



**POLYCHLORINATED BIPHENYL (PCB)
MANAGEMENT PLAN**

TUFTS ENVIRONMENTAL HEALTH AND SAFETY
REVISED: AUGUST 2017
ISSUED: JUNE 2017

Table of Contents

SECTION	PAGE NO.
1. INTRODUCTION.....	1
1.1 Objectives.....	1
1.2 Overview	1
2. DEFINITIONS AND REGULATORY OVERVIEW	2
2.1 Definitions.....	2
2.2 Acronyms	3
2.3 Regulations/Policies	3
2.3.1 Toxic Substance Control Act (TSCA) – 40 CFR 761 – Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, And Use Prohibitions	3
2.3.2 Massachusetts Department of Environmental Protection Bureau of Waste Prevention – 310 CMR 30.00 – Hazardous Waste	3
2.3.3 Massachusetts Contingency Plan (MCP) – 310 CMR 40.00.....	3
2.3.4 Massachusetts Water Resource Authority (MWRA) – 360 CMR 10.00	3
2.3.5 Occupational Safety and Health Administration (OSHA)	3
3. RESPONSIBILITIES.....	4
3.1 Tufts Department of Environmental Health and Safety (TEHS)	4
3.2 Facilities Office and CapITAL Projects Office	4
3.3 Abatement Contractors.....	4
4. IDENTIFICATION OF PCB HAZARDS.....	5
4.1 Examples of Materials that may have PCBs	5
4.2 PCB Hazard Assessment.....	5
5. OPERATIONS AND MAINTENANCE PROCEDURES.....	6
5.1 Repair and Maintenance Activities	6
5.2 Construction, Renovation and Demolition Activities	6
5.3 Surveys and Inspections.....	7
5.4 Waste Management.....	7
5.5 Labeling.....	7
6. RECORD KEEPING	8
6.1 PCB Inventory	8
6.2 Information Regarding PCB Abatement/Removal Projects.....	8

1. INTRODUCTION

1.1 OBJECTIVES

Prior to the 1979 ban implemented by the Environmental Protection Agency, polychlorinated biphenyl (PCB) containing materials had been used widely in the construction and manufacturing industries. Although use of PCBs in buildings is now prohibited, and Tufts University has removed significant quantities of PCBs from its campus, PCBs may still be present in older building systems. Accordingly, the purpose of this PCB Management Plan is to describe a program for recognizing, controlling and mitigating potential PCB hazards at Tufts University (Tufts). The program is consistent with and describes requirements for the management of PCBs under federal and state regulatory guidelines.

1.2 OVERVIEW

Federal requirements for PCBs specify when continued PCB use is “not authorized” and mandates removal of PCBs from buildings as well as how to manage PCB containing equipment that is “authorized for use” but that we wish to remove/renovate/update. These requirements dictate specific regulatory actions be taken under the Toxic Substance Control Act of 1976 (TSCA) 40 CFR 761.

This PCB Management Plan describes how Tufts complies with TSCA and, where appropriate, describes the Best Management Practices (BMPs) that Tufts employs to ensure compliance with the rules. Section 2.0 of this Plan provides a Regulatory Overview of the state and federal regulations and policies pertaining to management of PCBs. Section 3.0 designates areas of responsibility and Tufts’ personnel and protocol for coordinating PCB identification, management and abatement. Section 4.0 describes how Tufts identifies PCBs. Section 5.0 addresses the operation, maintenance, renovation and construction procedures. Finally, Section 6.0 provides information regarding how Tufts maintains and stores records of activities related to the PCB Management Plan.

2. DEFINITIONS AND REGULATORY OVERVIEW

Key definitions and acronyms as well as a summary of PCB regulations are provided below.

2.1 DEFINITIONS

Abatement: the removal of PCB containing materials or debris/dust contaminated with PCBs.

Non-PCB: Liquid material containing PCBs <50 mg/l or if insufficient liquid material is available for analysis, a non-porous surface having a surface concentration <10 µg/100 cm²; Non-liquid material containing PCBs <50 ppm.

TSCA - PCB Contaminated Waste: Liquid material containing PCBs at concentrations ≥50 mg/l but < 500 mg/l or where insufficient liquid material is available for analysis, a non-porous surface having a surface concentration >10 µg/100 cm² but < 100 µg/100 cm²; Non-liquid material containing PCBs at concentrations ≥50 ppm but < 500 ppm.

TSCA - PCB Waste: Liquid material containing >500mg/l; Non-liquid material containing >500 ppm.

