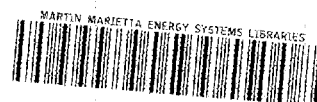


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**PCB Annual Report for
Oak Ridge National Laboratory-1984**

C. Y. Horton
B. D. Barkenbus

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National Technical Information Service
U.S. Department of Commerce
5285 Port Royal Road, Springfield, Virginia 22161
NTIS price codes--Printed Copy: A03; Microfiche A01

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ORNL/TM-9701
Distribution Category UC-13

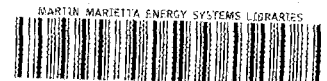
Department of Environmental Management
Environmental and Occupational Safety Division

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C. Y. Horton
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Date Published - August 1985

Prepared by the
Oak Ridge National Laboratory
Oak Ridge, Tennessee 37831
operated by
Martin Marietta Energy Systems, Inc.
for the
U.S. Department of Energy
under
Contract No. DE-AC05-84OR21400



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PCB ANNUAL REPORT FOR ORNL-CY 1984

ABSTRACT

Stringent government regulations control the use and disposal of Polychlorinated Biphenyl (PCB) materials. These same regulations require accurate recordkeeping by the owner/operator of a facility where PCBs are in use. This report details Oak Ridge National Laboratory (ORNL) efforts to comply with the Toxic Substance Control Act and the U.S. Environmental Protection Agency's new regulations found in Title 40, Code of Federal Regulations (CFR). This document provides detailed records of PCB materials still in use, PCB wastes generated, their origins, storage of PCB wastes and off-site shipments of this waste during CY 1984.

1.0 INTRODUCTION

Polychlorinated biphenyls (PCBs) are a family of chlorinated aromatic hydrocarbons. They are used extensively in electrical equipment, such as transformers and capacitors, because of their dielectric properties, chemical stability, and fire resistance. PCBs are also used in industry as fluids for heat transfer systems, fire retardants, and plasticizers.

It is now known that PCBs can be detrimental to human and animal health due to their persistent nature in the environment. Because they are relatively insoluble in water and highly soluble in lipids, they can accumulate in body fats of humans and animals. The known toxic effects of PCBs in humans include an acne like skin eruption, pigmentation of the skin and nails, excessive eye discharge, swelling of eye lids, and distinctive hair follicles. There is also a possible association between occupational exposure to PCBs and cancer in humans (NIOSH, Polychlorinated Biphenyls, Current Intelligence Bulletin 7, November 3, 1975, pp. 51-58) .

The control of PCBs was mandated by Congress under the Toxic Substance Control Act (TSCA) of 1976, Public Law 94-469, Section 6 (e). To enforce TSCA, the Environmental Protection Agency (EPA) enacted regulations which are published in the Code of Federal Regulations (CFR) under Title 40, Part 761. Subpart B of 40 CFR 761 outlines requirements pertaining to the manufacture, processing, distribution, and use of PCBs. Marketing and labeling requirements are specified in Subpart C and storage and disposal requirements in Subpart D.

The recordkeeping responsibilities of the owner or operator of a facility using or storing PCBs are detailed in 40 CFR 761.180. In addition to various recordkeeping requirements, an annual report is to be prepared for each facility by July 1, covering the previous calendar year. This report is prepared to comply with the PCB reporting requirements.

Oak Ridge National Laboratory (ORNL) handles PCBs and PCB-contaminated wastes, which are stored on-site before their disposal at an EPA approved off-site disposal facility. In addition, there are PCB articles, PCB containers, PCB equipment, and PCB-contaminated electrical equipment (see 40 CFR 761.3 for definitions) at ORNL which are still in active use.

This document provides updated inventories and addresses PCB-related activities at ORNL during calendar year 1984.

2.0 PCB REGULATIONS

TSCA is the latest and most encompassing federal law on toxicology and safety with which industry must comply. The goal of this act is to provide EPA with the authority to regulate chemical substances and mixtures which present an unreasonable risk of injury to human health or to the environment. To achieve this goal, TSCA implementation activities emphasize not only control of specific problems under TSCA regulatory provisions, but the use of TSCA authorities to support other governmental and nongovernmental programs to control toxic substances.

