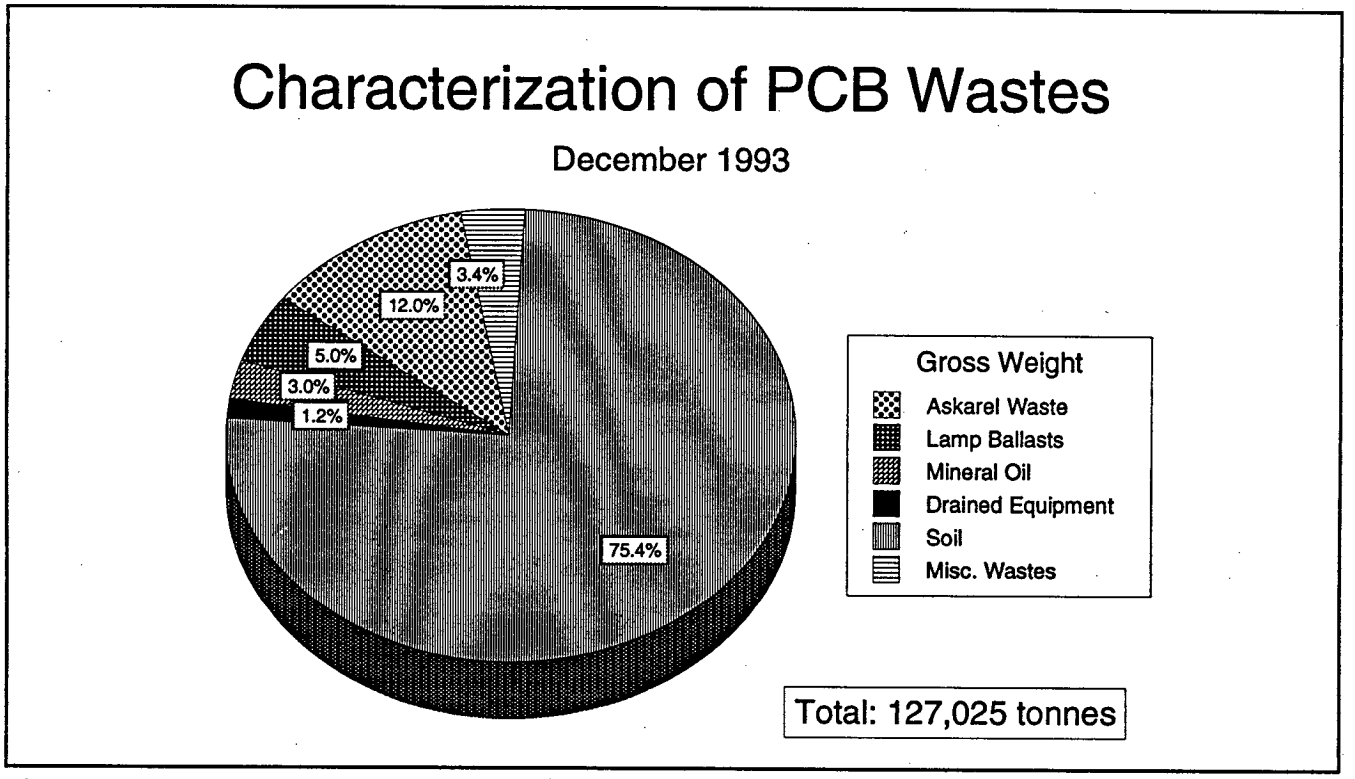

Figure N–5: Characterization of National PCB Wastes (gross weight)

The 127,025 tonnes of PCB wastes reported at the end of December 1993 represent a decrease of 16,265 tonnes from the 143,285 tonnes reported in December 1992. This decrease has four main components:

(1) The gross weight of contaminated soil decreased by 5,423 tonnes (5.4%) as more contaminated soil was cleaned.

(2) The gross weight of fluorescent lamp ballasts decreased by 3,983 tonnes (38.6%) to 6,328 tonnes.

(3) Contaminated mineral oil (CMO) waste decreased by 575 tonnes (13.2%) to 3,787 tonnes.

(4) The gross weight of bulk askarel and askarel–containing equipment decreased by 416 tonnes (2.7%) to 15,247 tonnes.

BY NET WEIGHT

In December 1993, there were approximately 6,266 tonnes of waste askarel in storage. Most of this is in bulk storage (2,576 tonnes, 41.1%). Transformers contain 2,044 tonnes, (32.6%). Another 1,604 tonnes (25.6%) are in capacitors, and a further 42 tonnes (less than 1%) are in miscellaneous other types of electrical and mechanical equipment.

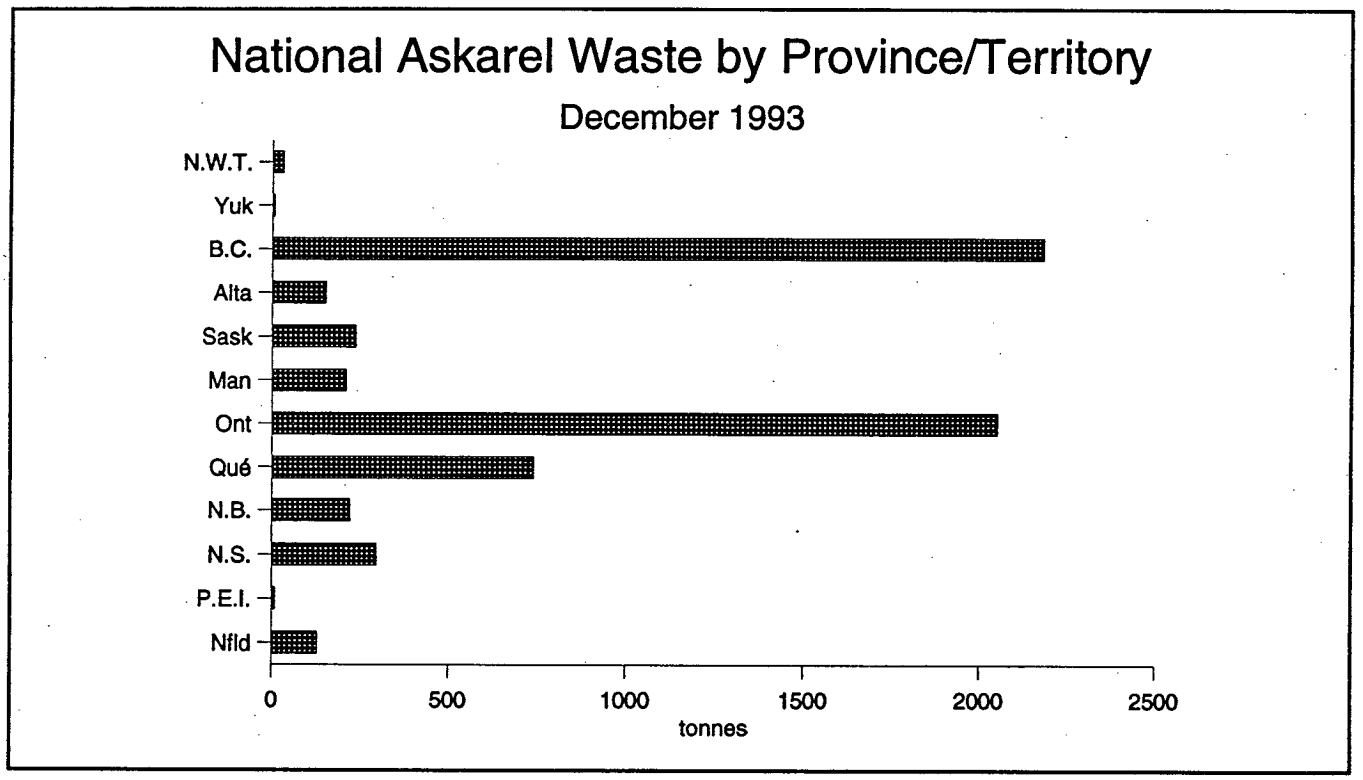

Figure N–6: National Askarel Waste by Province/Territory (net weight tonnes)

Net weight	NWT	Yuk	BC	Alta	Sask	Man	Ont	Que	NB	NS	PEI	Nfld
Inventory	29.4	5.3	2,183.6	151.2	236.8	210.0	2,052.7	742.4	221	295.8	8.9	128.3
Change from December 1992	.4	.3	1,129.5	-375.8	4.8	-31.0	-280.3	84.4	26	39.8	7.9	34.3

Table N–3: Askarel Waste by Province/Territory (net weight tonnes)

BY GROSS WEIGHT

There were 15,247 tonnes of askarel and askarel equipment stored for disposal. Transformers and capacitors constitute the majority, 6,131 tonnes (40.2%) and 6,415 tonnes (42.1%) respectively. 2,576 tonnes (16.9%) are in bulk storage and 125 tonnes (0.8%) are classified as other askarel wastes. The gross weight of askarel in storage decreased by 417 tonnes (2.7%) from December 1992.

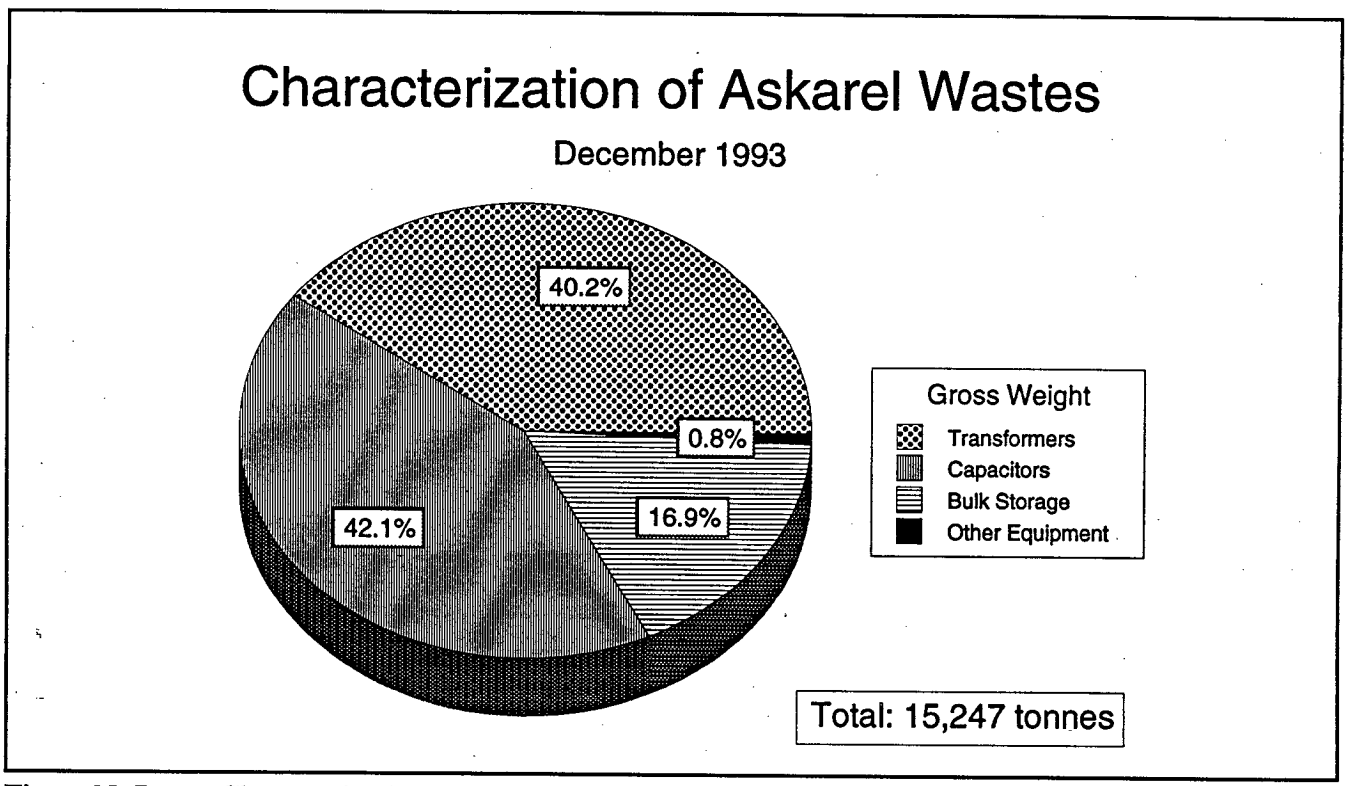

Figure N–7: Characterization of National Askarel Waste (gross weight)

Item	1993 Inventory	%	1992 Inventory	%	+/- (tonnes)	% (change)
Transformers	6,131	40.2	5,693	36.3	438.00	+ 7.7
Capacitors	6,415	42.1	7,618	48.6	-1,203.00	-15.8
Bulk storage	2,576	16.9	2,236	14.3	340.00	+15.2
Other equipment	125	0.8	117	0.7	8.00	+ 6.8
Total	15,247	100	15,664	100.0	-417	- 2.7

Table N–4: Characterization of Askarel Waste (gross weight)

MINERAL OIL WASTE

BY NET WEIGHT

In December 1993 there were approximately 3,787 tonnes of waste PCB–contaminated mineral oil in storage. 3,364 tonnes (88.8%) are in bulk storage awaiting treatment. Over the past year, the inventory of contaminated mineral oil decreased by 575 tonnes from 4,362 tonnes to 3,787 tonnes.

Category	NWT	Yuk	BC	Alta	Sask	Man	Ont	Que	NB	NS	PEI	Nfld	Total
Trans-formers	0.4	0.4	58.4	0.5	1.4	8.9	207.3	117.6	8.8	13.5	0.8	0.0	418
Other Equip-ment	0.0	0.0	0.0	0.0	0.0	0.0	5.4	0.3	0.0	0.2	0.0	0.0	5
Bulk Storage	35.0	0.2	360.3	122.6	13.0	2.1	2,581.3	165.4	48.1	4.3	22.6	9.1	3,364
Total	35.4	0.6	418.7	123.1	14.4	11.0	2,794.0	283.3	56.9	18.0	23.4	9.1	3,787

Table N–5: National PCB–Contaminated Mineral Oil Waste (net weight tonnes)

