

## POLYCHLORINATED BIPHENYLS (PCBs) MANAGEMENT

### INTRODUCTION

Polychlorinated biphenyls (PCBs) are very toxic chemicals and persistent in the environment. Before their manufacture was banned in 1979, PCBs were used widely in electrical equipment, including transformers and fluorescent light ballasts. Many transformers still contain traces of PCB-contaminated oil even after the oil has been changed several times. PCBs were also used as a plasticizer, and added to certain construction materials. Buildings constructed or renovated between 1950 and 1979 may contain PCBs in the caulk around windows, weather stripping and in masonry expansion joints. These materials have tested positive for PCBs on campus and around the nation.

### TRANSFORMERS

Numerous mechanical rooms and electrical vaults on campus house transformers and other PCB-containing equipment such as capacitors and switches. Most of this equipment was installed well before the PCB ban. The Washington State Department of Ecology (Ecology) and the U.S. Environmental Protection Agency (EPA) require that all these items, along with PCB-contaminated soil and surfaces, be managed carefully.

The EPA regulates wastes containing 50 parts per million (ppm) PCBs and greater. Ecology regulates wastes containing from 2 to 50 ppm PCBs. Both agencies have extensive requirements for management and disposal of PCB wastes. [University of Washington administrative policy](#) further restricts the transporters and end point disposal facilities used for PCB wastes.

[Facilities Services](#) manages all high voltage electrical equipment on the UW Seattle campus. Environmental Health and Safety (EH&S) oversees PCB management, coordinating sampling and disposal, conducting audits, reviewing work plans, and ensuring compliance with the regulations.

It should be assumed that any oil-filled electrical equipment (transformer or other electrical equipment) that ever contained PCBs will be regulated.

### Transformer vault

Mechanical rooms and electrical vaults at the University that contain older oil-filled transformers with PCB-contaminated oil must be identified and labeled. These locations are typically referred to as "Non-Restricted Access Areas." Inspections of these locations are conducted regularly by EH&S and Facilities Services to ensure compliance.

There are mechanical rooms at the University where historical PCB floor and wall contamination remains and has been encapsulated in place.

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EPA regulations require that encapsulated surfaces be marked with the yellow "Caution Contains PCBs" sticker typically used for labeling PCB Transformers (less than 500 ppm). These locations are also inspected regularly.



The following rooms at the University have PCB contamination encapsulated in place:

Building	Room
Haggett North	G203
Haggett South	G206
Health Sciences	B123A
Health Sciences	D005
Mechanical Engineering	B009
Power Plant	027

There are no longer any electrical vaults on campus with floors that have readily exposed PCB contamination. Locations previously classified as "restricted vaults" have been cleaned up.

## Transformer inventories

Active inventories are kept of each transformer indicating its general specifications along with the volume of oil, PCB concentrations and regulatory status.

## Transformer replacement

A key component of the PCB management program is that EH&S ensures oil-filled transformers that have reached their life expectancy are removed from service and replaced with non-PCB containing equipment. We follow stringent EPA standards to ensure that all PCB contamination is removed and PCB wastes are managed correctly. Higher priority for replacement is given to units with high levels of PCBs and other maintenance issues. The UW [Capital Planning and Development Office](#), along with Facilities Services, has incorporated these priorities into the recent utility upgrades on the Seattle campus.

## OTHER EQUIPMENT



Other types of older oil-filled electrical equipment must be removed and/or replaced whenever feasible and disposed of properly through EH&S.

If you are doing work that includes remodels, laboratory moves, and standard maintenance and alterations, you are required to identify any or all equipment suspected or known to contain PCBs. The equipment must be inspected and screened for PCB

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contamination by the appropriate UW department. Place a request through Facilities Services' [FS Works web page](#) or contact the UW Capital Planning and Development Office.

Examples of items known or suspected to contain PCBs include old x-ray machines and other large older laboratory equipment that contain power sources, power generators and capacitors (pictured), as well as fluorescent light ballasts.

## Fluorescent light ballasts

Fluorescent light ballasts may contain PCBs and must be managed in accordance with state and federal regulations. All ballasts manufactured through 1978 contain PCBs. Also, some ballasts manufactured after 1978 may contain PCBs or another carcinogenic chemical, bis(2-ethylhexyl)phthalate (DEHP). For these reasons, all fluorescent lighting ballasts that are not specifically labeled "No PCBs" must be suspected to contain PCBs.



Facilities Services continues to remove and replace all fluorescent lights and ballasts on campus as part of normal maintenance operations. Fluorescent lighting ballasts with known or suspected PCBs or DEHP must be managed through EH&S:



- Dispose of lighting ballasts by placing them in the labeled drum outside the EH&S Environmental Safety Storage Building.
- Alternatively, submit a [Chemical Waste Collection Request](#) form on the [EH&S website](#) to request an on-site pickup.

Leaking PCB ballasts are considered an occupational exposure hazard by skin contact.

- If you discover a leaking ballast, please contact your supervisor before proceeding.
- If the contamination is extensive, call EH&S spills advice line at 206.543.0467.
- Call 911 if there is an explosion, fire, serious injury or catastrophic leak.

When handling a leaking ballast or other contaminated materials, wear gloves and safety glasses. Place all materials in a sturdy container that will not leak. Leaking ballasts must be sent to a permitted incinerator for disposal and may not be sent for recycling. Contact EH&S spills advice line at 206.543.0467 to coordinate proper management and disposal.

## PCBs IN BUILDING MATERIALS

Before work is done on any building renovation, repair or demolition, a good faith survey is needed to identify any regulated building materials, including PCBs in window caulk and glazing, weather stripping, and in masonry expansion joints.

Contact EH&S for more information on conducting a survey, testing potential PCB-containing materials and avoiding potential exposures.

Building materials or caulk that is failing or degraded could present an exposure risk and must be tested for PCBs. (See the pictures below for examples of intact and degraded caulk.)



Where testing confirms the presence of PCBs in building materials, they must be managed in accordance with University policy and current regulations. Materials containing over 50 ppm PCBs are federally regulated by the EPA and prohibited for use.

The [PCB Caulking Work Plan](#), University of Washington, Seattle Campus, March 14, 2014, provides steps for safe removal and disposal of PCB-containing window caulking and glazing compound during routine operations and maintenance activities. The work plan addresses worker training and qualifications, engineering controls, worker protection and post removal documentation.

For more information, contact EH&S and see the EPA guidance for [PCBs in older buildings](#).

### **DISPOSAL**

Building materials with PCB concentrations greater than 2 ppm have disposal restrictions. Building materials with greater than 50 ppm must be disposed of as hazardous waste. Contact EH&S Environmental Programs for advice on waste containers and disposal options.

### **RECORDS AND REPORTS**

EH&S maintains all mandatory PCB regulatory records. All routine work is tracked and filed. Projects involving remediation or transformer replacements are managed by the Capital Planning & Development office, with significant coordination from EH&S. EH&S routinely reports to the EPA the progress of the PCB program with status update letters and annual reports.

### **CONTACTS**

- For information about building surveys or disposal options, contact EH&S Environmental Programs at 206.616.5835 or [chmwaste@uw.edu](mailto:chmwaste@uw.edu).
- For questions about personal protection, contact EH&S Occupational Safety & Health at 206.543.7388.