Perhaps the most significant impact of TSCA on ORNL has been the regulations dealing with PCBs. Section 6 (e) of TSCA requires the EPA to control the manufacture, processing, distribution in commerce, use, and disposal of PCBs. EPA issued a final PCB rule on August 25, 1982 (47 FR 37342) that amended the May 31, 1979, PCB rule. This action authorizes the use of PCBs in capacitors and the use and servicing of PCBs in electromagnets, circuit breakers, voltage regulators, cables, and switches. Transformer use (other than railroad transformers) is also covered by this rule. To implement this PCB-control program, EPA, among other provisions, has:

1. Banned the manufacture, distribution in commerce, and use of PCBs in other than a "totally enclosed manner."
2. Established categories of transformers [e.g., PCB transformers (> 500 ppm), PCB-contaminated electrical equipment (50-500 ppm), and non-PCB transformers (< 50 ppm)].
3. Set a ruling that a PCB transformer may be converted to PCB-contaminated electrical equipment or to non-PCB transformer by draining, refilling, and/or otherwise servicing the transformer.

4. Established criteria for the disposal of PCBs, PCB articles (transformers, PCB capacitors, PCB hydraulic machines, PCB-contaminated electrical equipment, and other PCB articles), PCB containers, and PCBs resulting from the clean-up and removal of spills (40 CFR 761.60).
5. Established standards for the marking (40 CFR 761.40), storage, and spill prevention of PCBs and PCB-contaminated liquids and solids (40 CFR 761.65).
6. Prohibited the use of PCB transformers and PCB-filled electromagnets (with concentrations of 500 ppm or greater) posing an exposure risk to food and feed after October 1, 1985.
7. Authorized the use of all other PCB transformers for the remainder of their useful lives and required a quarterly inspection of this equipment for leaks of dielectric fluids.
8. Authorized the use of large capacitors that are located in restricted access electrical substations or indoor installations for the remainder of their useful lives. The use of all other large PCB capacitors after October 1, 1988, however, is prohibited.

On October 11, 1984, EPA proposed amendments to its August 25, 1982 PCB electrical use rule to address the risks posed by fires involving PCB transformers (FR 39966).

The EPA amendments include: Registration of all PCB transformers (transformers having > 500 ppm PCBs) with appropriate fire department jurisdictions is required. All PCB transformer fire-related incidents must be reported to the National Spill Response Center. Provisions for immediate removal of stored combustibles from PCB transformer locations, the marking of the exterior at PCB transformer locations with PCB labels, and the isolation of PCB transformers from building ventilation equipment and ductwork. This proposal is expected to be finalized by the end of Summer, 1985.

3.0 RECORDS AND REPORTING

Detailed tracking of PCB materials at ORNL is accomplished via the PCB Tracking System (PCBTS), the Hazardous Material Tracking System (HMTS), and the Program Maintenance Report (PMR).

A computer inventory listing of equipment in use is generated via the PCBTS. This report supplies information such as: equipment serial number, equipment location, concentration (ppm) of PCB, gallon capacity, and date removed from service for each piece of equipment. Table 1 is the total ORNL listing of PCB equipment. Lists of transformers grouped by concentrations of PCB are also available via the PCBTS. Table 2 lists PCB transformers with concentrations less than 500 ppm. Table 3 lists transformers with PCB concentrations greater than 500 ppm.

Under the Interim Measures Program, PCB transformers of 500 ppm or greater (see Table 3) are to be inspected quarterly. In compliance with this regulation, we have access to the Program Maintenance Report (PMR). This database stores inspection reports on each transformer. These reports include the inspectors' initials, badge number, date, color and pH of oil, comments, and action taken. Through this system, a specific transformer can be referenced by serial number and all inspection reports reviewed in chronological order.