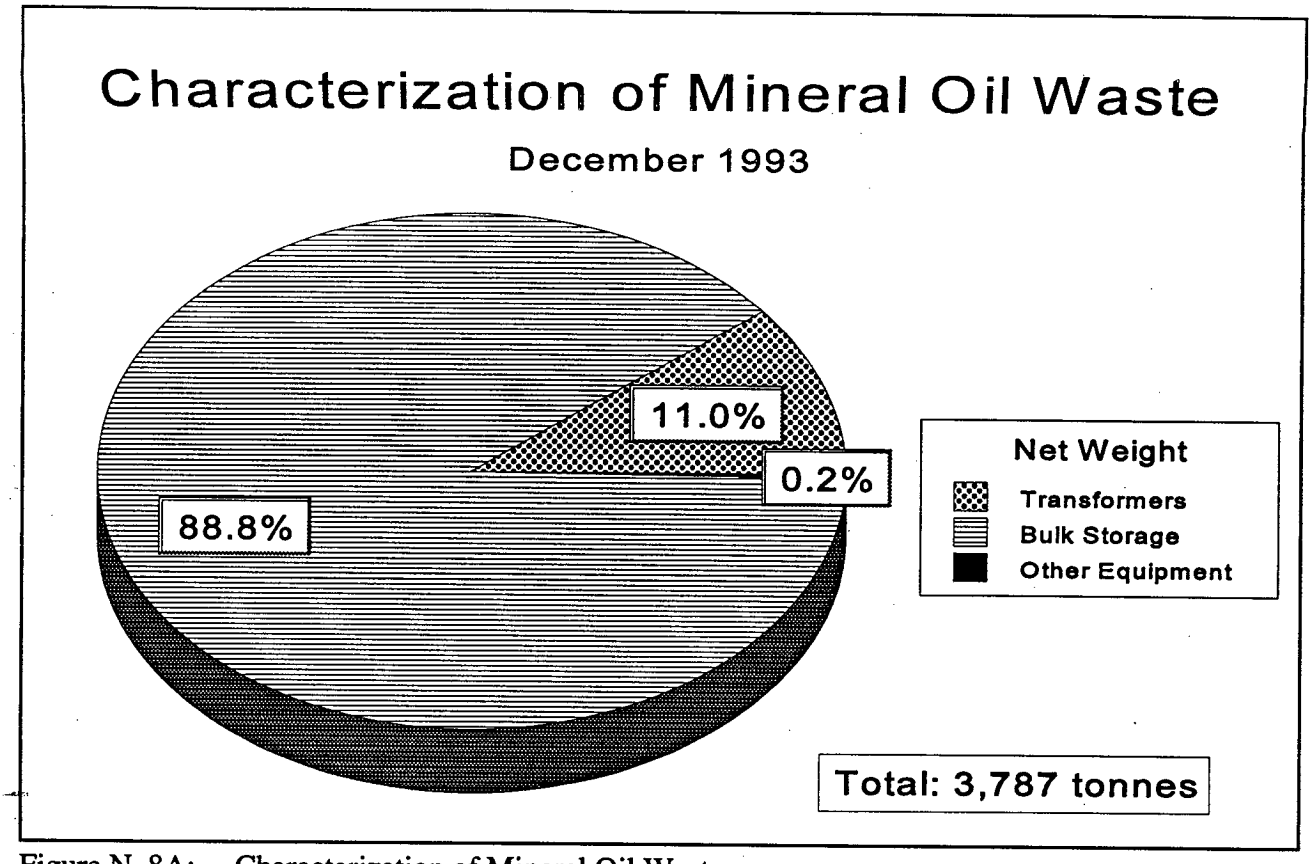

Figure N–8A: Characterization of Mineral Oil Waste

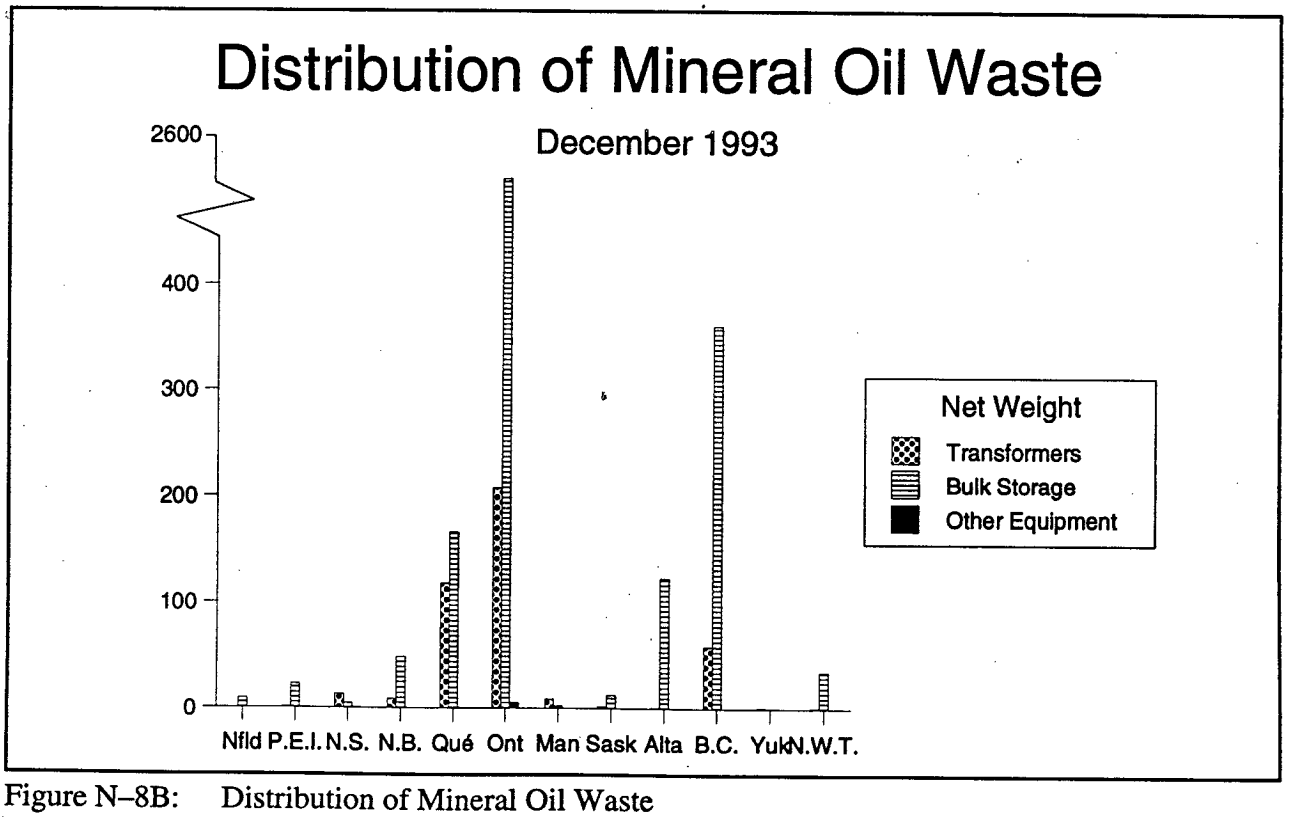

Figure N–8B: Distribution of Mineral Oil Waste

OTHER PCB WASTES

In addition to askarel stored in bulk containers and askarel–containing equipment, there are a variety of other PCB–contaminated wastes in storage. These wastes represent the majority of total PCB wastes, 85% (107,991 tonnes). As illustrated in Figure N–9 and Table N–6 this category includes such materials as:

- Soil (95,718 tonnes, 88.6%)
- PCB–containing fluorescent lamp ballasts (6,328 tonnes, 5.9%)
- Drained transformers and other equipment (1,581 tonnes, 1.5%)
- Miscellaneous wastes, such as absorbents and clothing used in spill clean–up, and other debris (4,364 tonnes, 4%).

The total quantity of other PCB–contaminated wastes decreased by 15,267 tonnes (12.4%) from the 123,258 tonnes reported at the end of December 1992. The main reason for the change in the quantity of PCB–contaminated wastes in the inventory was a decrease in the quantity of contaminated soil by 5,423 tonnes (5.4%). In addition, there was a decrease of 3,983 tonnes (38.6%) in the quantity of fluorescent lamp ballasts in storage.

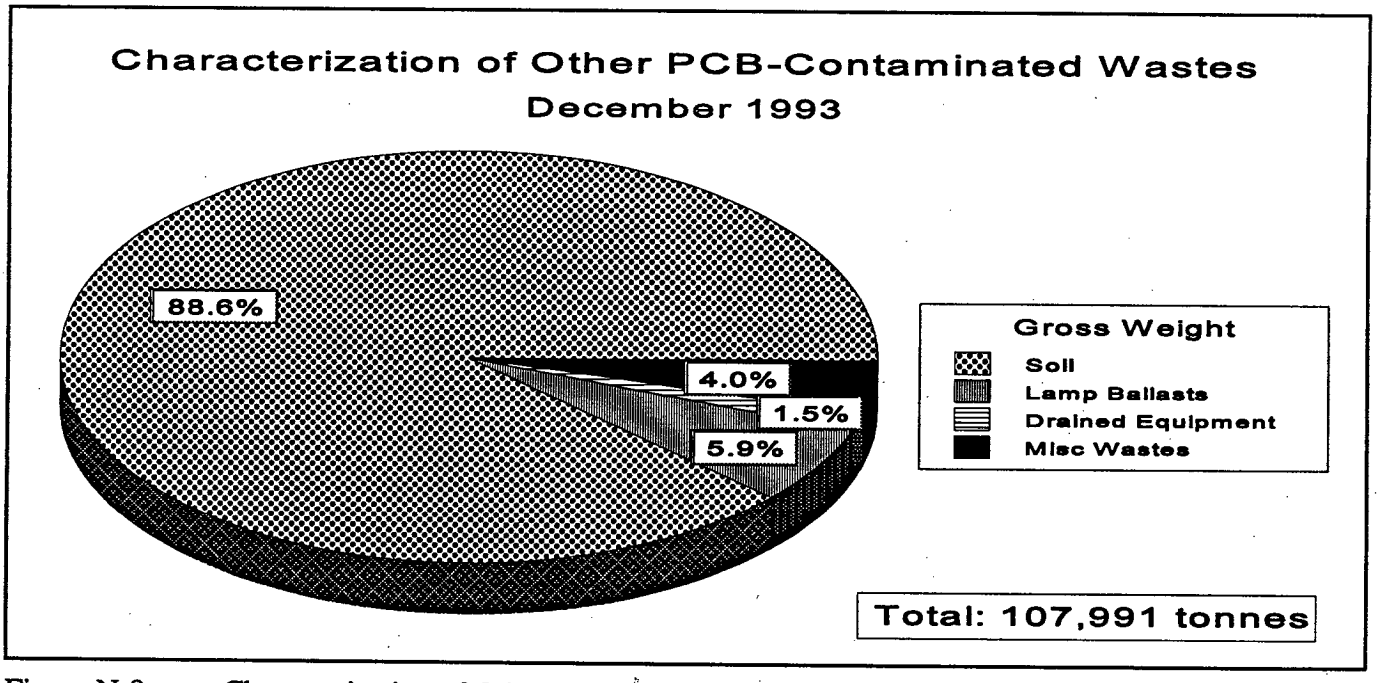

Figure N-9: Characterisation of Other PCB-Contaminated Wastes

Item	1993	%	1992	%	+/- (tonnes)	% Change
Soil	95,718	88.6	101,141	82.1	-5,423	-5.4
Fluorescent lamp Ballasts	6,329	5.9	10,311	8.4	-3,982	-38.6
Drained Equipment	1,581	1.5	2,540	2.1	-959	-37.8
Misc Wastes	4,363	4	9,267	7.5	-4,904	-52.9
Total	107,991	100	123,258	100	-15,267	-12.4

Table N–6: Other PCB–Contaminated Wastes (tonnes gross weight)

PCB WASTE STORAGE SITES

In December 1993, there were 3,216 PCB waste storage sites in Canada, an increase of 86 sites over the 3,130 sites identified in December 1992.

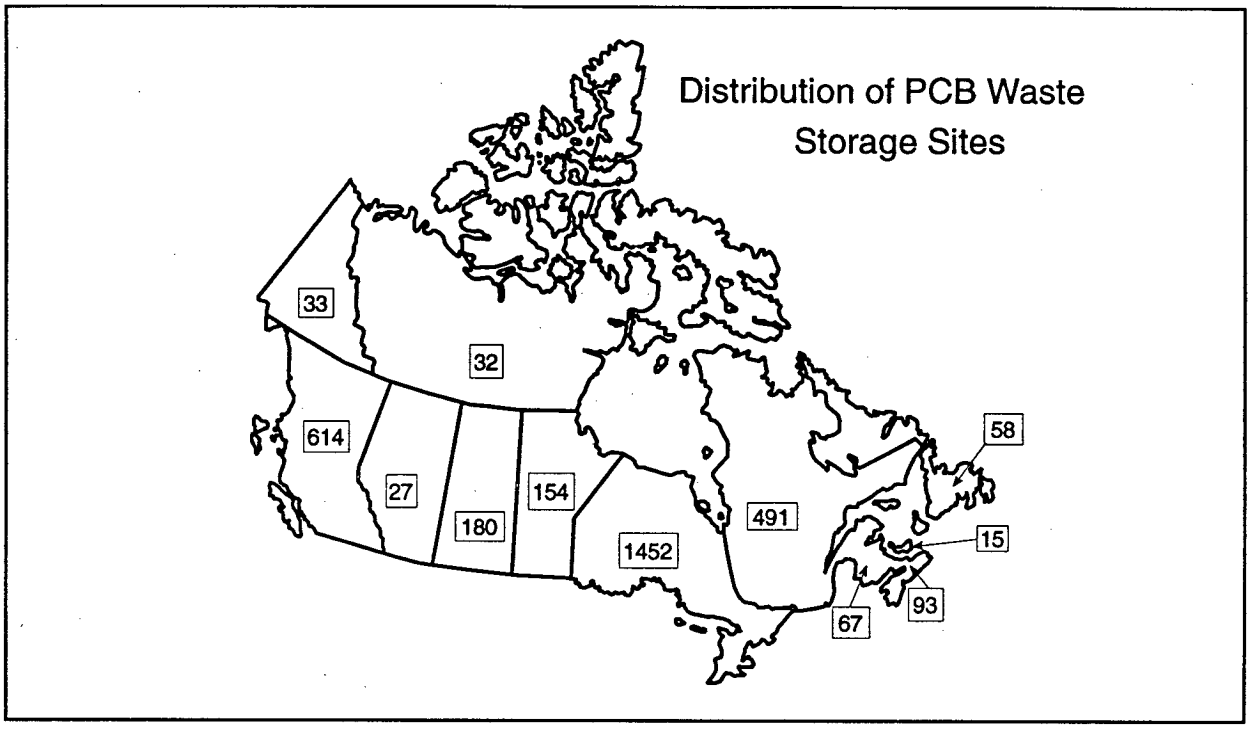

Figure N–10: PCB Waste Storage Sites December 1993

An analysis of PCB waste storage sites by the quantity of PCB wastes stored is presented in Figure N–11 and Table N–7. The sites are divided into the following categories:

- less than 100 kg
- greater than 100 kg to 1 tonne
- greater than 1 to 10 tonnes
- greater than 10 to 100 tonnes
- greater than 100 to 1,000 tonnes
- greater than 1,000 to 10,000 tonnes
- greater than 10,000 tonnes

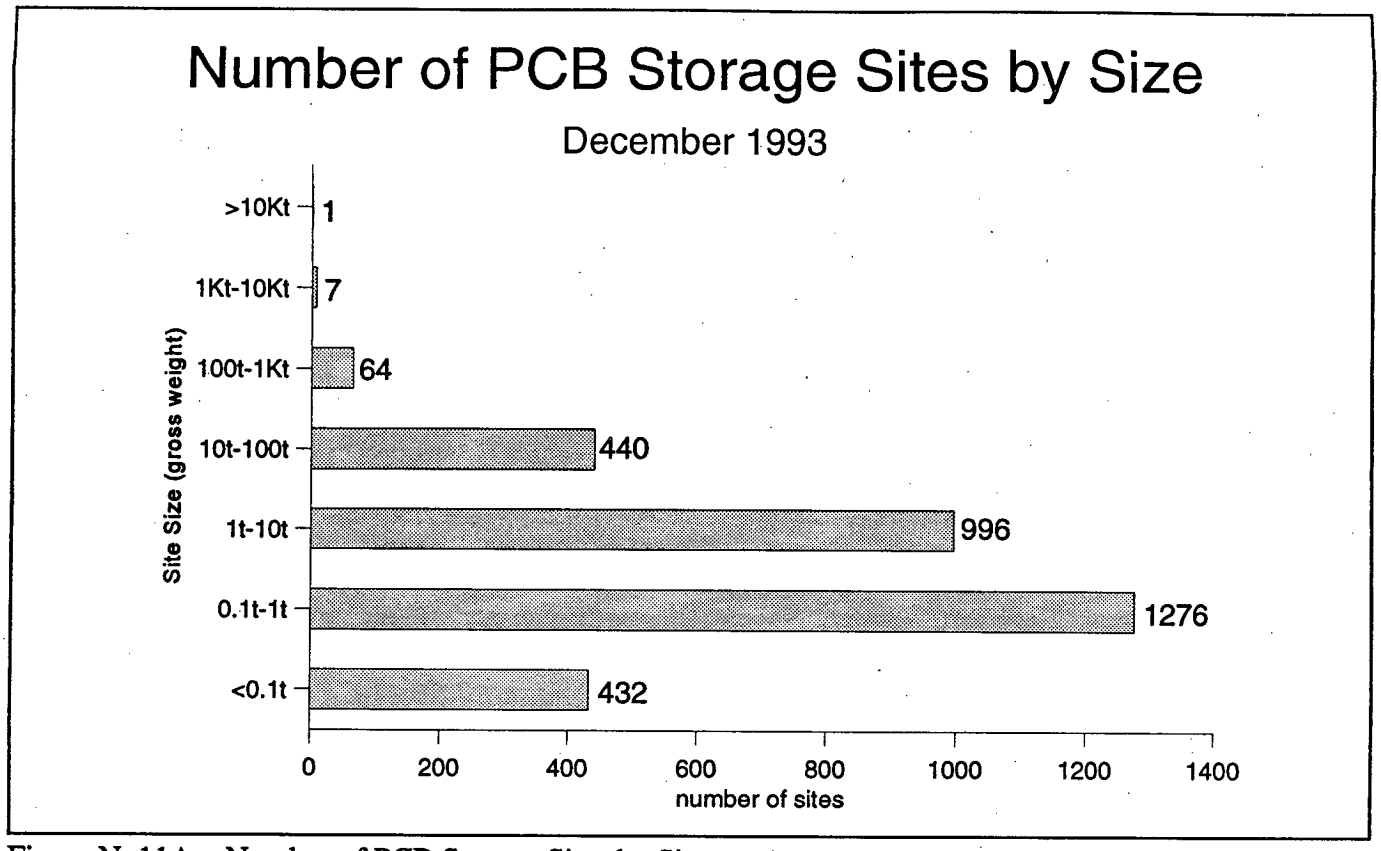

Figure N–11A: Number of PCB Storage Sites by Size

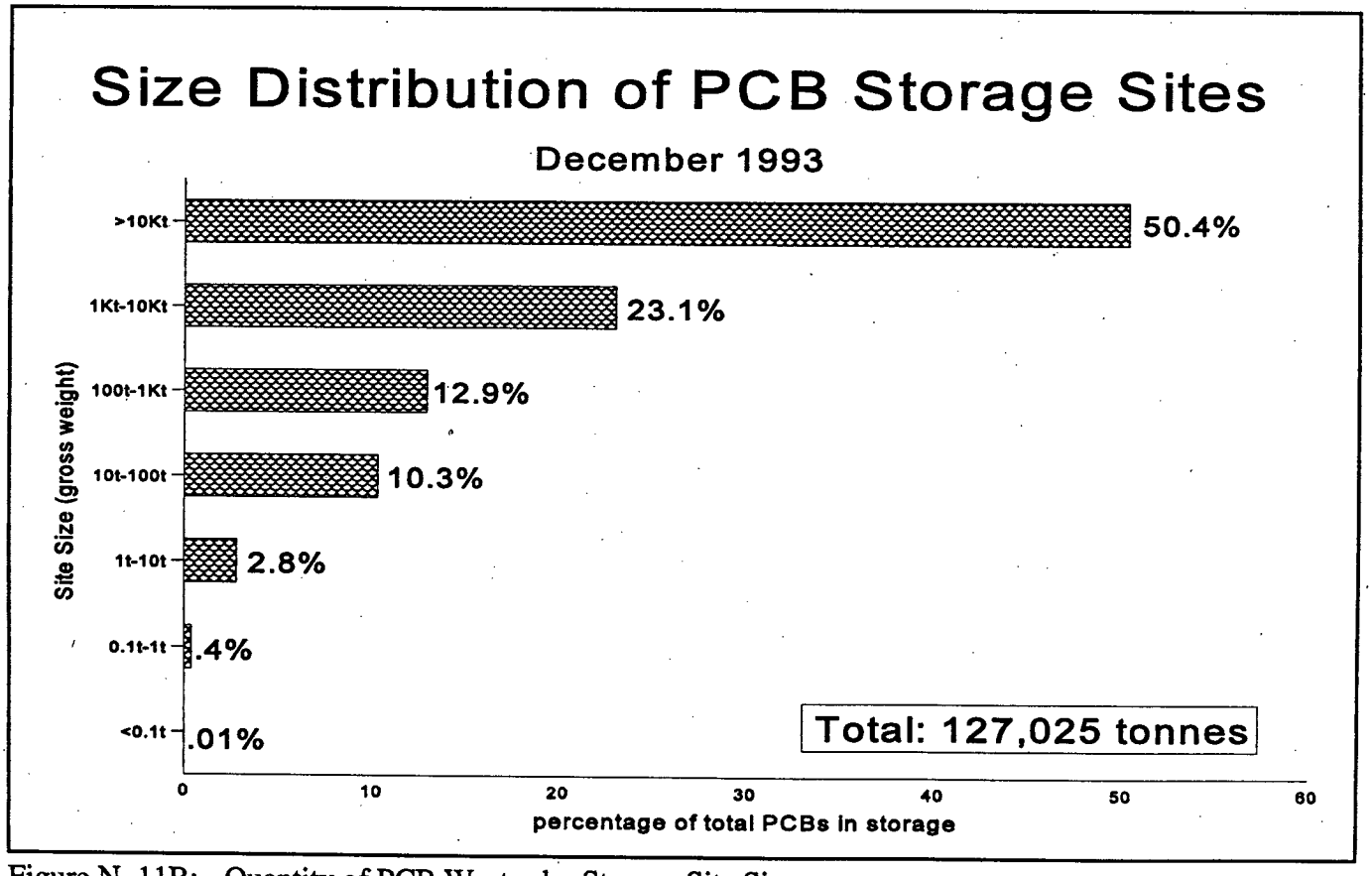

Figure N–11B: Quantity of PCB Wastes by Storage Site Size

There are 64,000 tonnes (50.4%) of the total PCB wastes stored in the largest PCB storage site in Canada.