PCB Bulk Product Waste: Non-liquid “source material” containing ≥50 ppm PCBs at the time of disposal (e.g. building sealants such as caulk, adhesives and glazing compounds). Note that the manufactured PCB material may have been added in the field.

PCB Remediation Waste: Waste containing PCBs because of a spill or the leaching of PCB Source Material. PCB remediation waste includes items such as soil, concrete, wood.

Bulk PCB Remediation Waste: Includes non-liquid waste such as soil, vegetation, sediments, sludge, rags, and other debris generated because of any PCB spill cleanup.

Non-porous Surfaces: Surface unlikely to absorb PCBs (e.g. metals, glass, aluminum siding, polished building stones such as marble or granite, enameled surfaces).

Porous Surfaces: Surfaces likely to absorb PCBs (e.g. wood, concrete, asphalt, plasterboard).

High Occupancy Area: Any area where PCB remediation waste has been disposed of on-site and where occupancy for any individual is an average of 6.7 hours or more per week. (e.g. residences, classrooms, day care centers, work stations, cafeterias, control rooms).

Low Occupancy Area: Any area where PCB remediation waste has been disposed of on-site and where occupancy for any individual is less than 6.7 hours per week. (e.g. an electrical substation, the upper floors of the exterior of a building, a location in a facility where a worker spends small amounts of time per week such as an unoccupied area outside a building, an electrical equipment vault, or in the non-office space in a warehouse where occupancy is transitory).

Hazardous Waste: PCBs are not hazardous waste under federal regulations, although many of the management requirements are like those for hazardous wastes. Some states, like

Massachusetts, choose to include PCBs in their RCRA Hazardous Waste programs. Therefore, management and disposal of PCBs in these states are subject to requirements of both TSCA and RCRA.

2.2 ACRONYMS

BMP	Best Management Practice	PCB	Polychlorinated Biphenyl
EPA	Environmental Protection Agency	PEL	Permissible Exposure Limit
TSCA	Toxic Substance Control Act	PPM	Part-Per-Million

2.3 REGULATIONS/POLICIES

The following regulations or policies pertain to the management and/or removal of PCBs. These summaries are provided as a reference and do not necessarily imply that Tufts is currently required to comply with these regulations and/or policies.

2.3.1 Toxic Substance Control Act (TSCA) – 40 CFR 761 – Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, And Use Prohibitions

TSCA actually covers numerous chemicals in addition to PCBs as it was intended to protect the public from “unreasonable risk of injury to health or the environment. While TSCA addresses the manufacture, processing, distribution, use and other facets of chemicals/materials including: Asbestos, Lead, Formaldehyde, Radon and hundreds of other chemicals, it is the primary regulation associated with PCBs.

2.3.2 Massachusetts Department of Environmental Protection Bureau of Waste Prevention – 310 CMR 30.00 – Hazardous Waste

This is a comprehensive regulation addressing the generation, storage, collection, transport, treatment, disposal, use, reuse and recycling of hazardous waste in Massachusetts, including dredged material; though it only applies to PCBs in certain instances and is largely superseded by TSCA.

2.3.3 Massachusetts Contingency Plan (MCP) – 310 CMR 40.00

This regulation applies to release (above the reportable quantities) to the environment (e.g., ambient air, soil or groundwater). The MCP describes procedures for evaluating and addressing PCB contamination in the environment.

2.3.4 Massachusetts Water Resource Authority (MWRA) – 360 CMR 10.00

The MWRA, which both provides water to and accepts sewage from the Boston and Medford campuses, strictly prohibits the disposal of PCBs into its wastewater treatment system.

2.3.5 Occupational Safety and Health Administration (OSHA)

Work-place exposures are regulated by OSHA. OSHA has established a permissible exposure limit (PEL) of 1 mg/m³ as an 8-hr TWA for certain PCB mixtures, and a 0.5 mg/m³ as an 8-hr TWA for others.

3. RESPONSIBILITIES

The following Tufts University personnel are responsible for the administration of the PCB Management Plan and the coordination of PCB-related activities.

3.1 TUFTS DEPARTMENT OF ENVIRONMENTAL HEALTH AND SAFETY (TEHS)

This department will serve as in-house contact for risk communication issues, training, and review of Abatement and Industrial Hygiene contractor work. TEHS will also maintain copies of survey, abatement and disposal records, which have been forwarded to them.

3.2 FACILITIES OFFICE AND CAPITAL PROJECTS OFFICE

Facilities and/or Capital Projects manages/coordinates, approves, schedules and inspects all PCB related activities conducted at the campus, with input from TEHS.