Records of PCB wastes generated are entered into the HMTS along with records of other wastes handled at ORNL, and the PCBTS copies the PCB records and is used to produce various reports. Total solid and liquid wastes shipped off-site and stored during a specific time period can be generated by PCBTS. A summary of the PCB waste totals and a summary of the PCB waste which is shipped to off-site disposal facilities for CY 1984 are provided in Section 5 of this report.

Table 1. PCB Equipment Summary Report

SERIAL NUMBER	LOCATION	PCB CONCENTRATION	CAPACITY		DATE REMOVED FROM SERVICE
			GALLONS	KILOGRAMS	
107182	7505	49 PPM	.250	1.000	
12446	6000	1,000,000 PPM	375.000	1421.250	
15198	7033	7 PPM	225.000	890.650	
154363	4501	< 5 PPM	364.000	1379.560	
1814098	3044	36 PPM	.500	2.000	
1901716	7033	< 5 PPM	210.000	795.900	
1902055	4509	17 PPM	682.000	2584.780	
1902056	4509	9 PPM	682.000	2584.780	
1902057	4509	7 PPM	682.000	2584.780	
202600110	2026	49 PPM	4.000	15.160	
2371103	7901	6 PPM	1297.000	4915.630	
2371106	2632	18 PPM	1297.000	4915.630	
2506-098	2506	19 PPM	.500	2.000	
2519-002	2519	31 PPM	.250	1.000	
2519-003	2519	49 PPM	.250	1.000	
2525-028	2525	28 PPM	3.000	11.370	
2525-029	2525	15 PPM	10.000	37.900	
2525-032	2525	49 PPM	10.000	37.900	
2525-048	2525	7 PPM	10.000	37.900	
2525-049	2525	18 PPM	10.000	37.900	

Table 1. (Continued)

S E R I A L N U M B E R	L O C A T I O N	P C B C O N C E N T R A T I O N	C A P A C I T Y		D A T E R E M O V E D F R O M S E R V I C E
			G A L L O N S	K I L O G R A M S	
2525-063	2525	11 PPM	5.000	18.950	
2525-072	2525	49 PPM	15.000	56.850	
2525-076	2525	49 PPM	14.000	53.060	
2525-089	2525	9 PPM	5.000	19.000	
2525-094	2525	49 PPM	10.000	38.000	
2525-115	2525	49 PPM	3.000	11.370	
2525-705	2525	19 PPM	16.000	60.640	
2546-1	3012	10 PPM	80.000	303.200	
2546-2	3012	39 PPM	80.000	303.200	
2546-3	3012	29 PPM	80.000	303.200	
27140-10	7033	16 PPM	237.000	898.230	
27140-11	7033	10 PPM	237.000	898.230	
27140-16	7033	18 PPM	237.000	898.230	
27140-20	7033	19 PPM	237.000	898.230	
2P175	7500	49 PPM	10.000	37.900	
3012-004	3012	49 PPM	5.000	18.950	
3012-015	3012	16 PPM	5.000	18.950	
3012-016	3012	15 PPM	150.000	568.500	
3012-017	3012	32 PPM	400.000	1516.000	
3012-111213	3012	34 PPM	192.000	727.680	
3019-001	3019	49 PPM	2.000	7.580	

Table 1. (Continued)