There are 29,295.8 tonnes (23%) of the PCB wastes stored at the 7 sites containing between 1,000 and 10,000 tonnes each.

There are 16,479.4 tonnes (12.9%) stored at the 64 sites containing between 100 and 1,000 tonnes.

Cumulatively, 109,775 tonnes (86.4%) of all PCB wastes in Canada are stored at 72 (2%) of the 3,216 storage sites.

At the lower end of the waste–storage–site scale, the 440 sites containing between 10 and 100 tonnes of PCB wastes each, account for 10.3% (13,112.9 tonnes) of the total PCB wastes.

The 996 sites containing between one and ten tonnes each, contain only 2.8% (3,609.5 tonnes) of the total wastes.

The 1,276 sites containing between 100 kilograms and 1 tonne store only .4% (511.1 tonnes) of the total wastes.

And finally, the 432 sites containing less than 100 kg each account for a negligible proportion (16.1 tonnes) of the total quantity of PCB wastes.

This analysis indicates an uneven distribution of PCB waste storage sites nationwide (Figure N–10) and that a relatively small number of sites store the majority of the PCB wastes in Canada (Figures N–11A, N–11B, and Table N–7).

NATIONAL PCB WASTE STORAGE SITES
BY PROVINCE/TERRITORY AND SITE SIZE CLASS
December 1993

PROVINCE/ TERRITORY		<100 kg	100 kg - 1 tonne	1-10 tonnes	10-100 tonnes	100-1,000 tonnes	1,000 - 10,000 tonnes	> 10,000 tonnes	Total Sites / Total Tonnes
NFLD	Sites	7	24	14	13	0	0	0	58
	Tonnes	0.3	11.0	59.1	480.6	0.0	0.0	0.0	551.0
PEI	Sites	3	6	5	1	0	0	0	15
	Tonnes	0.2	2.7	19.3	31.5	0.0	0.0	0.0	53.7
NS	Sites	12	35	27	14	4	1	0	93
	Tonnes	0.4	15.6	95.5	300.5	588.0	2,204.0	0.0	3,204.0
NB	Sites	6	21	19	19	2	0	0	67
	Tonnes	0.3	7.7	80.6	665.0	267.4	0.0	0.0	1,021.0
QUE	Sites	118	169	128	73	3	0	0	491
	Tonnes	4.9	61.0	532.4	2,159.0	1,252.6	0.0	0.0	4,009.9
ONT	Sites	106	558	542	212	30	3	1	1,452
	Tonnes	3.3	234.0	1,919.3	6,281.3	7,990.6	17,487.0	64,000.0	97,915.5
MAN	Sites	12	84	40	15	3	0	0	154
	Tonnes	0.4	31.4	137.1	407.2	842.5	0.0	0.0	1,418.6
SASK	Sites	15	107	30	25	3	0	0	180
	Tonnes	0.7	53.8	112.8	935.5	426.1	0.0	0.0	1,274.6
ALTA	Sites	3	10	6	5	3	0	0	27
	Tonnes	0.0	2.8	23.2	170.6	1,589.5	0.0	0.0	1,786.1
B.C.	Sites	131	247	165	55	13	3	0	614
	Tonnes	5.2	93.5	593.7	1,468.1	2,733.3	9,604.8	0.0	14,498.6
YUK	Sites	12	13	7	0	1	0	0	33
	Tonnes	0.3	4.0	25.0	0.0	173.8	0.0	0.0	203.1
NWT	Sites	7	2	13	8	2	0	0	32
	Tonnes	0.2	1.0	59.1	326.0	702.4	0.0	0.0	1,088.7
National Totals	Sites	432	1,276	996	440	64	7	1	3,216
	Tonnes	16.1	511.1	3,609.5	13,112.9	16,479.4	29,295.8	64,000.0	127,024.8

Table N–7: National PCB Waste Storage Sites by Province/Territory and Site Size

IN–USE ASKAREL

BY NET WEIGHT

In December 1993, there were 667 tonnes of in–use askarel in the federal inventory: 585 tonnes (87.7%) in transformers; 45 tonnes (6.7%) in capacitors; and 37 tonnes (5.6%) in other miscellaneous electrical and mechanical equipment (Figure F–1). The amount of in–use askarel for 1993 represents a decrease of 63 tonnes (2%) from the 1992 inventory of 730 tonnes.

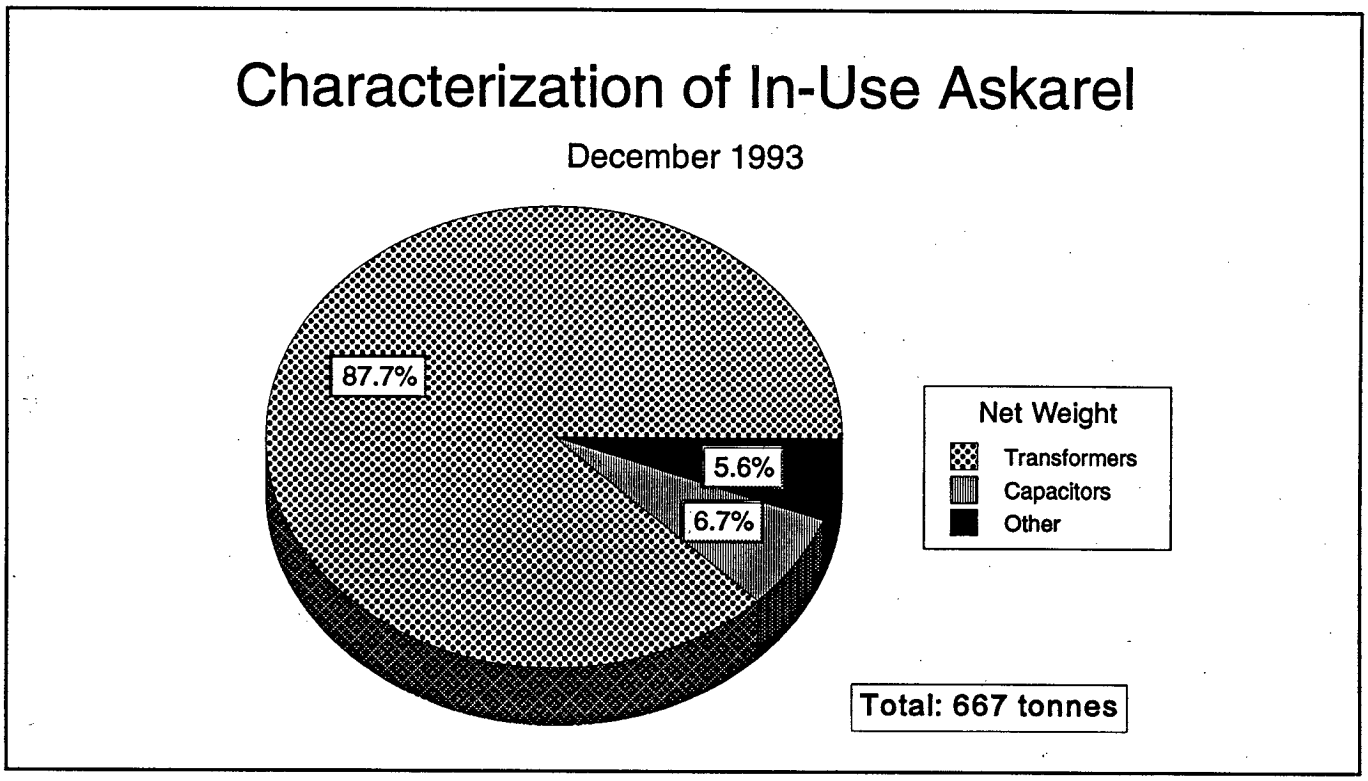

Figure F–1: Federal In–Use Askarel Net Weight in Tonnes

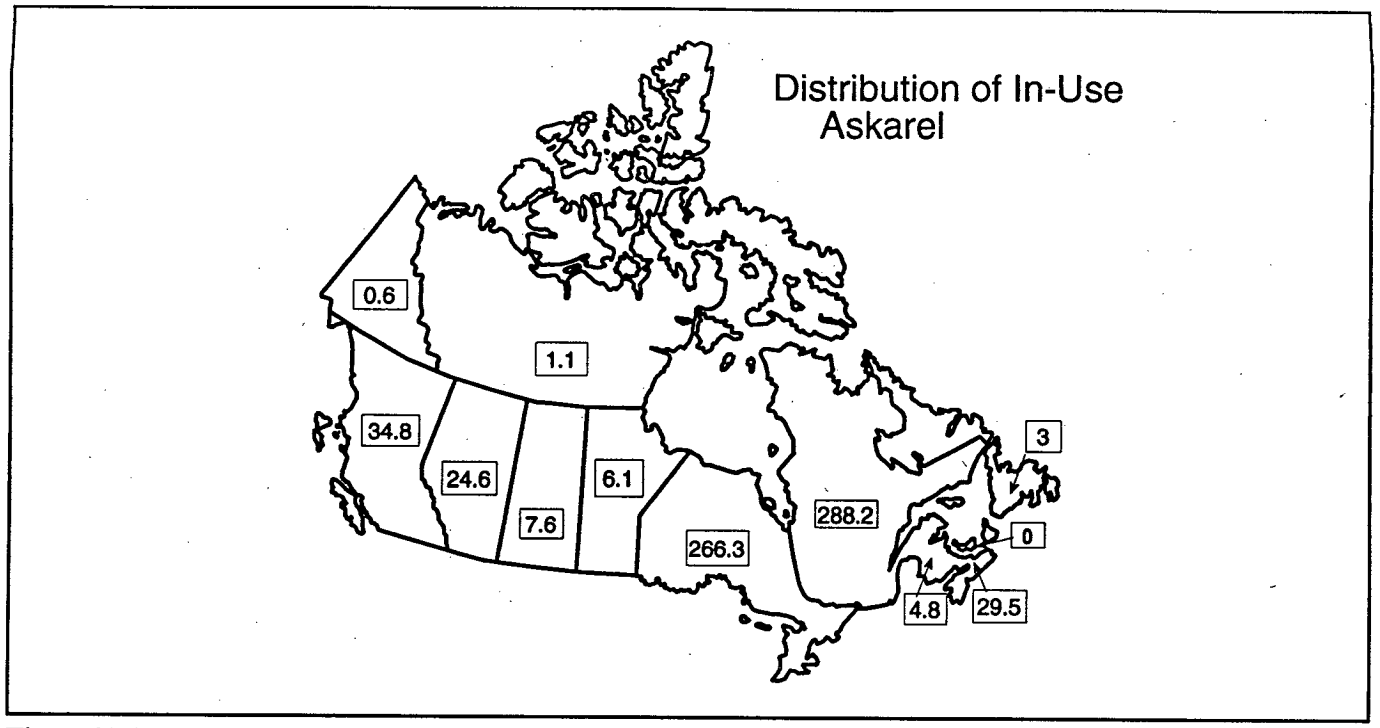

Figure F–2A: Distribution of Federal In–Use Askarel (tonnes net weight)

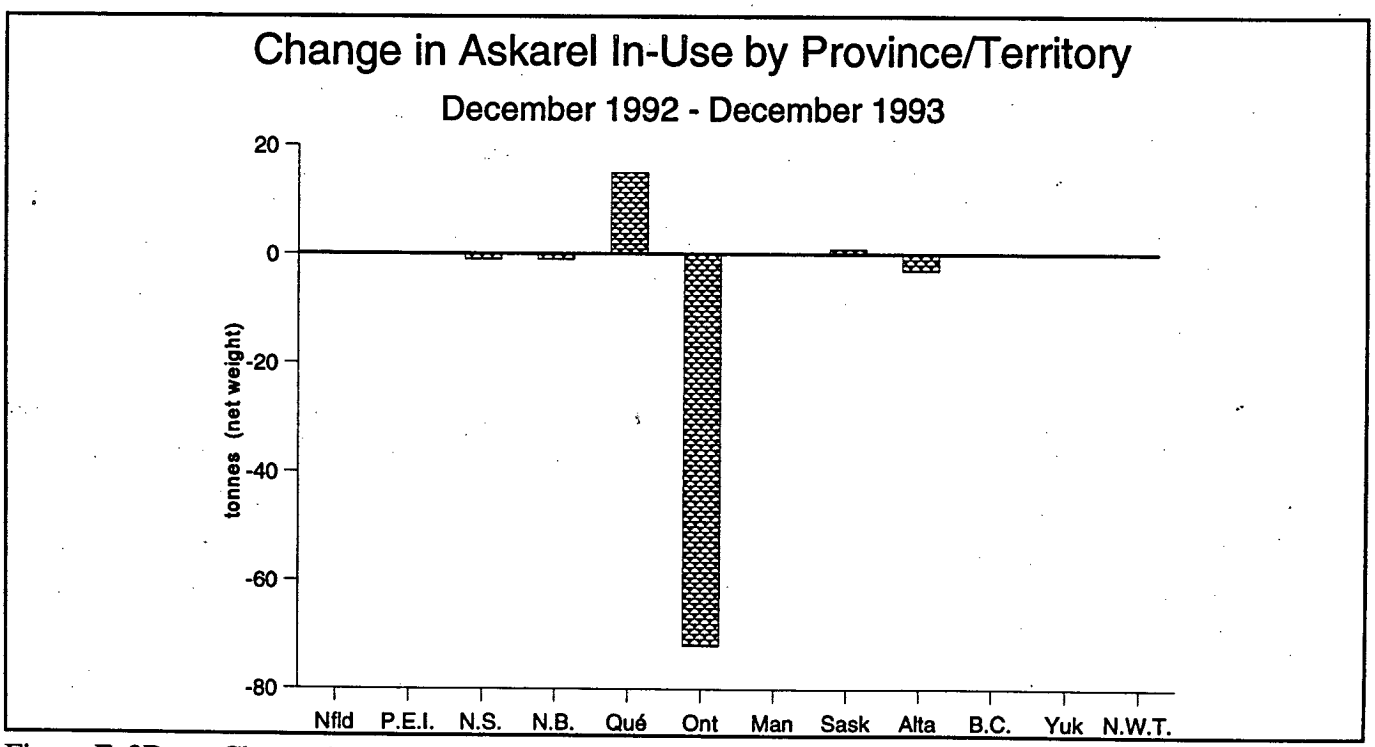

Figure F–2B: Change in Federal In–Use Askarel

Federal In–use Askarel (Tonnes of Askarel – Net Weight)			
Province	1992	1993	CHANGE
Nfld.	3	3	0
P.E.I.	0	0	0
N.S.	31	30	-1
N.B.	6	5	-1
Que.	273	288	15
Ont.	338	266	-72
Man.	6	6	0
Sask.	7	8	1
Alta.	28	25	-3
B.C.	35	35	0
Yuk.	1	1	0
N.W.T.	1	1	0

Table F–1: Federal In–use Askarel

The majority, 124 tonnes, 98%, of the federal contaminated mineral oil is contained in bulk storage. The remaining 2% (2 tonnes) are contained in other equipment. The distribution of federal PCB–contaminated mineral oil is shown in Figure F–3 and Table F–2 below.

