8-15 Polychlorinated Biphenyls (PCB's)

POLYCHLORINATED BIPHENYLS 8-l5

(PCBs)

The Environmental Protection Agency (EPA) under the Toxic Substance Control Act (TSCA) has promulgated 40 CFR Part 76l, a regulation for the use and disposal of PCBs. In order to meet these regulations and Institute's position on PCB's, guidelines for use, storage, transport and disposal of PCBs is herein contained.

PCB's have a heavy liquid, oil-like consistency and weigh l0-l2 lbs. per gallon. Their high degree of chemical stability, low solubility in water, low vapor pressure, low flammability, high heat capacity, low electrical conductivity and favorable dielectric constant have made them commercially attractive. PCB's were generally used in electrical transformes, capacitors, heat transfer systems and hydraulic systems, as well as oil-filled: electromagnets, voltage regulators, switches, circuit breakers, reclosers and cables.

Almost all PCBs (Polychlorinated Biphenyls) in existence today were synthetically manufactured. Companies that used PCB's in the manufacture of transformers, capacitors, etc. often used other trade names for PCB's. The PCB trade name can be found on the manufacturer's name plate. The following list is representative of PCB trade names: Apirolio, Aroclor, Askerel, Asbestol, Clophen Chlorextol, Clorinol, Clorphen, Diaclor, Dk, Inclor, Fenclor, Dykanol, EEC-l8, Elemex, Eucarel, Hyvol, Inerteen, Kenechlor, N-3, No-flamol, Phenoclor, Pyroclor, Pyralene, Pyranol, Saf-T-Kuhl, Santotherm, Santovac l & 2, Savol Therminol.

DEFINITIONS FROM 40 CFR Part 37l

"PCB", and "PCB's" means any chemical substance that is limited to the biphenyl molecule that has been chlorinated to varying degrees or any combination of substances which contains such substance.

"PCB Item" is defined as any PCB Article, Container, PCB Container, or PCB Equipmment, that deliberately or unintentinally contains or has a part of it any PCB or PCB's.

"PCB Transformer" means any transformer that contains 500 ppm PCB or greater.

"PCB Container" means any package, can, bottle, bag, barrel, drum, tank, or other device that contains PCB's or PCB Articles and whose surfaces(s) has been in direct contact with PCB's.

Hazards of PCB Filled Electrical Equipment

We are writing to you concerning capacitors, transformers, and other equipment that may contain Polychlorinated Biphenyls (PCBs). We urge that all PCB-containing equipment be replaced and disposed of as soon as possible. Retrofilling with Non-PCB materials may be a viable alternative in some situations.

Equipment containing PCB's should not be accepted in transfer from other institutions or from other department within M.I.T. There are several reason for this advice. If you accept PCB-containing equipment, you also accept a very large toxic waste disposal bill that only escalates with the passage of time.

More important, any leak or fire will be treated by regulatory authorities as a toxic emergency. A typical, small PCB-transformer leak or fire often results in the effective loss of an entire building for several years and a multimillion dollar clean-up bill.

Federal and state agencies react this way because of the health effect of PCB's and their break-down products. Although toxicologists disagree about the degree of risk from PCB's and break-down products (dibenzodioxins and dibenzofurans), there is no reason why Institute personnel should experience any risk from fires orleaks. Medical information about PCB's can be obtained from Alan Ducatman, M.D., at x3-5360.

At present, the departments bear the cost of PCB identification and disposal. You can obtain help in this area by calling Mr. Donald Batson at the Safety Office, x3-3434, or Mr. William MacLachlan at Lincoln Laboratory, l8l-2382.

(The above is an exerpt from a letter to Department Heads and Laboratory Directors by Robert A. Alberty, Chairman, Institute Council on Environmental Health and Safety, June 4, l987.)

PCB FILLED CAPACITORS

As of October l, l988 the use or storage for reuse of certain P.C.B. filled capacitors is prohibited. This prohibition applies to both "Large High Voltage Capacitors" and "Large Low Voltage Capacitors" as defined in the Code of Federal Regulations, Title 40 Part 76l.30.

The Institutes' position on this regulation is that we want to remove such items from service as soon as possible and dispose of them in an approved manner.

(The above is an exerpt from a letter to Department Heads and Labortory Directors by John M. Fresina, Director of the Safety Office, March 23, l988.)

MARKING/LABELLING REQUIREMENTS FOR PCB ITEMS

PCB Items	Label Required Federal Regulations	Label Required MIT Other Requirements	
l. Transformers - more than 500 ppm	yes	yes	
2. Transformers - 50 to 500 ppm (which are classified contaminated)	no	yes	
3. Secure vaults/areas containing transformers	yes	yes	
4. Large high voltage capacitors 200 volts or more Prohibited-l0/0l/88	yes	yes	
5. Large high voltage capacitoors below 200 volts Prohibited-l0/l/88	no	yes	(a) Label when taken out of service (b)If manufactured after 7/l/78 the manufacturer must mark with"No PCB's" label.
6. Small capacitors	no	yes	(a) See equipment/ small capacitors #ll below (b) If manufactured after 7/l/78 the Manufacturer must mark with"No PCB's"
7. Secure areas containing large capacitors	yes	yes	
8. Electric motors	yes	yes	
9. Hydraulic systems	yes	yes	
l0. Heat transfersystems	yes	yes	
ll. Equipment containing small	yes	yes	As of 0l/0l/79 manufacturers must mark with "This equipment contains

			PCB's label of ML size.
12. Equipment containing PCB itmes/ fluids	yes	yes	
13. Constrainers containing PCB items/ fluids	yes	yes	
l4. Light fixture ballasts	no	no	If manufactured after 07/0l/78 the manufacturer must mark with"No PCB's label.
15. Vehicles carrying (a) PCB containers that contain more than 99.4 lbs. as liquids, or (b) with one or more PCB transformers	yes	yes	Vehicles must be marked on each end side with label of ML size.