SERIAL NUMBER	LOCATION	PCB CONCENTRATION	CAPACITY		DATE REMOVED FROM SERVICE
			GALLONS	KILOGRAMS	
3024-1101	3024	49 PPM	150.000	568.500	
3024-141	3024	49 PPM	20.000	75.800	
3024-194	3024	49 PPM	15.000	56.850	
3024-201	3024	49 PPM	10.000	38.000	
3024-233	3024	49 PPM	.500	2.000	
3024-234	3024	49 PPM	15.000	56.850	
3024-236	3024	29 PPM	20.000	75.800	
3024-237	3024	49 PPM	15.000	56.850	
3024-238	3024	49 PPM	15.000	56.850	
3024-240	3024	49 PPM	15.000	56.850	
3024-243	3024	49 PPM	.500	2.000	
3024-246	3024	11 PPM	20.000	75.800	
3024-258	3024	1436 PPM	1.000	3.790	
3024-259	3024	49 PPM	15.000	56.850	
3024-260	3024	49 PPM	15.000	56.850	
3024-264	3024	49 PPM	15.000	56.850	
3024-269	3024	83 PPM	3.000	11.370	
3024-425	3024	49 PPM	15.000	56.850	
3025-002	3025	49 PPM	.250	1.000	
3025-007	3025	18 PPM	.250	1.000	
3039-1020	3039	49 PPM	7.000	27.000	

Table 1. (Continued)

S E R I A L N U M B E R	L O C A T I O N	P C B C O N C E N T R A T I O N	C A P A C I T Y		D A T E R E M O V E D F R O M S E R V I C E
			G A L L O N S	K I L O G R A M S	
3044-358	3044	65 PPM	15.000	56.850	
3044-360	3044	40 PPM	2.000	7.580	
3044-365	3044	6 PPM	55.000	208.450	
3044-366	3044	8 PPM	2.000	7.580	
3044-370	3044	7 PPM	2.000	7.580	
3044-378	3044	9 PPM	2.000	7.580	
3153348	7033	5 PPM	55.000	208.450	
3160686	7033	45 PPM	110.000	416.900	
3428808	7901	15 PPM	200.000	758.000	
3502-450	3502	49 PPM	15.000	56.850	
3502-451	3502	49 PPM	15.000	56.850	
3502-562	3502	49 PPM	15.500	58.745	
3525-023	3525	301 PPM	2.000	7.580	
3525-054	3525	6 PPM	.500	2.000	
3525-055	3525	49 PPM	.250	1.000	
378584	7606	49 PPM	2.000	7.580	
40101	7700	38 PPM	.250	1.000	
4500S-039	4500S	49 PPM	5.000	18.950	
4501-001	4501	49 PPM	.500	2.000	
4501-002	4501	146 PPM	.500	2.000	
49177	4505	11 PPM	200.000	758.000	

Table 1. (Continued)

SERIAL NUMBER	LOCATION	PCB CONCENTRATION	CAPACITY		DATE REMOVED FROM SERVICE
			GALLONS	KILOGRAMS	
5500-999	5500	9 PPM	2.000	7.580	
572308L	6010	49 PPM	.500	2.000	
59298	3525	11 PPM	197.000	746.630	
6000-057	6000	49 PPM	1.000	3.790	
6000-063	6000	247 PPM	1500.000	5685.000	
6000-064	6000	180 PPM	.250	1.000	
6000-065	6000	163 PPM	.250	1.000	
6000-066	6000	163 PPM	.250	1.000	
6000-077	6000	11 PPM	.250	1.000	
6010-037	6010	49 PPM	40.000	151.600	
6010-062	6010	49 PPM	3.000	11.370	
6010-075-1	6010	6 PPM	350.000	1326.500	
6010-076-2	6010	49 PPM	350.000	1326.500	
6010-077-3	6010	7 PPM	350.000	49.270	
6010-078-4	6010	13 PPM	350.000	1326.500	
6010-079-4	6010	49 PPM	300.000	1137.000	
6010-080-3	6010	49 PPM	300.000	1137.000	
6010-082-1	6010	49 PPM	300.000	1137.000	
6010-248	6010	49 PPM	.500	2.000	
60569	3525	32 PPM	.500	2.000	
6154018	7033	43 PPM	40.000	151.640	
6589125	7033	7 PPM	50.000	189.500	(Spare)
66710	3039	29 PPM	130.000	492.700	
66711	3039	10 PPM	130.000	492.700	

Table 1. (Continued)