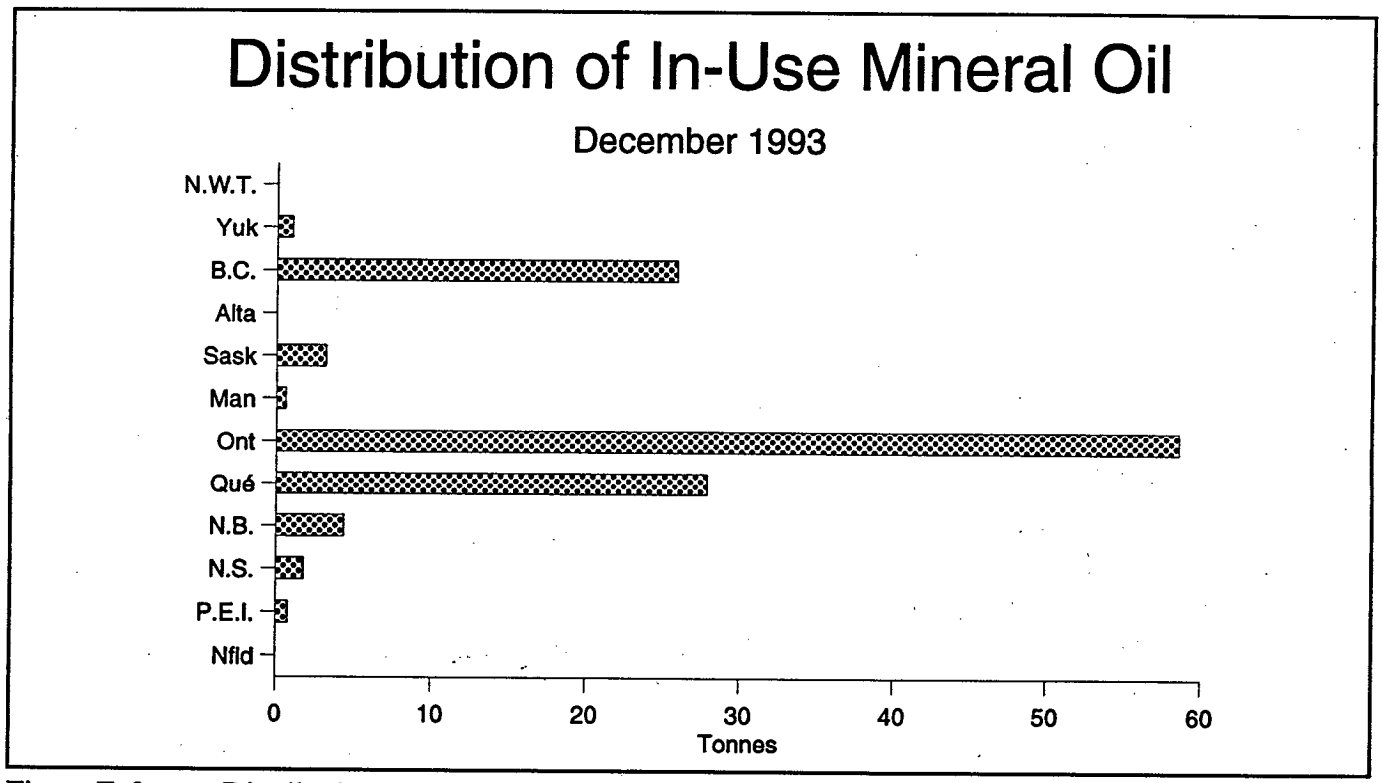

Figure F–3: Distribution of Federal In–Use Mineral Oil (net tonnes)

ITEM	NWT	Yuk	BC	Alta	Sask	Man	Ont	Que	NB	NS	PEI	Nfld	Total
Trans-formers	0.0	1.0	25.9	0.0	3.2	0.6	58.6	27.9	4.4	1.8	0.8	0.0	124.2
Other Equip-ment	0.2	0.0	0.0	0.0	0.2	0.0	1.6	0.0	0.0	0.1	0.0	0.0	2.1
Total	0.2	1.0	25.9	0.0	3.4	0.6	60.2	27.9	4.4	1.9	0.8	0.0	126.3

Table F–2: Federal Distribution of In–Use Mineral Oil (net tonnes)

TOTAL PCB WASTES

BY GROSS WEIGHT

In December 1993 there were 5,362 tonnes of federally–owned PCB wastes in Canada. 1,482 tonnes (27.6%) of these wastes are bulk askarel and askarel–containing equipment; 1,039 tonnes (19.4%) fluorescent lamp ballasts; 157 tonnes (2.9%) are PCB–contaminated mineral oil; 174 tonnes (3.2%) are drained askarel equipment; 2,353 tonnes (43.9%) are PCB–contaminated soils; and 158 tonnes (2.9%) are miscellaneous PCB–contaminated wastes (Figure F–4).

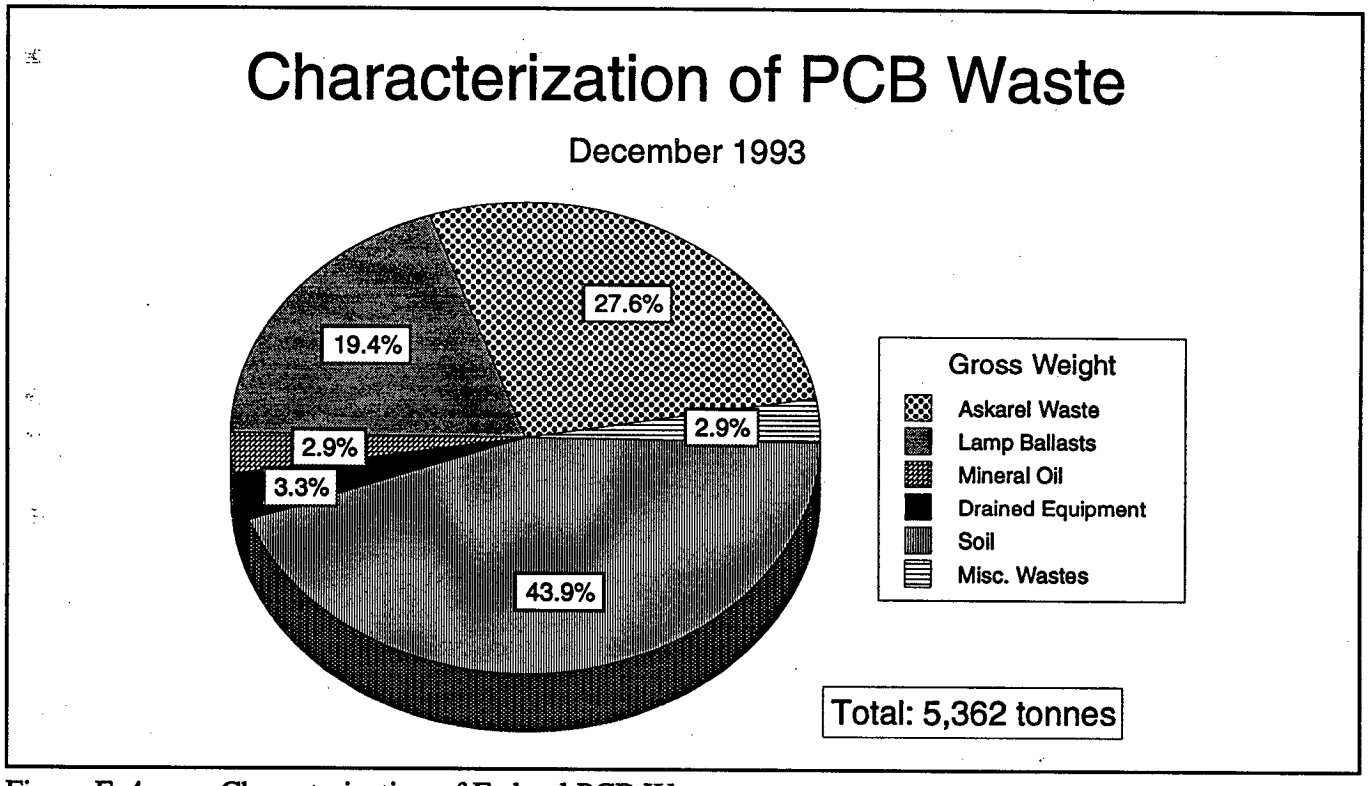

Figure F–4: Characterization of Federal PCB Waste

The total quantity of federal PCB wastes reported at the end of December 1993 increased by 7.6% (380 tonnes) since December 1992. This increase has three main components:

(1) The quantity of fluorescent lamp ballasts in storage increased by 27 tonnes from 1,012 tonnes in December 1992 to 1,039 tonnes in December 1993 as more fluorescent lamp ballasts were identified and removed from service;

(2) The quantity of drained equipment increased by 42 tonnes from December 1992 as more askarel–containing equipment was removed from service; and

(3) The quantity of bulk askarel and askarel–containing equipment increased by 223 tonnes from 1,259 tonnes in December 1992 to 1,482 tonnes in December 1993 as more equipment came out of service.

ASKAREL WASTE

BY NET WEIGHT

In December 1993, there were approximately 520 tonnes of waste askarel in federally–regulated storage sites (Figure F–5A): 186 tonnes (35.8%) in capacitors; 169 tonnes (32.5%) are in transformers; 132 tonnes (25.4%) are in bulk storage; and 33 tonnes (6.3%) are in miscellaneous other types of electrical and mechanical equipment (Figure F–5, Table F–3).

The net weight of federal askarel waste in storage increased by 111 tonnes (27.1%) from 409 tonnes in December 1992 to 520 tonnes in December 1993. The most noticable increase occurred in the bulk storage category which more than doubled from the previously reported 64 tonnes to 132 tonnes. Moderate increases occurred in the capacitor and transformer categories. Capacitors rose by 14.1% (23 tonnes) and transformers rose by 11.1% (17 tonnes) in 1993.

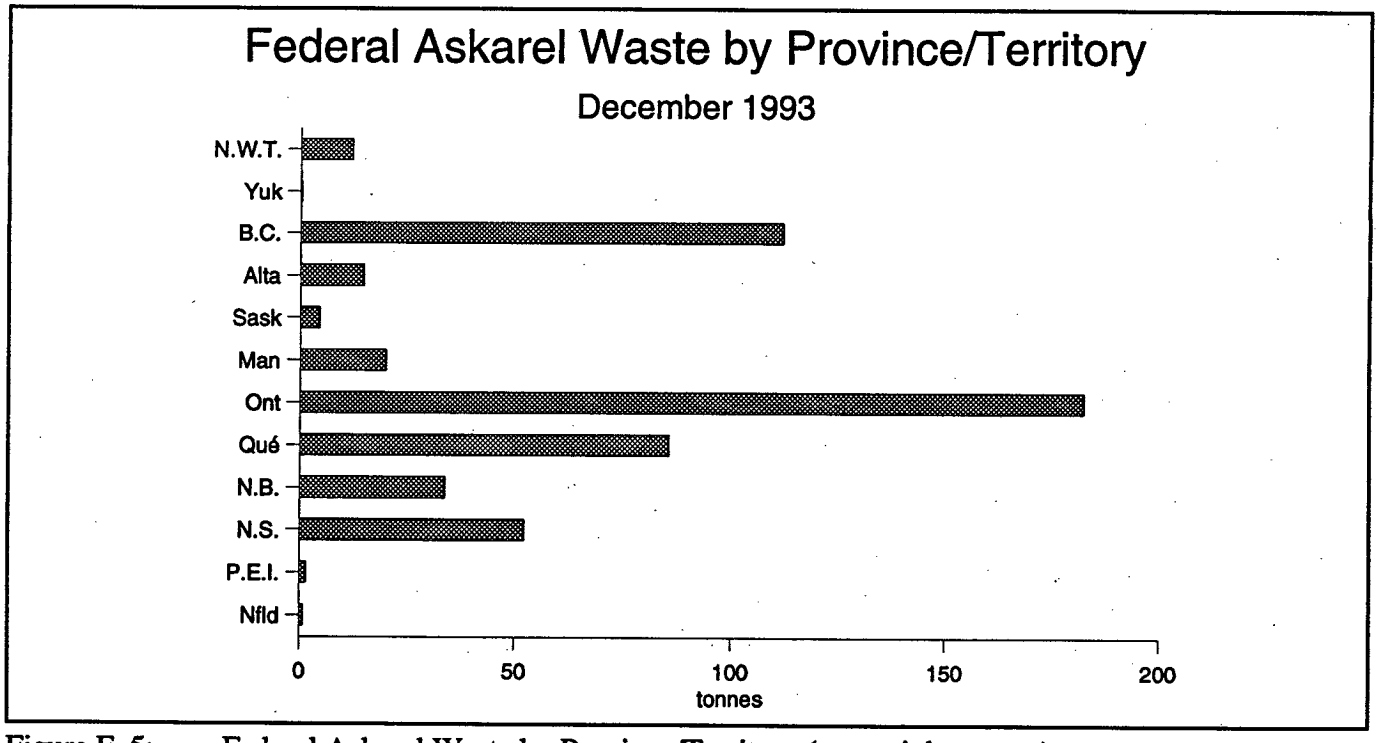

Figure F–5: Federal Askarel Waste by Province/Territory (net weight tonnes)

Net weight	NWT	Yuk	BC	Alta	Sask	Man	Ont	Que	NB	NS	PEI	Nfld
Inventory	12.1	.2	112.1	14.7	4.5	19.9	182.4	85.7	33.9	52.4	1.7	.8
Change from December 1992	.1	.2	2.1	-7.3	-2.5	2.9	55.4	27.7	25.9	6.4	.7	-.2

Table F–3: Federal Askarel Waste by Province/Territory (net weight tonnes)

BY GROSS WEIGHT

Viewed from a gross weight perspective, 1,482 tonnes of askarel and askarel equipment in storage for disposal were reported. Transformers and capacitors comprise the majority, 507 tonnes (34.2%) and 744 tonnes (50.2%) respectively. Bulk storage comprises 132 tonnes (8.9%). The remaining 99 tonnes (6.7%) are classified as other askarel wastes. Federal storage sites reported a 223–tonne (17.7%) increase in the gross weight of askarel in storage in December 1993 compared with 1,259 tonnes reported in December 1992.

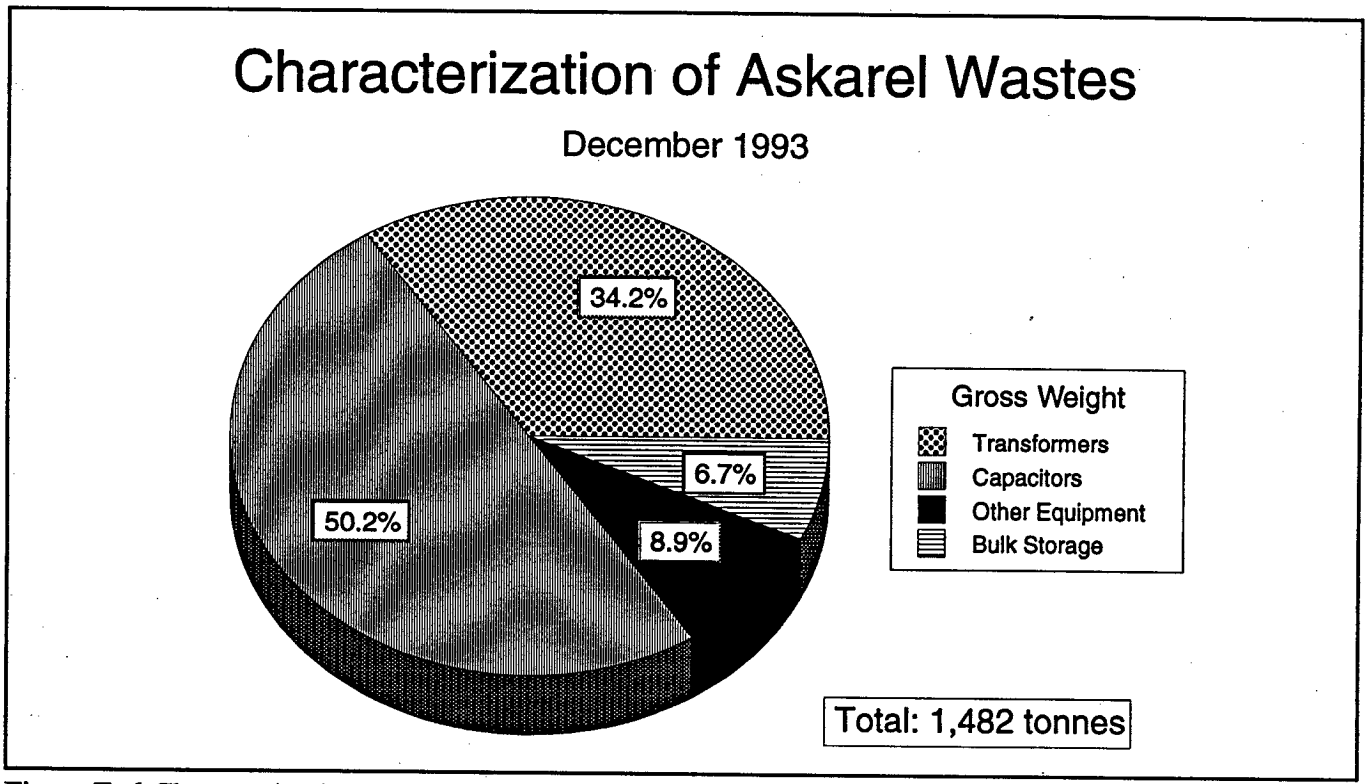

Figure F–6:Characterization of Federal Askarel Wastes (gross weight)

Item	1993 Inventory	%	1992 Inventory	%	+/- (tonnes)	% (change)
Transformers	507	34.2	456	36.2	51	11.3
Capacitors	744	50.2	643	51.1	101	15.7
Bulk storage	132	8.9	64	5.1	68	106.4
Other equipment	99	6.7	96	7.6	3	3.2
Total	1,482	100	1,259	100.0	223	17.8

Table F–4: Characterization of Askarel Wastes

MINERAL OIL WASTE

In December 1993 there were approximately 157 tonnes (net weight) of federally–owned PCB–contaminated mineral oil in storage.

Compared to 1992, the inventory of mineral oil waste increased by 37 tonnes from 120 tonnes to 157 tonnes (23.2 %).

Note:

PCB–contaminated mineral oil often goes directly from in–use equipment to a treatment facility without being stored and included in inventory.