3.3 ABATEMENT CONTRACTORS

Contractors will obtain necessary permits and oversee activities that may involve the abatement/disturbance of PCB-containing materials. They will perform PCB abatement in accordance with practices designed to limit potential exposure to PCB hazards for the public. Contractors must, at minimum, comply with the standards and procedures required by local, state and Federal regulations and listed in this plan.

4. IDENTIFICATION OF PCB HAZARDS

PCB-containing materials have been used in buildings since approximately 1929 until 1979; though use was most common between 1949 and 1979. Tufts University is a campus comprised of buildings that have been constructed or renovated since 1920; therefore, it is likely that PCB-containing material may have been or are present in campus buildings. Tufts University has already replaced its large PCB containing electrical transformers with non-PCB electrical transformers; however, PCBs may be in other material on the campuses.

The following subsections describe examples of PCBs that may be on the Tufts Campuses. When completing a project that will impact any of these materials, the potential for PCBs must be considered and evaluated.

4.1 EXAMPLES OF MATERIALS THAT MAY HAVE PCBs

The following materials may contain PCBs with expected concentrations as parts per million shown in parentheses:

- Transformers and capacitors (500 – 600,000)
- Electrical equipment including voltage regulators, switches, re-closers, bushings, and electromagnets (50 - 500)
- Oil used in motors and hydraulic systems (500 – 3,000)
- Fluorescent light ballasts (51 – 670,000)
- Cable insulation (75)
- Thermal insulation material including fiberglass, felt, foam, and cork
- Adhesives and tapes
- Oil-based paint (<1 – 97,000)
- Caulking (<1 – 550,000)
- Plastics
- Carbonless copy paper
- Floor finish i.e. *Fabulon*®

4.2 PCB HAZARD ASSESSMENT

While PCBs may be present in any of the above listed materials, several factors play into how we must manage these materials. Under 40 CFR 761, materials that are not entirely enclosed, with PCB concentrations greater than 50 ppm are “NOT AUTHORIZED FOR USE”, and must be removed. Caulking is one common example. We are required to remove and dispose of any not sealed/enclosed building material, such as caulking, in excess of 50 ppm of PCBs in accordance with TSCA.

Materials that are entirely enclosed, with a concentration greater than 50 ppm PCBs, i.e. a transformer in a light fixture, can remain in service, but must be disposed of properly when not needed or if it begins to leak. Any large transformers with greater than 500 ppm PCBs must be inventoried and reported to the EPA. Tufts does not have any such transformers.

Building materials with PCB concentrations below 50 ppm still require management, but are generally exempt from TSCA and can be managed differently and disposed of in a landfill permitted to accept PCBs at a given concentration. If there is a possibility that your project will encounter PCB containing building material, contact TEHS.

5. OPERATIONS AND MAINTENANCE PROCEDURES

The operations and maintenance procedures that are provided herein are designed ensure that when dealing with materials that may contain PCBs, PCB management is considered.

5.1 REPAIR AND MAINTAINANCE ACTIVITIES

Repair and maintenance activities may involve situations where an item that may contain PCBs is repaired or replaced. Before beginning work, evaluate the component to be repaired and replaced. If it is listed in Section 4.1, above and was installed prior to 1979 it may contain PCBs and should be further evaluated. For example, fluorescent light ballasts and electrical transformers usually have a tag stating that it is/is not PCB free. In the absence of such a tag, look for the date of manufacture. If the date of manufacture cannot be determined, try to learn the date of installation by reviewing University historical records. If it is learned that the component was installed between 1929 and 1979, or it is labeled as containing PCBs, contact TEHS for assistance in managing this material.

5.2 CONSTRUCTION, RENOVATION AND DEMOLITION ACTIVITIES

Prior to beginning any Construction, Renovation or Demolition project that may encounter PCBs or material containing PCBs, PCBs must be evaluated. For example, does the project involve removing/replacing windows, caulking or sealants that were installed prior to 1979? If the answer is yes, you must decide how you want to assess for PCBs before you begin the project. When working with these materials that are likely to contain PCBs above the 50 ppm threshold, you could either:

- Sample the affected material and the adjacent substrate (i.e. the brick opening and the window, in addition to the caulking used to seal the joint). You must sample both because PCBs that were in the caulking could have migrated into the brick or window frame. Under 40 CFR 761, this migration is considered a “spill” and has a clean-up threshold of 1 ppm (high occupancy areas) or 25 ppm (low occupancy areas); or
- Do not sample and dispose of the materials as though it did contain PCBs above 50 ppm.