SERIAL NUMBER	LOCATION	PCB CONCENTRATION	CAPACITY		DATE REMOVED FROM SERVICE
			GALLONS	KILOGRAMS	
7022144	7920	38 PPM	275.000	1042.250	
72V9421	1504	13 PPM	220.000	833.800	
7351430	3047	36 PPM	350.000	1326.500	
7367549	4508	22 PPM	500.000	1895.000	
7367549 REG	4508	8 PPM	112.000	425.000	
7367553	4508	17 PPM	500.000	1895.000	
7367553 REG	4508	5 PPM	112.000	425.000	
7367568 SW	7901	42 PPM	19.000	72.030	
7367568	7901	21 PPM	499.000	1891.660	
7367568 REG	7901	41 PPM	119.000	451.118	
7367598	4500S-W2	1,000,000 PPM	829.000	3141.910	
7373793	7901	14 PPM	500.000	72.027	
7375500	6000	1,000,000 PPM	829.000	3141.910	
7375505	4500S-W1	1,000,000 PPM	829.000	3141.910	
7375507	4509	1,000,000 PPM	829.000	3141.910	
7375510	6000	1,000,000 PPM	829.000	3141.910	
7500-002-1	7500	49 PPM	3.000	11.370	
7500-007	7500	49 PPM	1.000	3.790	
7500-014	7500	49 PPM	1.000	3.790	
7506-008	7506	49 PPM	2.000	7.580	
7506-268	7506	49 PPM	2.000	7.580	
7516-001	7516	49 PPM	5.000	18.950	
756725	7709	49 PPM	1.000	3.790	

Table 1. (Continued)

SERIAL NUMBER	LOCATION	PCB CONCENTRATION	CAPACITY		DATE REMOVED FROM SERVICE
			GALLONS	KILOGRAMS	
7600-011	7600	49 PPM	10.000	37.900	
7603-038	7603	49 PPM	15.000	56.850	
7603-1096	7606	49 PPM	2.000	7.580	
7731581 REG	7901	10 PPM	119.000	451.118	
7731581	7901	12 PPM	499.000	1891.660	
7731582	7710	16 PPM	500.000	1895.000	
7731801	7901	16 PPM	499.000	1891.210	
7921-001	7921	49 PPM	10.000	37.900	
7921-003	7921	49 PPM	12.000	45.480	
7930-009	7930	49 PPM	.250	1.000	
8110078	3000	32 PPM	1350.000	5116.500	
8110079	3000	22 PPM	1350.000	5116.500	
8110080	3000	12 PPM	1350.000	5116.500	
8110081	2000	15 PPM	390.000	1478.100	
8671187	7033	46 PPM	50.000	189.500	
8671542	7033	5 PPM	45.000	170.550	
90201110	902	49 PPM	50.000	189.500	
957331	7033	10 PPM	150.000	568.500	
A59465	7033	< 5 PPM	80.000	303.200	
A59466	7033	< 5 PPM	80.000	303.200	
3A59469	7033	< 5 PPM	80.000	303.200	

Table 1. (Continued)

SERIAL NUMBER	LOCATION	PCB CONCENTRATION	CAPACITY		DATE REMOVED FROM SERVICE
			GALLONS	KILOGRAMS	
A9F1211	7700	2 PPM	145.000	549.550	
A9F1213	7700	4 PPM	145.000	549.550	
B339639	7033	10 PPM	185.000	701.150	
B339640	7033	9 PPM	185.000	701.150	
B339641	7033	5 PPM	185.000	701.150	
B5H8007	7700	5 PPM	145.000	549.550	
C-864777A	7604	1,000,000 PPM	265.000	1004.350	2/28/84
D-554601	6000	1,000,000 PPM	800.000	3032.000	
D-578512	6000	1,000,000 PPM	340.000	1288.910	
E-694971	6000	1,000,000 PPM	265.000	1004.350	
F496875-64P	3025	< 5 PPM	80.000	303.200	
F497848-64P	3025	< 5 PPM	80.000	303.200	
F497849-64P	3025	< 5 PPM	80.000	303.200	
F643634-67P	6010	30 PPM	94.000	356.260	
F959883	6010	20 PPM	300.000	1137.000	
F959884	6010	27 PPM	180.000	682.200	
H363007P72AA	2028	1,000,000 PPM	115.000	435.850	8/10/84
M9D1621	7500	28 PPM	145.000	549.550	
M9D1623	7500	25 PPM	145.000	549.550	
M9D1625	7500	5 PPM	145.000	549.550	
PKR-94711	3010	30 PPM	260.000	985.400	