ITEM	NWT	Yuk	BC	Alta	Sask	Man	Ont	Que	NB	NS	PEI	Nfld	Total
Trans-formers	0.0	0.0	15.7	0.0	0.4	0.2	25.9	23.7	2.4	1.1	0.4	0.0	70
Bulk Storage	0.0	0.0	9.4	1.3	0.0	0.0	46.9	16.2	4.2	2.9	0.0	0.0	81
Other Equip.	0.0	0.0	0.0	0.0	0.0	0.0	5.4	0.2	0.0	0.0	0.0	0.0	6
Total	0.0	0.0	25.1	1.3	0.4	0.2	72.8	39.9	6.6	4.0	0.4	0.0	157

Table F–5: Federal PCB–Contaminated Mineral Oil Waste (net weight tonnes)

OTHER PCB WASTES

In addition to askarel stored in bulk containers and askarel–containing equipment, there are a variety of PCB–contaminated wastes in storage. These wastes represent the majority of total PCB wastes, 3,724 tonnes (69.5%). As illustrated in Figure F–7, this classification includes such materials as:

- Soil (2,353 tonnes, 63.2%)
- PCB–containing fluorescent lamp ballasts (1,039 tonnes, 27.9%)
- Drained transformers and other equipment (174 tonnes, 4.7%).
- Miscellaneous wastes, such as absorbents and clothing used in spill clean–up, and other debris (158 tonnes, 4.2%)

The total quantity of other PCB–contaminated wastes increased by 126 tonnes (3.3%) from the 3,598 tonnes reported at the end of December 1992.

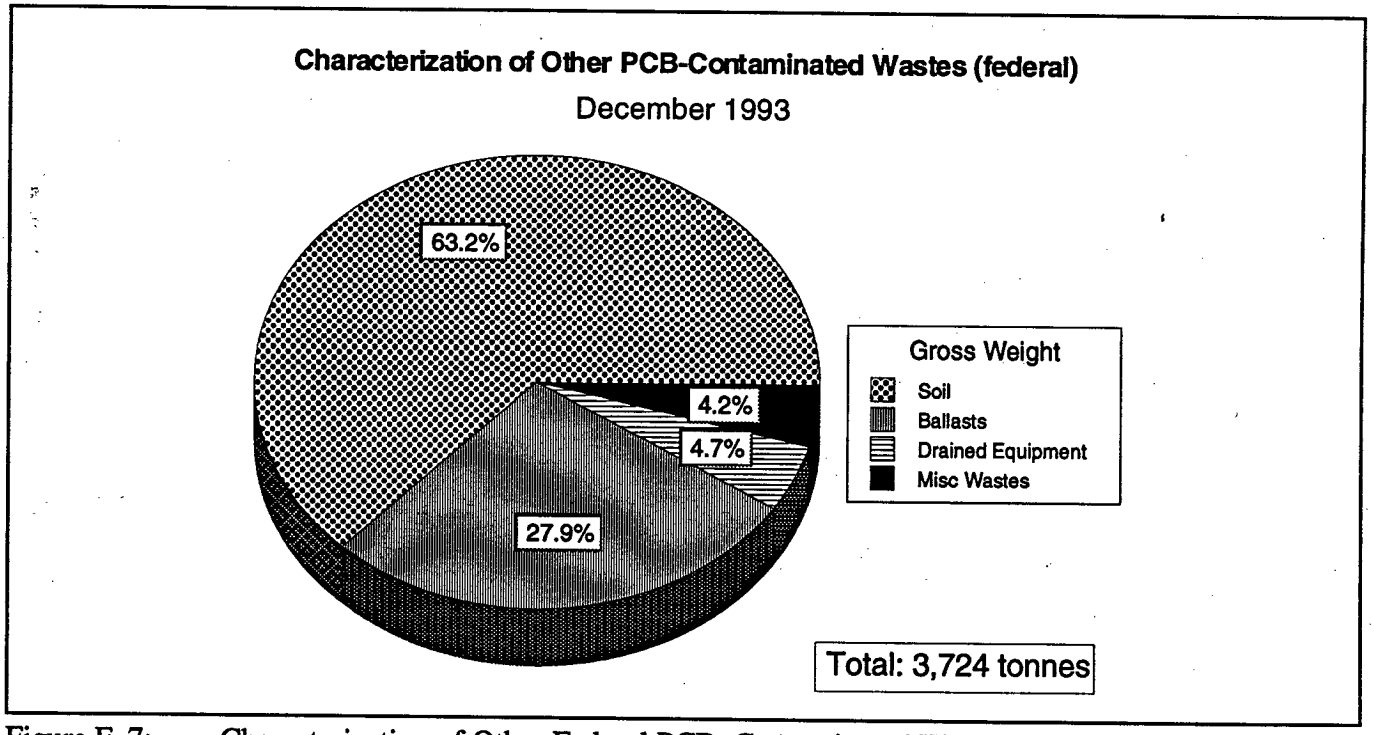

Figure F–7: Characterization of Other Federal PCB–Contaminated Wastes

Item	1993	%	1992	%	+/- (tonnes)	%
Soil	2,353	63.2	2,333	64.8	20	.8
Fluorescent lamp ballasts	1,039	27.9	1,012	28.1	27	2.6
Drained Equipment	174.3	4.7	132	3.7	42	32.0
Misc. Wastes	158	4.2	122	3.4	36	29.5
Total	3,724	100.0	3,598	100.0	125	3.3

Table F–6: Other Federal PCB–Contaminated Wastes

PCB WASTE STORAGE SITES

The total number of federally–owned PCB waste storage sites nationwide decreased by one site from 496 in December 1992 to 495 in December 1993.

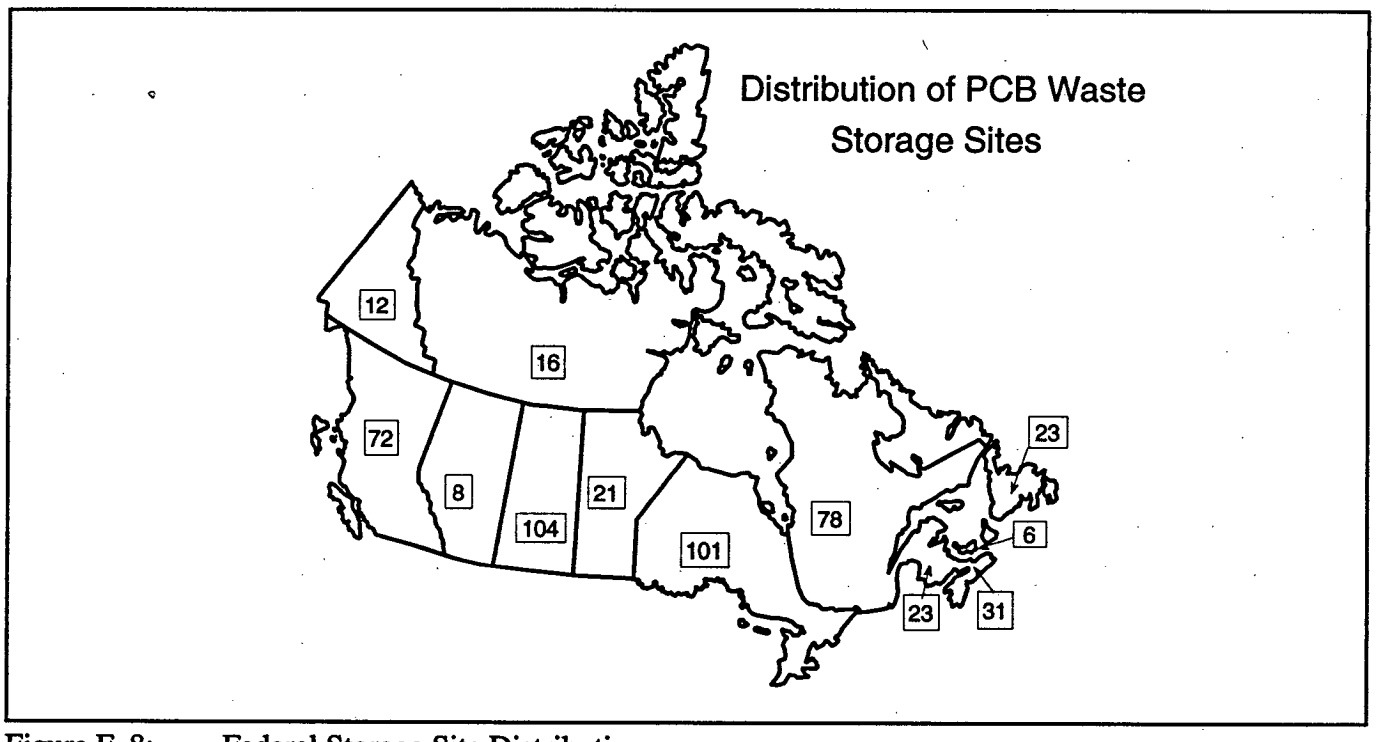

Figure F–8: Federal Storage Site Distribution

An analysis of federally–owned PCB waste storage sites by the quantity of PCB wastes stored is presented in Figure 3B and Table F–7. The sites are divided into the following categories:

- less than 100 kg
- greater than 100 kg to 1 tonne
- greater than 1 to 10 tonnes
- greater than 10 to 100 tonnes
- greater than 100 to 1,000 tonnes
- greater than 1,000 to 10,000 tonnes
- greater than 10,000 tonnes

There are 2,204 tonnes (41%) of the federal PCB wastes stored at the single large (1,000–10,000 tonnes) site in Nova Scotia. A further 1,878.3 tonnes (35%) are stored at the 67 sites containing between 10 and 100 tonnes. Cumulatively, 4,082.2 tonnes (76%) of all federal PCB wastes are stored at 68 of the 495 federal storage sites.

At the lower end of the waste–storage–site scale, the 239 sites containing between 100 kg and 1 tonne of PCB wastes each, account for only about 2% (100 tonnes) of the total federal PCB wastes. The 114 sites containing between one and ten tonnes each, contain only 8.2% (438.2 tonnes) of the total PCB wastes.

This analysis indicates an uneven distribution of federal PCB waste storage sites and that a relatively small number of sites (73) store the majority of the PCB wastes in Canada (see Figure F–9).

Although the number of federal PCB waste storage sites decreased, the total amount of PCB waste in storage increased by 385 tonnes from 4,977 tonnes to 5,362. This increase represents a 7.7% increase since December 1992.

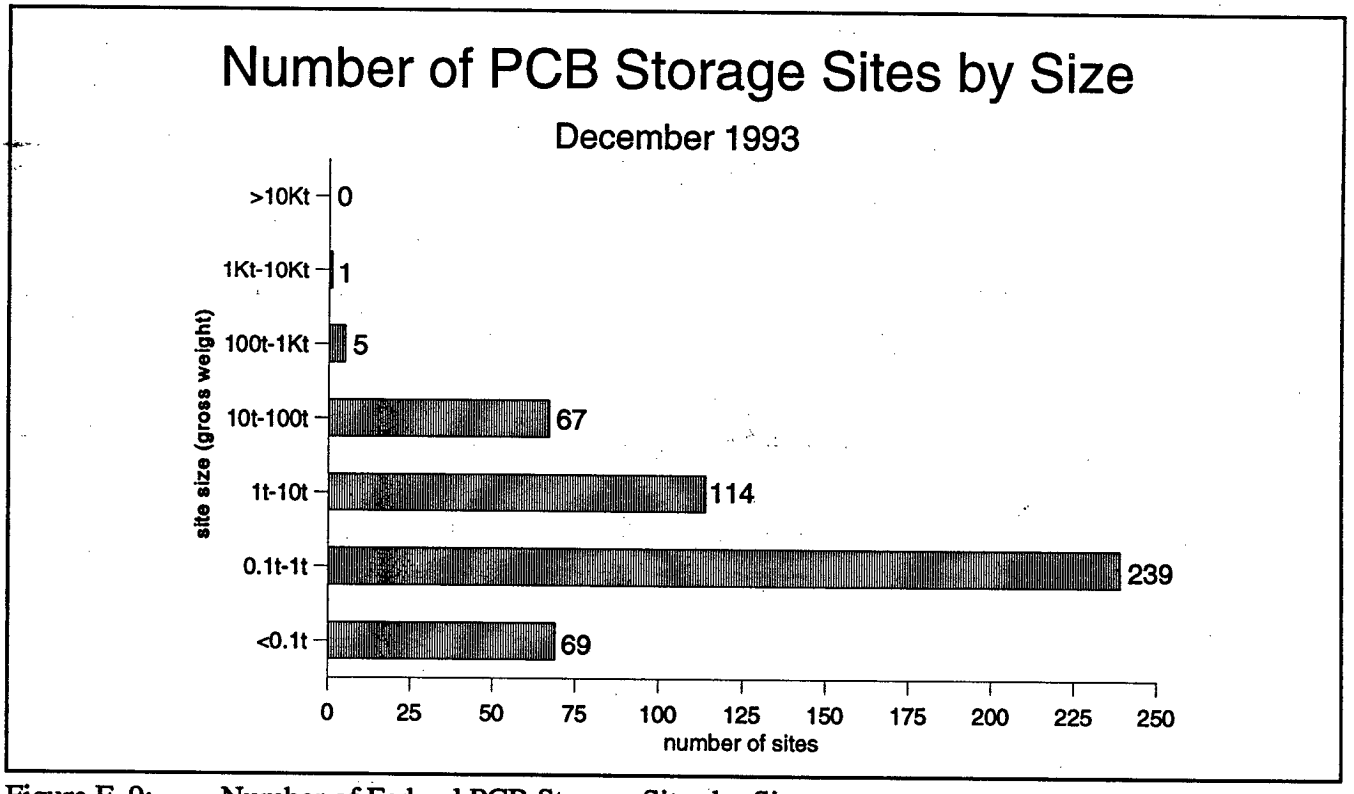

Figure F–9: Number of Federal PCB Storage Sites by Size

FEDERAL PCB WASTE STORAGE SITES
BY PROVINCE/TERRITORY AND SITE SIZE CLASS
December 1993

PROVINCE/ TERRITORY		< 100 kg	100 kg -1 tonne	1 - 10 tonnes	10 - 100 tonnes	100-1,000 tonnes	1,000 - 10,000 tonnes	> 10,000 tonnes	Total Sites / Total Tonnes
NFLD	Sites	4	15	3	1	0	0	0	23
	Tonnes	0.1	7.8	17.3	82.3	0.0	0.0	0.0	107.5
PEI	Sites	0	4	2	0	0	0	0	6
	Tonnes	0.0	2.1	6.3	0.0	0.0	0.0	0.0	8.4
NS	Sites	4	13	9	3	1	1	0	31
	Tonnes	0.1	6.2	33.4	65.7	101.6	2,204.0	0.0	2,411.0
NB	Sites	1	10	7	5	0	0	0	23
	Tonnes	0.1	4.2	22.6	128.7	0.0	0.0	0.0	155.6
QUE	Sites	3	44	16	15	0	0	0	78
	Tonnes	0.2	15.5	74.6	387.1	0.0	0.0	0.0	477.6
ONT	Sites	11	35	34	20	1	0	0	104
	Tonnes	0.5	13.7	139.3	479.4	174.0	0.0	0.0	806.9
MAN	Sites	1	11	3	6	0	0	0	21
	Tonnes	0.0	4.0	16.9	97.3	0.0	0.0	0.0	118.2
SASK	Sites	2	80	20	2	0	0	0	104
	Tonnes	0.1	36.6	42.3	88.5	0.0	0.0	0.0	167.5
ALTA	Sites	1	5	1	1	0	0	0	8
	Tonnes	0.0	1.9	4.5	44.0	0.0	0.0	0.0	50.4
BC	Sites	34	13	14	9	2	0	0	72
	Tonnes	0.6	4.8	58.6	305.7	313.3	0.0	0.0	683.0
YUK	Sites	4	7	1	0	0	0	0	12
	Tonnes	0.1	2.1	4.0	0.0	0.0	0.0	0.0	6.2
NWT	Sites	4	2	4	5	1	0	0	16
	Tonnes	0.1	1.0	18.2	199.6	150.8	0.0	0.0	369.7
FEDERAL TOTALS	Sites	69	239	114	67	5	1	0	495
	Tonnes	1.9	99.9	438.2	1,878.3	739.7	2,204.0	0.0	5,362.0

Table F–7: Federal PCB Waste Storage Sites

IN–USE ASKAREL

BY NET WEIGHT

In December 1993, there were 10,838 tonnes of in–use askarel in the non–federal inventory: 9,064 tonnes (83.7%) in transformers; 1,652 tonnes (15.2%) in capacitors; and 122 tonnes (1.1%) in other miscellaneous electrical and mechanical equipment (Figure NF–1). The amount of in–use askarel for 1993 represents a decrease of 920 tonnes (6%) from the 1992 inventory of 11,758 tonnes.