If you choose to sample the caulking and find that it contains PCBs above the 50 ppm threshold, you must remove it. Depending on the concentration of PCBs in the adjacent material it may also have to be removed. When removing the caulking/sealant, if you determine you must also remove the adjacent material, you should remove the adjacent material at the same time as the caulking/sealant.

If you did not sample, but are assuming that the caulking/sealant contains PCBs above the 50 ppm threshold, any adjacent materials that were otherwise going to be removed and disposed of as part of your project, should be disposed of in conjunction with the assumed PCB containing caulking/sealant.

As interpreted by the EPA, if the caulking/sealant is removed coincident with the adjacent material, both can be considered Bulk PCB Waste. If you remove the caulking/sealant and then learn that the adjacent material has a PCB concentration greater than 1 ppm (high occupancy area) or 25 ppm (low occupancy area), after you’ve removed the caulking, you must now remove the adjacent material as PCB Remediation Waste, which is generally costlier than if you had removed it all as Bulk PCB Waste.

Additionally, depending on the project, as detailed in 40 CFR 761.61(a), 40 CFR 761.61(b), 40 CFR 761.62(a) and 40 CFR 761.61(c), the EPA may or may not require prior notification and grant approval prior to construction/renovations. To determine prior notification and approval is necessary contact TEHS prior to beginning construction/renovations.

Prior to beginning any Construction, Renovation or Demolition project that will encounter PCBs, or where PCBs are assumed to be present, but were not tested for, Tufts will notify:

- Tufts employees who will work in or adjacent to areas containing such material,
- Employers of other service contractors performing work within or adjacent to areas containing such materials, and
- Any tenants who will occupy areas containing such material.

The notification will either be in writing, or a personal communication between Tufts and the person to whom notification must be given or their authorized representatives.

Abatement and construction contractors are responsible for informing their own employees of the potential or known PCB hazards associated with the project and the precautions to be taken to ensure that airborne PCB contaminated media are confined to the work area.

If contractors discover PCBs during work for Tufts, they are required to inform their Tufts contact within 24 hours of the discovery of the presence, location and quantity of such newly discovered PCBs.

5.3 SURVEYS AND INSPECTIONS

Building Hazard Assessments and Inspections will be performed by an Industrial Hygiene firm, familiar with and qualified to assess PCBs, with input from TEHS. These inspections shall be performed using methods and practices in accordance with industry standards.

5.4 WASTE MANAGEMENT

Proper waste handling, storage and disposal will be performed for all PCB impacted waste, including TSCA- PCB Contaminated Waste, TSCA – PCB Waste, PCB Bulk Product Waste, PCB Remediation Waste, Bulk PCB Remediation Waste. These wastes must be properly containerized and it is important that all PCB waste materials are disposed of at an appropriate High temperature incinerator, high efficiency boiler or Chemical Waste Landfill, licensed to accept PCB-containing waste materials.

5.5 LABELING

Materials/equipment determined to contain PCBs will be appropriately labeled. If, per 40 CFR 761, the equipment can remain in service (certain sealed pieces of equipment), and it contains more than 3 pounds of PCBs, it shall be affixed with the following label.



6. RECORD KEEPING

Copies of records pertaining to PCB management activities at Tufts University shall be maintained at the TEHS office to document compliance with the requirements of the 40 CFR 761. These records should be made available to custodial, regulatory or emergency personnel upon request and should be kept for a prescribed period. The originals of records shall be maintained at the campus Facilities office.

6.1 PCB INVENTORY

If any samples are collected and analyzed for PCBs, the results of that analysis will be maintained by TEHS to document the presence, location and quantity of PCBs in University buildings and facilities. These records will be kept for the duration of ownership and transferred to successive owners.

6.2 INFORMATION REGARDING PCB ABATEMENT/REMOVAL PROJECTS

Facilities manages/coordinates, approves, schedules and inspects all PCB related activities conducted at the campus. TEHS will maintain survey or abatement related records. Facilities will forward records of PCB abatement/removal to the TEHS department, and TEHS will maintain the copies of the disposal activity records. TEHS will maintain all waste shipment records for a period of at least as long as required by regulations. The following information will be recorded for each response action or preventative PCB measure:

A written description of the measure or action, including the method used;

- The location where the measure or action was taken;
- Reasons for selecting the measure or action;
- The start and completion dates of the work;
- The names and addresses of all workers and contractors involved with the work (if applicable);
- Personal and area air monitoring results (e.g., clearance air samples; if applicable); and
- Final exposure monitoring results (if applicable).