Table 1. (Continued)

SERIAL NUMBER	LOCATION	PCB CONCENTRATION	CAPACITY		DATE REMOVED FROM SERVICE
			GALLONS	KILOGRAMS	
R-3333	7901	1,000,000 PPM	31.000	117.490	
R-3334	7901	1,000,000 PPM	31.000	117.490	
PE100005	2026	1,000,000 PPM	140.000	530.600	
T35H8007	7700	2 PPM	145.000	549.550	
X103336	7710	49 PPM	4.000	15.160	
X104416	3012	549 PPM	2.000	7.580	
X105593	3012	454 PPM	20.000	75.800	
X105593A	3012	950,000 PPM	150.000	568.500	
X117378	2011	49 PPM	285.000	1080.000	
X118754	2521	49 PPM	285.000	1080.000	
X119045	2088	49 PPM	285.000	1080.000	
X131220	5500	49 PPM	3.000	11.370	
X15523	7710	49 PPM	4.000	15.160	
X51212	3025	28 PPM	.250	1.000	
X56503	7710	49 PPM	5.000	18.950	
X57992	7605	9 PPM	.500	2.000	
X58191	3012	28 PPM	2.000	7.580	
X67432	3044	8 PPM	.250	1.000	
X83058	3598	49 PPM	400.000	1516.000	
X85102	3525	28 PPM	.250	1.000	
X92876	2572	49 PPM	285.000	1080.000	

Table 1. (Continued)

SERIAL NUMBER	LOCATION	PCB CONCENTRATION	CAPACITY		DATE REMOVED FROM SERVICE
			GALLONS	KILOGRAMS	
X95204	3012	149 PPM	2.500	9.475	
X96051	3012	53 PPM	1.000	3.790	
Y53390	5500	49 PPM	.500	2.000	

Table 2. PCB Transformers < 500 PPM

SERIAL NUMBER	LOCATION	PCB CONCENTRATION	CAPACITY		DATE REMOVED FROM SERVICE
			GALLONS	KILOGRAMS	
15198	7033	7 PPM	225.000	890.650	
154363	4501	< 5 PPM	364.000	1379.560	
1901716	7033	< 5 PPM	210.000	795.900	
1902055	4509	17 PPM	682.000	2584.780	
1902056	4509	9 PPM	682.000	2584.780	
1902057	4509	7 PPM	682.000	2584.780	
2371103	7901	6 PPM	1297.000	4915.630	
2371106	2632	18 PPM	1297.000	4915.630	
2546-1	3012	10 PPM	80.000	303.200	
2546-2	3012	39 PPM	80.000	303.200	
2546-3	3012	29 PPM	80.000	303.200	
27140-10	7033	16 PPM	237.000	898.230	
27140-11	7033	10 PPM	237.000	898.230	
27140-16	7033	18 PPM	237.000	898.230	
27140-20	7033	19 PPM	237.000	898.230	
3153348	7033	5 PPM	55.000	208.450	
3160686	7033	46 PPM	110.000	416.900	
3428808	7901	15 PPM	200.000	758.000	
49177	4505	11 PPM	200.000	758.000	
59298	3525	11 PPM	197.000	746.630	
6154018	7033	43 PPM	40.000	151.640	

Table 2. (Continued)