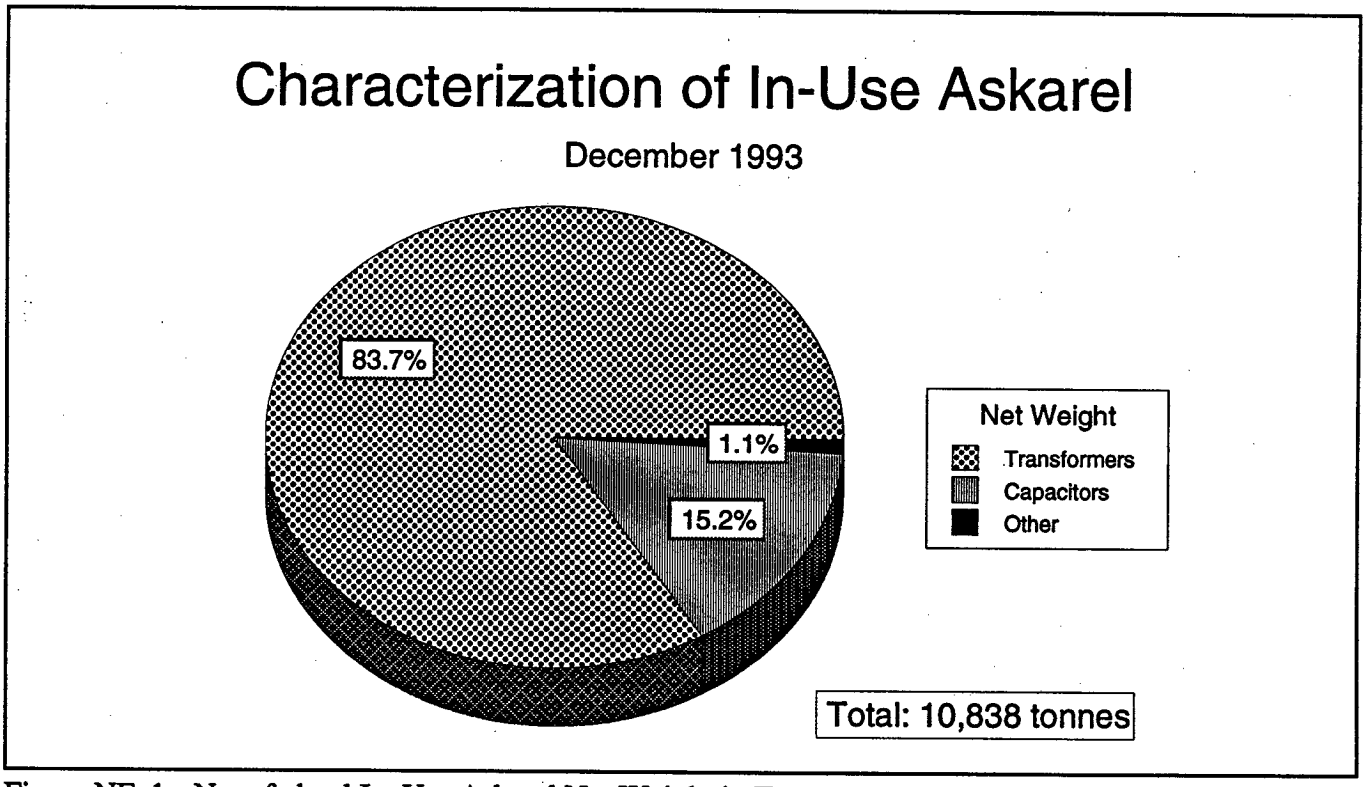

Figure NF–1: Non–federal In–Use Askarel Net Weight in Tonnes

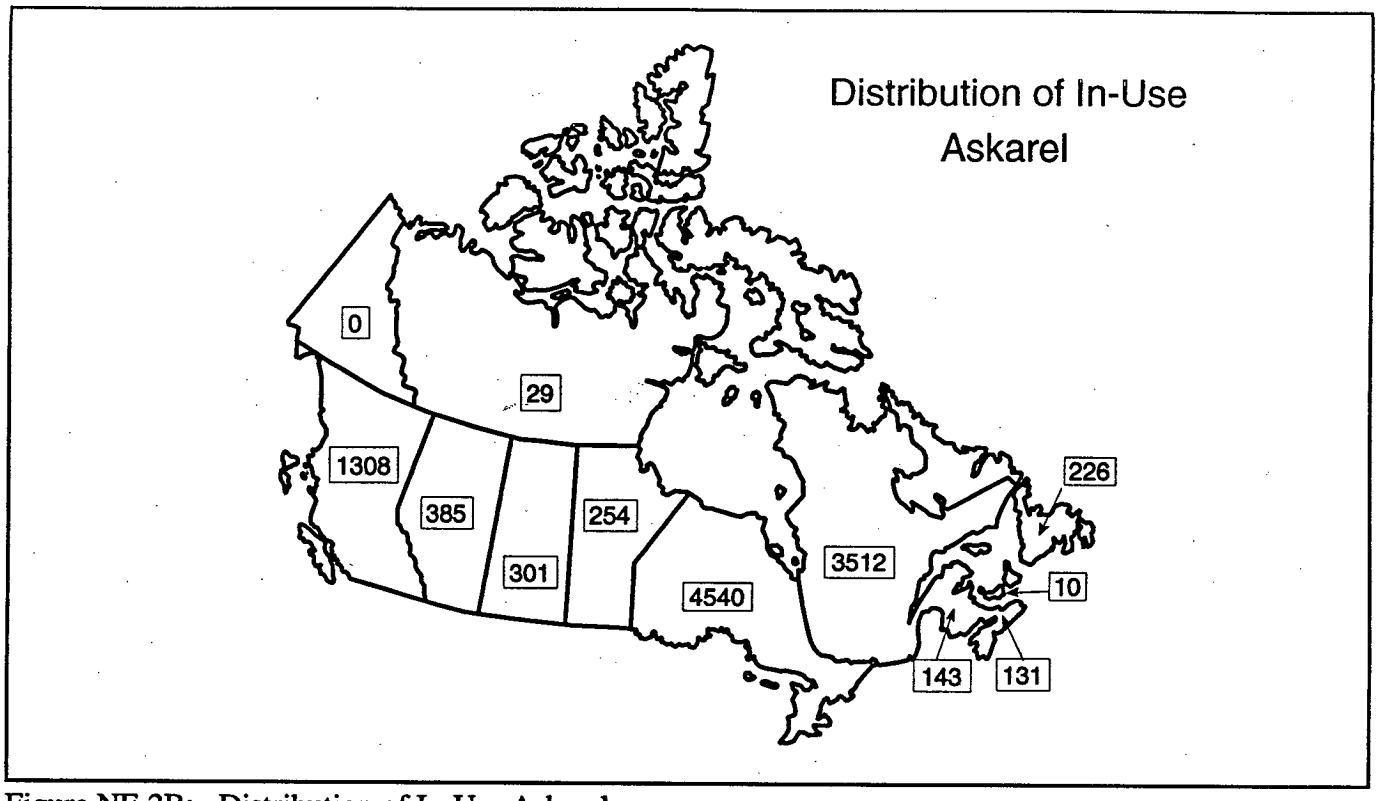

Figure NF-2B: Distribution of In-Use Askarel

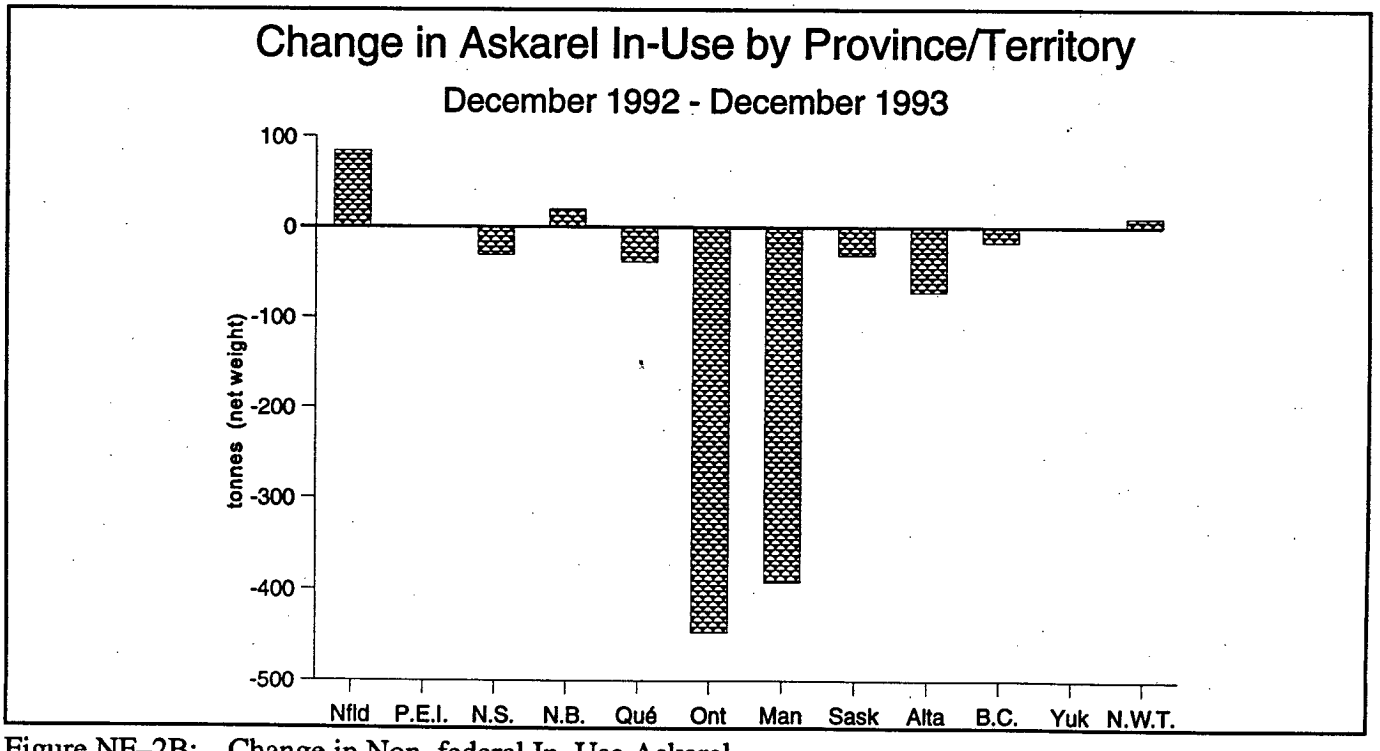

Figure NF–2B: Change in Non–federal In–Use Askarel

Non-federal In-use Askarel (Tonnes of Askarel – Net Weight)			
Province/ Territory	1993	1992	CHANGE
Nfld.	226.2	142	84.2
P.E.I.	10.3	10	0.3
N.S.	130.9	162	-31.1
N.B.	143.1	124	19.1
Que.	3,511.6	3,550	-38.4
Ont.	4,539.6	4,986	-446.4
Man.	253.5	645	-391.5
Sask.	301.1	332	-31
Alta.	384.6	456	-71.4
B.C.	1,307.8	1,324	-16.2
Yuk.	0.2	0	0.1
N.W.T.	29	29	0.0

Table NF-1: Non-federal In-use Askarel

Most (1,959 tonnes, 96%) of the non–federal PCB–contaminated mineral oil is contained in transformers. The remainder (75 tonnes, 3.7%) is contained in other equipment. The distribution of non–federal PCB–contaminated mineral oil is shown in Figure NF–3 and Table NF–2 below.

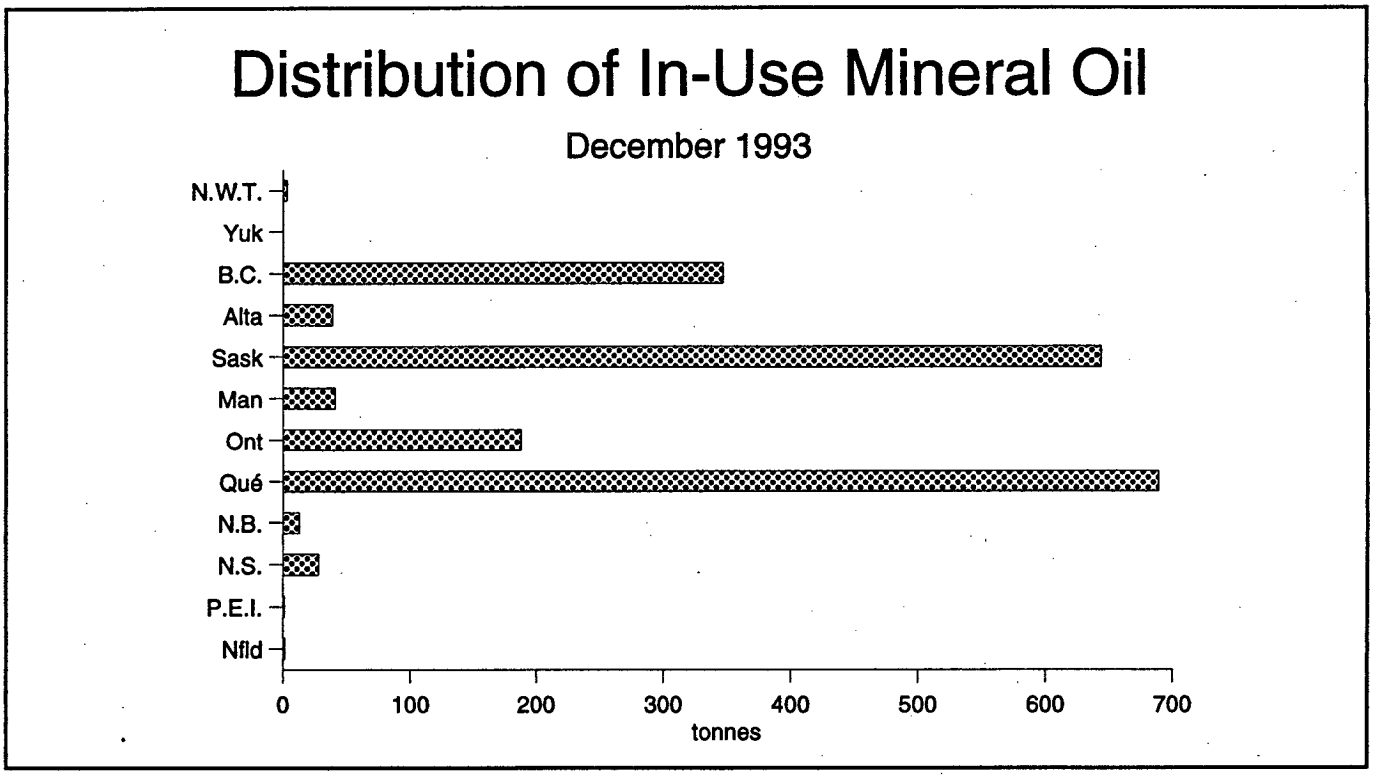

Figure NF–3: Distribution of Non–Federal In–Use Mineral Oil in tonnes

ITEM	NWT	Yuk	BC	Alta	Sask	Man	Ont	Que	NB	NS	PEI	Nfld	Total
Trans-formers	2.5	0.1	346.7	36.6	572.2	39.6	179.6	748.2	5.0	26.2	1.3	1.4	1,959
Other equip.	0.0	0.0	0.0	0.0	58.4	1.2	0.0	15.0	0.0	0.7	0.0	0.0	75
Total	2.5	0.1	346.7	36.6	630.6	40.8	179.6	763.2	5.0	26.9	1.3	1.4	2,034

Table NF–2: Distribution of Non–federal In–Use Mineral Oil in tonnes

TOTAL PCB WASTES

In December 1993 there were 121,662 tonnes (gross weight) of non–federally–regulated PCB wastes in Canada. 13,765 tonnes (11.3%) of these wastes are askarel waste; 5,290 tonnes (4.3%) are fluorescent lamp ballasts, 3,631 tonnes (3.0%) are PCB–contaminated mineral oil, 1,406 tonnes (1.2%) are drained askarel equipment, 93,365 tonnes (76.7%) are PCB–contaminated soils, and 4,205 tonnes (3.5%) are miscellaneous PCB–contaminated wastes (Figure NF–4).

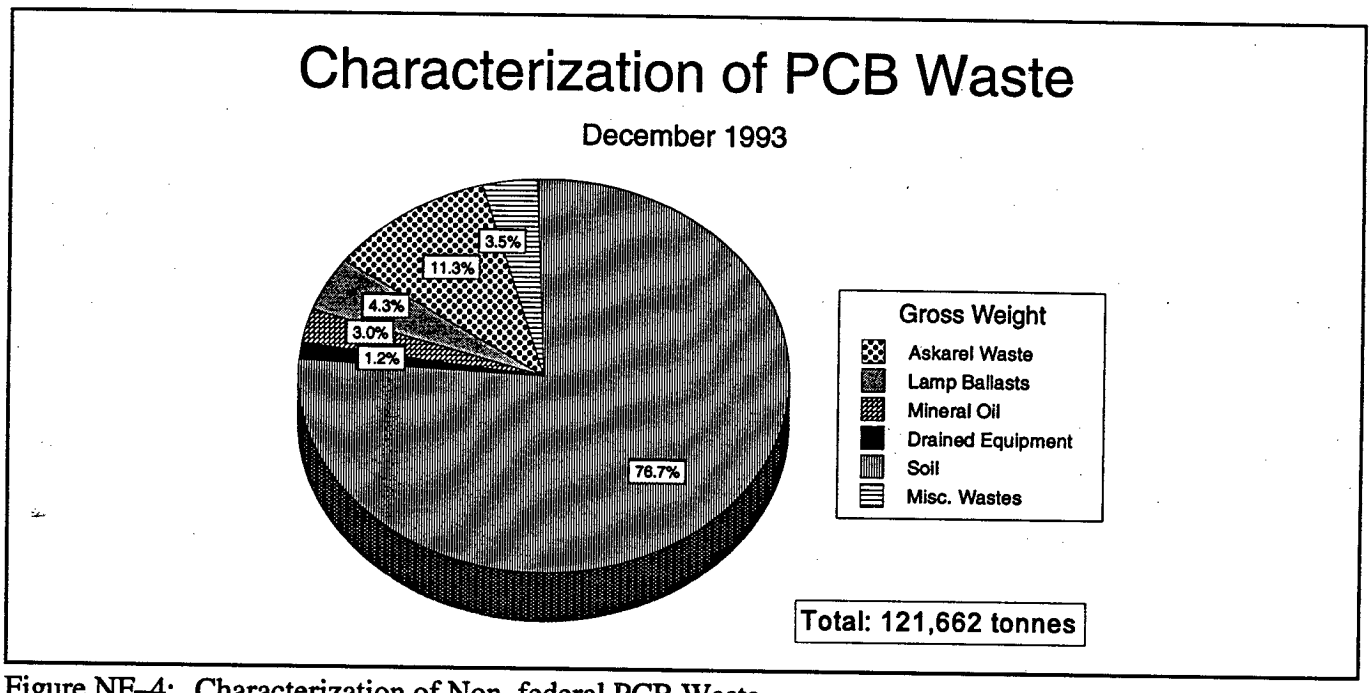

Figure NF–4: Characterization of Non–federal PCB Waste

In 1993, the total quantity of non–federal PCB wastes decreased by 16,646 (13.9%). This decrease has six main components:

(1) The quantity of PCB–contaminated soil decreased by 5.5% (5,443 tonnes) from 98,808 tonnes in December 1992 to 93,365 tonnes in December 1993.