See attached Marking Foremat (76l.45) for description of required labels ML or MS. All items listed (except ballasts) must be marked with a large PCB mark - ML unless the item is too small and then a small PCB mark - MS must be used.

76l.45 Marking formats.

The following formats shall be used for marking:

(a) Large PCB Mark- MS. Mark MS shall be as shown in Figure l. letters and striping on a white or yellow background and shall be suffciently durable to equal or exceed the life (including storage for disposal) ofthe PCB Article, PCB Equipment, or PCB Containers. The size ofthe mark shall be at least l5.25 cm (6 inches) on each side. If the PCB Article or PCB Equipment is too small to accommodate this size, the mark may be reduced in size proportionately down to a minimum of 5 cm (2 inches) on each side.

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*                      CAUTION                    *
*                      CONTAINS                   *
*                      PCB'S                      *
*              (POLYCHLORINATED BIPHENYLS)        *
*                                                 *
* A toxic environmental contaminant requiring     *
* special handling and disposal in accordance     *
* with U S Environmental Protection Agency        *
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* Regulation 40 CFR76l for Disposal Information *
* contact the nearest U S EPA Office.           *
* In case of accident or spill call toll free   *
* the US Coast Guard National Response Center   *
* 800 424-8802                                  *
*                                               *
*  Also Contact                                 *
*  Tel. No.                                     *
* * * * * * * * * * * * * * * * * * * * * * * *
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FIGURE 1

(b) Small PCB Mark - Ms. Mark Ms shall be as shown in Figure 2, letters and striping on a white or yellow background, and shall be sufficeiently durable to equal or exceed the life (including storage for disposal) of the PCB Article, PCB Equipment, or PCB Container. The mark shall be a rectangle 2.5 by 5 cm (l inch by 2 inches). If the PCB Article or PCB Equipment is too small to accommodate this size, the mark may be reduced in size proportionately down to a minimum of l by 2 cm (.4 by .8 inches).

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*              CAUTION CONTAINS PCB's     *
*       (POLYCHLORINATED BIPHENYLS)       *
*       FOR PROPER DISPOSAL INFORMATION   *
*       CONTACT U S ENVIRONMENTAL         *
*             PROTECTION AGENCY           *
* * * * * * * * * * * * * * * * * * * * *
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FIGURE 2

PCB SPILLS

All PCB spills of any size must be reported to the Industrial Hygiene Office immediately. Major spills must also be reported to the Safety Office.

The Industrial Hygiene Office must be consulted for cleanup procedures for all spills.

Details of the spill, location and cleanup must be recorded at the completion of the cleanup operation. Check with the Industrial Hygiene Office for more information on the recordkeeping.

Records must be kept for 5 years.

PCB DISPOSAL

The disposal of PCB's and PCB items is the responsibility of the department involved.

The Safety Office will assist with the names of vendors and other pertinent information concerning the identification, testing and

disposalof PCB's and PCB items.

All hazardous waste manifests generated as result of any PCB's or PCB items being placed into transport for disposal must be sent to the proper State agency listed on the manifest. In addition, a copy of the generators copy of the hazardous waste manifest must be sent to the Safety Office (El9-207) for the Institute records.

Records must be kept for 5 years after the facility ceases using or storing PCB's or PCB items.

RECORDS AND MONITORING

PCB's, PCB Items and PCB Transformers

The use or storage of 99.4 lbs. or more of PCB's contained in PCB containers, one or more PCB transformers or 50 or more Large High or Low Voltage Capacitors must develop and maintain records on the disposition of PCB's and PCB items.

An annual document must be prepared by July l for the previous calendar year. This document must contain the type, weight, location of PCB items, the date an item is placed into storage and the date an item is placed in transport for disposal.

PCB items and containers must be dated on the item or container when they are placed in storage for disposal.

PCB items in storage for disposal must be checked for leaks once every 340 days and PCB items temporarily stored outside must be checked weekly.
Records must be kept for 5 years after a facility ceases using or storing PCB's or PCB items.

PCB TRANSFORMERS

In addition to all of the above requirements, PCB transformers require the following:

Inspection -A visual inspection of each PCB transformer in use or stored for reuse must be performed at least once every 3 months. The visual inspection must include investigation for any leak of dielectric fluid on or around the transformer. Records of inspection and maintenance history must be maintained for 3 years after disposing of the transformer.

Fire Department Registration - All PCB transformers including PCB transformers in storage for reuse must be registered with the local Fire Department. Information required include the location of the transformer and the principal constituent of the dielectric fluid.

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