S E R I A L N U M B E R	L O C A T I O N	P C B C O N C E N T R A T I O N	C A P A C I T Y		D A T E R E M O V E D F R O M S E R V I C E
			G A L L O N S	K I L O G R A M S	
6589125	7033	7 PPM	50.000	189.500	(Spare)
66710	3039	29 PPM	130.000	492.700	
66711	3039	10 PPM	130.000	492.700	
7022144	7920	38 PPM	275.000	1042.250	
72V9421	1504	13 PPM	220.000	833.800	
7351430	3047	36 PPM	350.000	1326.500	
7367549	4508	22 PPM	500.000	1895.000	
7367549 REG	4508	8 PPM	112.000	425.000	
7367553	4508	17 PPM	500.000	1895.000	
7367553 REG	4508	5 PPM	112.000	425.000	
7367568 SW	7901	42 PPM	19.000	72.030	
7367568	7901	21 PPM	499.000	1891.660	
7367568 REG	7901	41 PPM	119.000	451.118	
7373793	7901	14 PPM	500.000	72.027	
7731581 REG	7901	10 PPM	119.000	451.118	
7731581	7901	12 PPM	499.000	1891.660	
7731582	7710	16 PPM	500.000	1895.000	
7731801	7901	16 PPM	499.000	1891.210	
8110078	3000	32 PPM	1350.000	5116.500	
8110079	3000	22 PPM	1350.000	5116.500	
8110080	3000	12 PPM	1350.000	5116.500	
8110081	2000	15 PPM	390.000	1478.100	
8671187	7033	46 PPM	50.000	189.500	

Table 2. (Continued)

S E R I A L N U M B E R	L O C A T I O N	P C B C O N C E N T R A T I O N	C A P A C I T Y		D A T E R E M O V E D F R O M S E R V I C E
			G A L L O N S	K I L O G R A M S	
8671542	7033	5 PPM	45.000	170.550	
957331	7033	10 PPM	150.000	568.500	
A59465	7033	< 5 PPM	80.000	303.200	
A59466	7033	< 5 PPM	80.000	303.200	
A59469	7033	< 5 PPM	80.000	303.200	
A9F1211	7700	2 PPM	145.000	549.550	
A9F1213	7700	4 PPM	145.000	549.550	
B339639	7033	10 PPM	185.000	701.150	
B339640	7033	9 PPM	185.000	701.150	
B339641	7033	5 PPM	185.000	701.150	
B5H8007	7700	5 PPM	145.000	549.550	
F496875-64P	3025	< 5 PPM	80.000	303.200	
F497848-64P	3025	< 5 PPM	80.000	303.200	
F497849-64P	3025	< 5 PPM	80.000	303.200	
F643634-67P	6010	30 PPM	94.000	356.260	
F959883	6010	20 PPM	300.000	1137.000	
F959884	6010	27 PPM	180.000	682.200	
M9D1621	7500	28 PPM	145.000	549.550	
M9D1623	7500	25 PPM	145.000	549.550	
M9D1625	7500	5 PPM	145.000	549.550	
PKR-94711	3010	30 PPM	260.000	985.400	
T35H8007	7700	2 PPM	145.000	549.550	

Table 3. PCB Transformers > 500 PPM

SERIAL NUMBER	LOCATION	PCB CONCENTRATION	CAPACITY		DATE REMOVED FROM SERVICE
			GALLONS	KILOGRAMS	
12446	6000	1,000,000 PPM	375.000	1421.250	
7367598	4500S-W2	1,000,000 PPM	829.000	3141.910	
7375500	6000	1,000,000 PPM	829.000	3141.910	
7375505	4500S-W1	1,000,000 PPM	829.000	3141.910	
7375507	4509	1,000,000 PPM	829.000	3141.910	
7375510	6000	1,000,000 PPM	829.000	3141.910	
C-864777A	7604	1,000,000 PPM	265.000	1004.350	2/28/84
D-554601	6000	1,000,000 PPM	800.000	3032.000	
D-578512	6000	1,000,000 PPM	340.000	1288.910	
E-694971	6000	1,000,000 PPM	265.000	1004.350	
H363007P72AA	2028	1,000,000 PPM	115.000	435.850	8/10/84
R-3333	7901	1,000,000 PPM	31.000	117.490	
R-3334	7901	1,000,000 PPM	31.000	117.490	
PE100005	2026	1,000,000 PPM	140.000	530.600	