(2) The quantity of fluorescent lamp ballasts decreased by 43.1% (4,009 tonnes) from 9,299 tonnes in December 1992 to 5,290 tonnes in December 1993;

(3) The quantity of miscellaneous PCB–contaminated wastes decreased by 54% (4,940 tonnes) from 9,145 tonnes in December 1992 to 4,205 tonnes in December 1993;

(4) The quantity of drained equipment decreased by 41.6% (1,002 tonnes) from 2,408 tonnes in December 1992 to 1,406 tonnes in December 1993;

(5) The quantity of askarel waste in capacitors decreased by 18.6% (1,303 tonnes) from 6,974 tonnes in December 1992 to 5,671 tonnes in December 1993; and

(6) The quantity of PCB–Contaminated Mineral Oil waste decreased by 14.4% (611 tonnes) from 4,242 tonnes in December 1992 to 3,631 tonnes in December 1993.

BY NET WEIGHT

In December 1993, there were approximately 5,745 tonnes of waste askarel in provincially–regulated storage sites. 1,875 tonnes (32.6%) is in transformers; 1,418 tonnes (24.7%) is in capacitors; 2,444 tonnes (42.5%) is in bulk storage; and 9 tonnes (0.2%) is in miscellaneous other types of electrical and mechanical equipment.

Overall, the net weight of non–federal waste askarel in storage increased by 76 tonnes (1.3%) from 5,669 tonnes in December 1992 to 5,745 tonnes in December 1993.

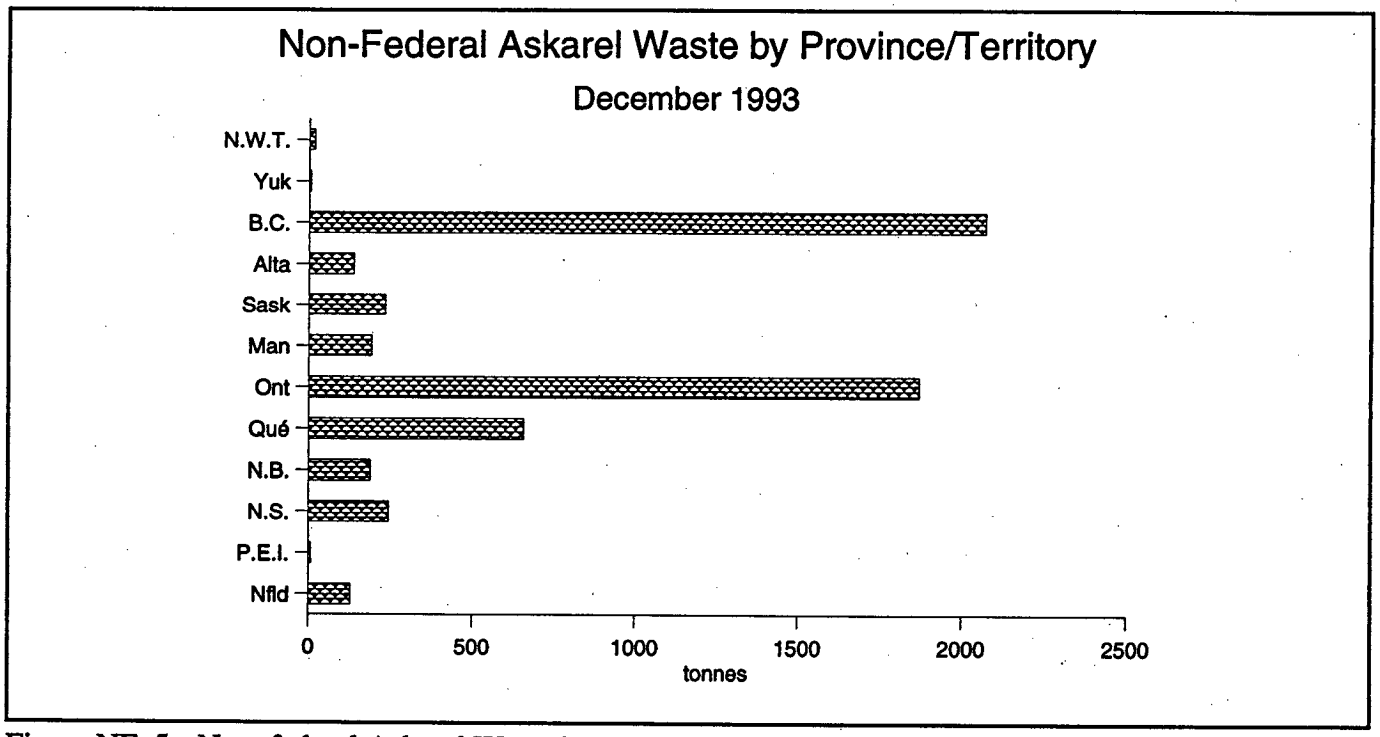

Figure NF–5: Non–federal Askarel Waste by Prov./Terr. (net weight tonnes)

Net weight	NWT	Yuk	BC	Alta	Sask	Man	Ont	Que	NB	NS	PEI	Nfld
Inventory	17.3	5.1	2,071.5	136.4	232.3	189.9	1,870.3	656.6	187.2	243.5	7.3	127.5
Change from December 1992	.3	0.1	677.5	- 368.6	7.3	- 34.1	- 335.7	56.6	- 0.8	33.5	7.3	33.5

Table NF–3: Non–federal Askarel Waste by Province/Territory (net weight tonnes)

BY GROSS WEIGHT

Viewed from a gross weight perspective, there were 13,765 tonnes of askarel and askarel equipment in storage for disposal. Transformers and capacitors comprise the majority: 5,624 and 5,671 tonnes (40.9% and 41.2%) respectively. Twenty–six tonnes (0.2%) are classified as other askarel wastes, and bulk storage comprises 2,444 tonnes (17.7%). The gross weight of askarel in storage decreased by 641 tonnes (1.7%) between December 1992 and December 1993.

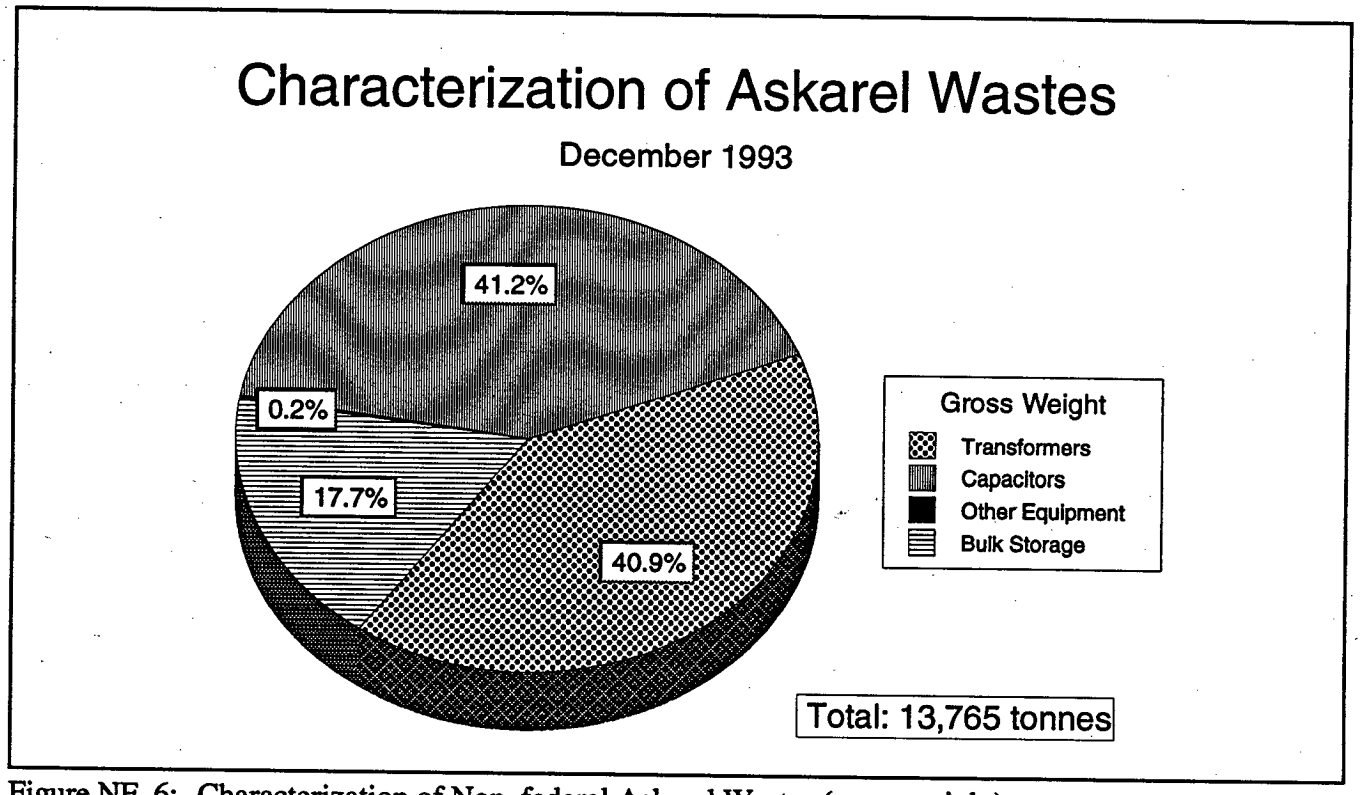

Figure NF–6: Characterization of Non–federal Askarel Wastes (gross weight)

Item	1993 Inventory (in tonnes)	%	1992 Inventory (in tonnes)	%	+/- (tonnes)	% (change)
Transformers	5,624	40.9	5,238	36.4	386	+7.4
Capacitors	5,671	41.2	6,975	48.4	-1,304	-18.7
Other Equipment	26	.2	21	.1	5	+22.4
Bulk Storage	2,444	17.7	2,172	15.1	272	+12.5
Total	13,765	100.0	14,406	100.0	-641	-4.5

Table NF–4: Characterization of Non–federal Askarel Waste

MINERAL OIL WASTE

In December 1993 there were approximately 3,631 tonnes (net weight) of non–federal PCB–contaminated mineral oil in storage.

Compared to 1992, the inventory of contaminated mineral oil decreased 611 tonnes from 4,242 tonnes to 3,631 tonnes. The actual amount treated may actually be greater than the difference reported here.

Note:

PCB–contaminated mineral oil often goes directly from in–use equipment to a treatment facility without being stored and included in inventory.

Mineral Oil (net Weight)	NWT	Yuk	BC	Alta	Sask	Man	Ont	Que	NB	NS	PEI	Nfld	Total
Transformers	0.4	0.4	42.7	0.5	1.1	8.7	181.4	93.9	6.4	12.4	0.3	0.0	348
Other Equipment	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.2	0.0	0.0	0
Bulk Storage	35.0	0.2	350.9	121.4	13.0	2.1	2,534.4	149.3	43.9	1.4	22.6	9.1	3,283
Total	35.4	0.6	393.6	121.9	14.1	10.8	2,715.8	243.3	50.3	14.0	22.9	9.1	3,631

Table NF–5: Non–federal PCB–Contaminated Mineral Oil Waste (net weight tonnes)

OTHER PCB WASTES

In addition to askarel stored in bulk containers and askarel–containing equipment, there are a variety of other PCB–contaminated wastes in storage. These wastes represent the majority of total PCB wastes, 104,266 tonnes (85.7%) of the total PCB wastes at the end of December 1993 (Figure NF–7). "Other PCB–contaminated Wastes" include such materials as:

- Soil (93,365 tonnes, 89.5%)
- PCB–containing fluorescent lamp ballasts (5,290 tonnes, 5.1%)
- Drained transformers and other equipment (1,406 tonnes, 1.4%)
- Miscellaneous wastes, such as absorbents and clothing used in spill clean–up, and other debris (4,205 tonnes, 4.0%)

The total quantity of other PCB–contaminated wastes decreased by 15,394 tonnes from the 119,660 tonnes reported at the end of December 1992.

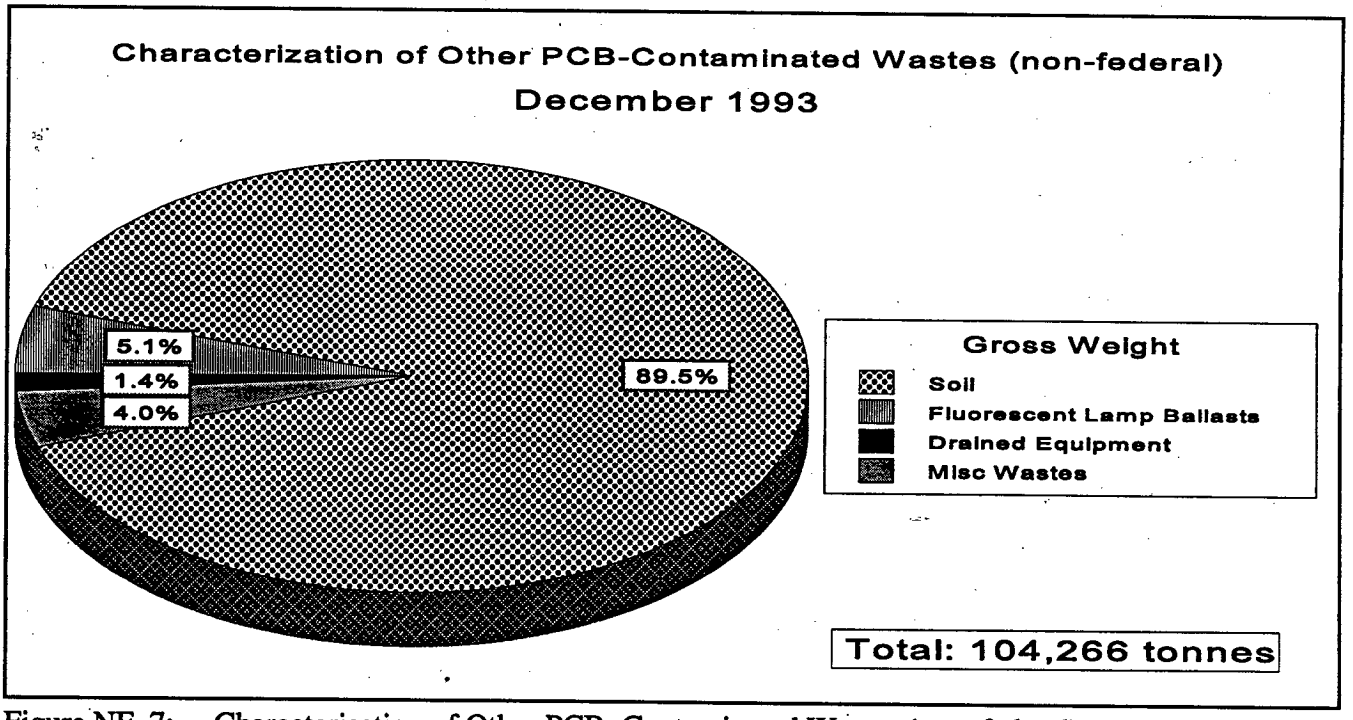

Figure NF–7: Characterisation of Other PCB–Contaminated Wastes (non–federal)

Item	1993 Inventory	%	1992 Inventory	%	+/- (tonnes)	% (change)
Soil	93,365	89.5	98,808	82.6	-5,443	-5.5
Fluorescent lamp ballasts	5,290	5.1	9,299	7.8	-4,009	-43.1
Drained Equipment	1,406	1.4	2,408	2.0	-1,002	-41.6
Misc Wastes	4,205	4.0	9,145	7.6	4,940	-54.0
Total	104,266	100.0	119,660	100.0	-5,514	-12.9

Table NF–6: Other Non–federal PCB–Contaminated Wastes

PCB WASTE STORAGE SITES

In December 1993, there were 2,721 non–federal PCB waste storage sites in Canada. An additional 87 storage sites have been identified since December 1992.