4.0 PCB WASTE CHARACTERIZATION

PCB-contaminated oil is classified into oils containing > 5 ppm but < 500 ppm of PCBs and oils with > 500 ppm PCBs. Most of these oils are being used as dielectric fluid for electrical equipment (e.g., transformers and capacitors) or in heat exchange systems. Low concentrations of PCBs (> 5 , < 50 ppm) are frequently detected in waste oils from various sources. Oils with ≥ 500 ppm of PCBs are found primarily in PCB transformers still in use and are potential contamination sources. Following a sampling program, transformers containing PCBs in concentrations in excess of 50 ppm but less than 500 ppm are treated by oil replacement (retrofilling) to get the PCB level below 50 ppm. PCB computer records are updated to reflect these changes. During the period between 1980 and the end of 1984, when oil-filled transformers were first sampled, the ORNL PCB-contaminated transformers with concentrations < 500 ppm were converted to non-PCB transformers (concentrations < 50 ppm). The transformer with serial number 1901716 that was sent to an off-site facility for retrofitting is back at ORNL (present concentration is < 5 ppm). Twelve PCB-transformers with concentrations > 500 ppm which are listed in Table 3 are to be replaced in the near future.

The PCB-contaminated (> 5 ppm) wastes are currently shipped off-site for disposal. Commercial costs for PCB-incineration are on the order of \$290.00 per 55-gallon drum.

5.0 PCB WASTE TOTALS AND ORIGINS

Using the PCBTS, the total PCB materials in storage and those materials which are shipped off-site can be generated. These numbers are further broken down into liquid and solid wastes (see Table 4).

Table 4. PCB Waste Totals - CY 1984

Physical Form	Amount
<u>Storage On-Site</u>	
Solid	6,514 kg
Liquid	18,643 kg
<u>Shipped Off-Site^a</u>	
Solid	7,302 kg
Liquid	19,486 kg

^aPCB wastes are shipped to licensed commercial facilities for disposal.

In 1984, a total of 26,788 kg of PCB waste were shipped to off-site contractors. Three shipments were made to three different contractors. These shipments were: a) 36 drums to Chemical Waste Management Inc. at Emelle, Alabama (1/13/84), b) 26 drums of PCB waste and one transformer to Triangle Resource Industries at Greenbrier, Tennessee (6/14/84), and c) 56 drums to Rollins Environmental Services, Inc. at Deer Park, Texas (12/4/84). These wastes were incinerated and/or landfilled.

Information as to the source of the waste, number of drums generated, and concentration groupings also are available from the PCBTS (see Table 5). Eighty-seven drums of liquid PCB waste with concentrations of < 500 ppm (with the exception of ten drums with concentrations of > 500 ppm) were manifested in 1984. Since the concentrations of solid PCB wastes consisting of oily rags, light ballasts, and small capacitors are not determined, they are not included in Table 5.

At the end of CY 1984, there was not any PCB waste left in the Hazardous Waste Storage Facility, Building 7507. A total of 18 drums of PCBs were shipped to EPA approved disposal facilities.

Table 5. PCB Waste Shipped Off-Site for Disposal - CY 1984

*Drums	Source (Bldg. Number)	Plant
<u>Conc 5-500 ppm</u>		
<u>Liquids</u>		
18	2018	ORNL
1	2525	ORNL
32	3001	ORNL
1	3012	ORNL
2	4501	ORNL
1	4500N	ORNL
1	4500S	ORNL
8	6000	ORNL
1	7818	ORNL
21	9204-3	Y-12
1	9208	Y-12
<u>Conc > 500 ppm</u>		
<u>Liquids</u>		
10	7033	ORNL

*55-gallon size

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