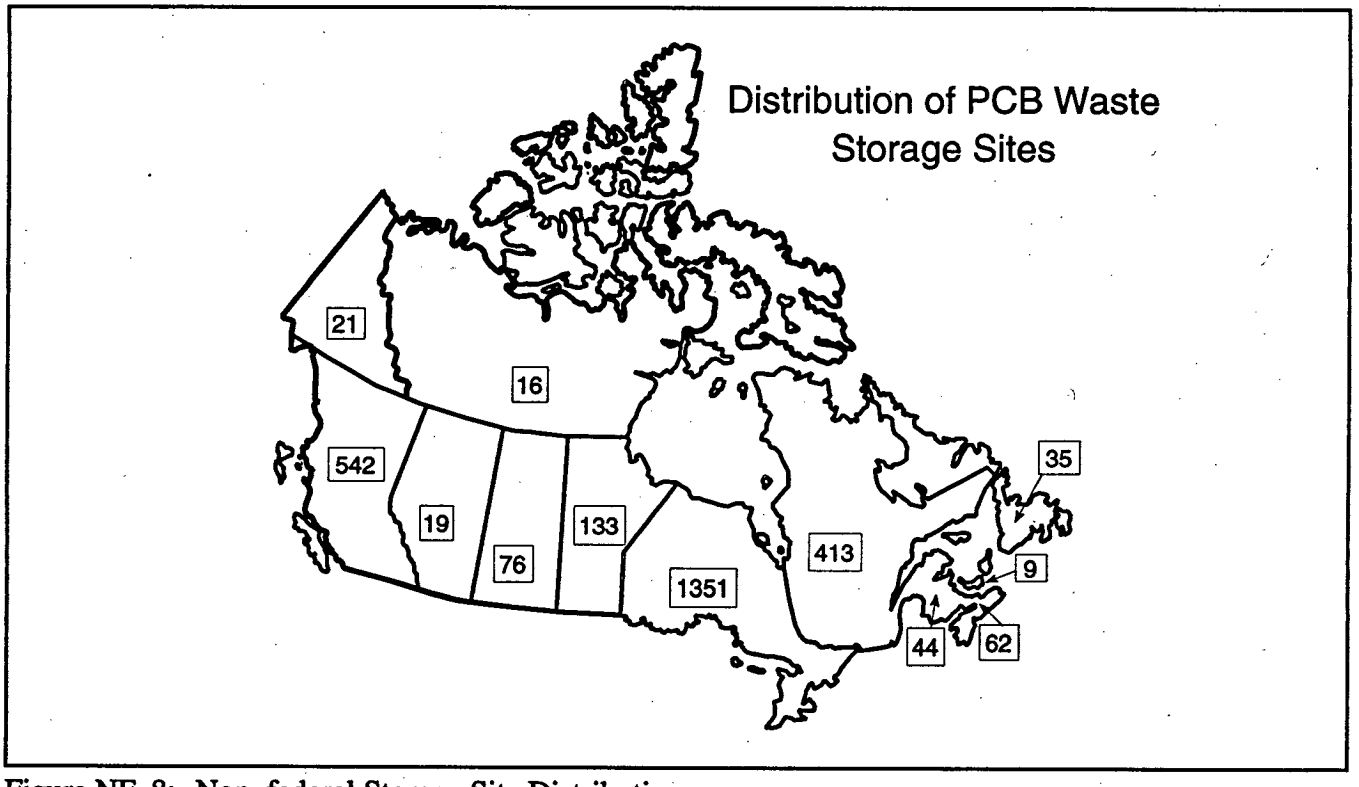

Figure NF–8: Non–federal Storage Site Distribution

An analysis of non–federal PCB waste storage sites by the quantity of PCB wastes stored are presented in (Figure NF–9 and Table NF–7). The sites are divided into the following categories:

- less than 100 kg
- greater than 100 kg to 1 tonne
- greater than 1 to 10 tonnes
- greater than 10 to 100 tonnes
- greater than 100 to 1,000 tonnes
- greater than 1,000 to 10,000 tonnes
- greater than 10,000 tonnes

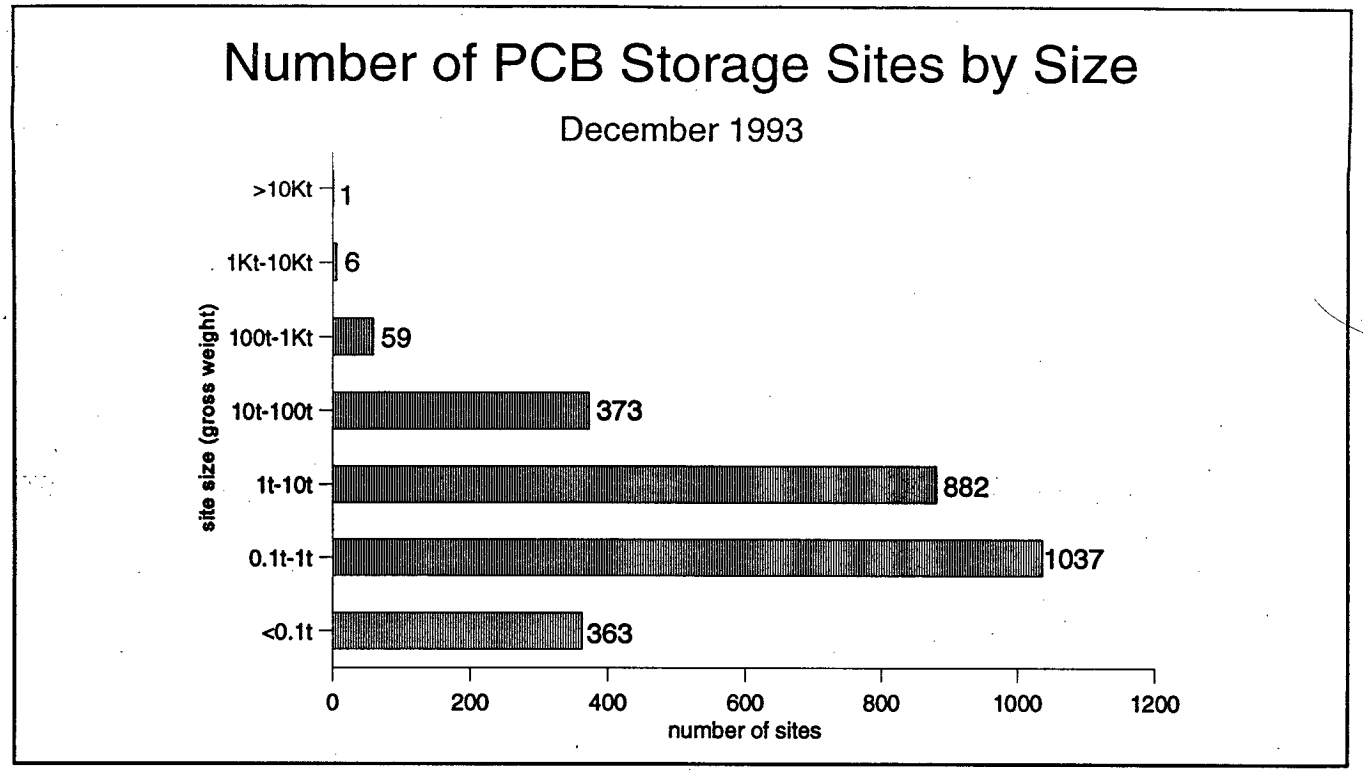

Figure NF–9: Number of Non–federal PCB Storage Sites by Size

Fifty–three percent (64,000 tonnes) of the non–federal PCB wastes are stored at the Pottersburg Creek site in Ontario. Close to 22.2% (27,091.8 tonnes) are stored at the 6 sites containing between 1,000 and 10,000 tonnes. Cumulatively, 91,092 tonnes (75%) of all non–federal PCB wastes in Canada are stored at 7 of the 2,721 non–federal storage facilities.

At the lower end of the waste–storage–site scale, the 1,037 sites containing between 100 kg and 1 tonne of PCB wastes each, account for less than 1% (411.1 tonnes) of the total non–federal PCB wastes. The 882 sites containing between one and ten tonnes each, contain only 2.6% (3,171.2 tonnes) of the total PCB wastes.

This analysis indicates an uneven distribution of PCB waste storage sites and that a relatively small number of sites (7) store the majority of non–federal PCB wastes in Canada (see Table NF–8, page 43).

NON–FEDERAL PCB WASTE STORAGE SITES
BY PROVINCE/TERRITORY AND SITE SIZE CLASS
December 1993

PROVINCE/ TERRITORY		<100 kg	100 kg - 1 tonne	1-10 tonnes	10-100 tonnes	100-1,000 tonnes	1,000 - 10,000 tonnes	> 10,000 tonnes	Total Sites / Total Tonnes
NFLD	Sites	3	9	11	12	0	0	0	35
	Tonnes	0.2	3.2	41.8	398.4	0.0	0.0	0.0	443.6
PEI	Sites	3	2	3	1	0	0	0	9
	Tonnes	0.2	0.6	12.9	31.5	0.0	0.0	0.0	45.2
NS	Sites	8	22	18	11	3	0	0	62
	Tonnes	0.3	9.4	62.1	234.8	486.4	0.0	0.0	793.0
NB	Sites	5	11	12	14	2	0	0	44
	Tonnes	0.2	3.5	58.0	536.3	267.4	0.0	0.0	865.4
QUE	Sites	115	125	112	58	3	0	0	413
	Tonnes	4.7	45.5	457.5	1,771.9	1,252.6	0.0	0.0	3,532.2
ONT	Sites	95	523	508	192	29	3	1	1,351
	Tonnes	2.8	220.2	1,780.0	5,801.9	7,816.7	17,487.8	64,000.0	97,108.6
MAN	Sites	11	73	37	9	3	0	0	133
	Tonnes	0.4	27.5	120.2	309.9	842.5	0.0	0.0	1,300.5
SASK	Sites	13	27	10	23	3	0	0	76
	Tonnes	0.5	9.8	22.9	734.6	339.3	0.0	0.0	1,107.1
ALTA	Sites	2	5	5	4	3	0	0	19
	Tonnes	0.0	0.9	18.7	126.6	1,589.5	0.0	0.0	1,735.7
BC	Sites	97	234	151	46	11	3	0	542
	Tonnes	4.5	88.6	535.1	1,162.4	2,420.0	9,604.8	0.0	13,815.4
YUK	Sites	8	6	6	0	1	0	0	21
	Tonnes	0.2	1.9	21.0	0.0	173.8	0.0	0.0	196.9
NWT	Sites	3	0	9	3	1	0	0	16
	Tonnes	0.2	0.0	41.0	126.5	551.6	0.0	0.0	719.3
NON-FEDERAL TOTALS	Sites	363	1,037	882	373	59	6	1	2,721
	Tonnes	14.2	411.1	3,171.2	11,234.8	15,739.8	27,739.8	64,000.0	121,662.9

Table NF–7: Non–federal PCB Waste Storage Sites

In Canada, there are two approved methods available for the destruction of PCB wastes, thermal destruction (e.g., by high temperature incineration), and chemical treatment (decontamination). Decontamination is a chemical process applicable to mineral oil containing low concentrations of PCBs. High concentration PCB wastes are more effectively destroyed using a thermal process. Some PCBs were exported overseas for destruction. However, on August 15, 1990, the federal Minister of Environment banned the overseas export of PCBs. Before the PCB export ban, PCB wastes were sent to two incineration facilities in Europe: Tredi in France, and Rechem in Wales.

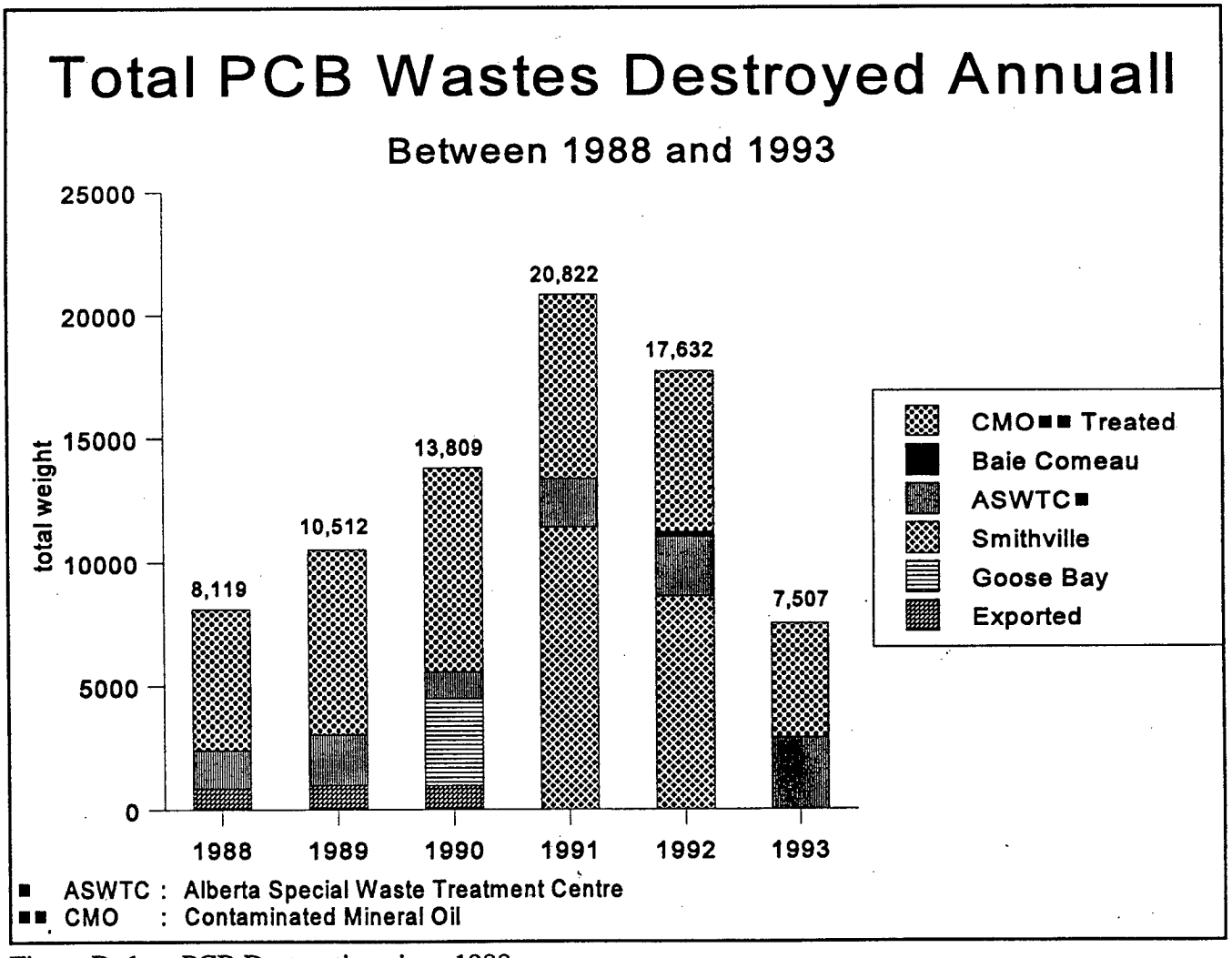

Figure D–1: PCB Destruction since 1988

INCINERATION OF PCB WASTES

Incineration of PCB wastes in Canada to date has occurred at four sites: The first is the only permanent incineration facility in Canada licensed to destroy PCBs, the Alberta Special Waste Treatment Centre, near Swan Hills, Alberta.

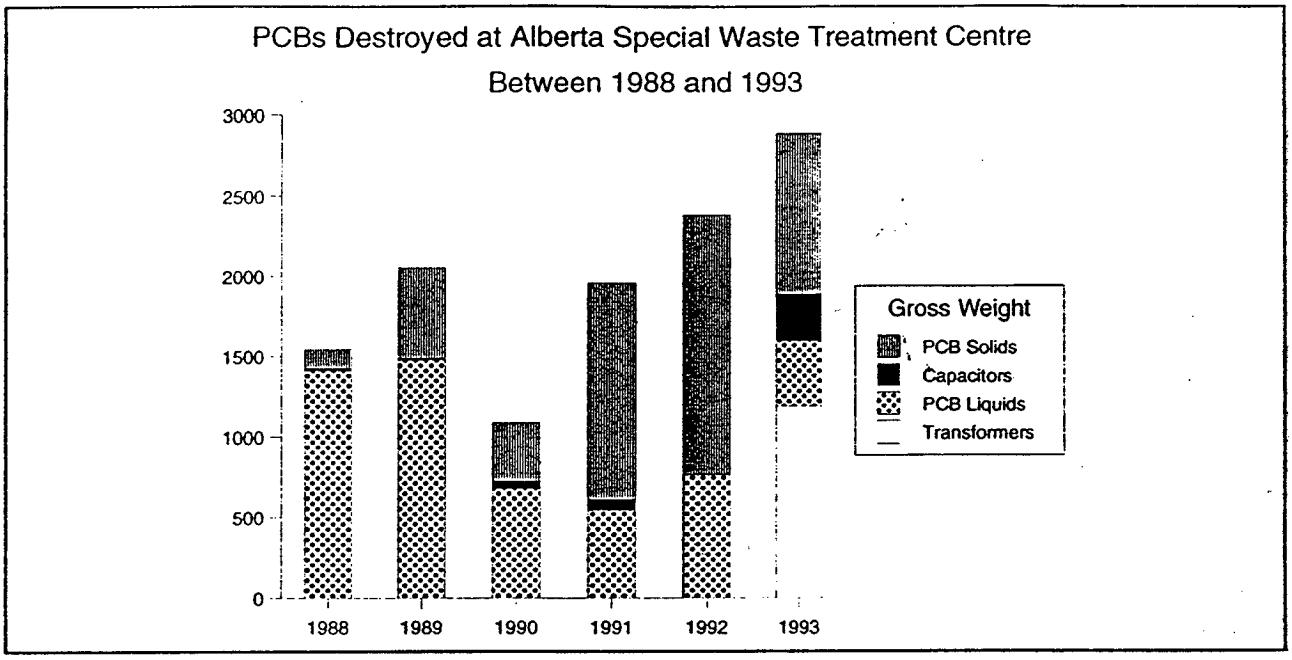

Figure D–2: Incineration of PCB Wastes 1992

The second was a temporary incineration project at the Department of National Defence Base at Goose Bay, Labrador, using a transportable incinerator, where 3,500 tonnes of wastes were destroyed between January and July 1990.

The third site was another temporary project, managed by the Ontario Ministry of Environment, at Smithville, Ontario where 18,000 tonnes of PCB wastes were destroyed.

The fourth was at a test site near Baie Comeau, Québec where 196 tonnes of soil, 9 tonnes of askarel, and 13 tonnes of PCB–contaminated mineral oil were destroyed in 1993.

In 1993, an additional 1,191 tonnes of transformer carcasses were decontaminated and returned to service.

CHEMICAL TREATMENT OF PCB–CONTAMINATED MINERAL OIL

The treatment of low–level PCB–contaminated oil has been practised in Canada since 1983. Between 1983 and 1987, 5,888 tonnes (6.5 million litres) were treated (CCREM, 1987). Between 1988 and 1993, a further 39,903 tonnes were treated. This brings the total amount treated to 47,668 tonnes.

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