

4. PCBs in Building Materials*

Brochure Series

Guiding States and Brownfield Projects through the PCB Rules under TSCA: Navigating the TSCA process is complex and represents a challenge for many Brownfield remediation and redevelopment projects which can stretch limited funds. This brochure series focuses on the topics most relevant to the states and their Brownfield stakeholders:

1. Working with the Federal and State PCB Regulations on Brownfield Sites: When and What Federal Involvement is Required;

2. Characterization: Sampling and Testing Approaches for PCBs;

3. Cleanup and Management of PCBs;

4. PCBs in Building Materials; and

5. PCB Articles, Containers and Liquids.

Various building products produced from the 1950's through the 1970's were manufactured with polychlorinated biphenyls (PCBs) as a key ingredient because of its non-flammability, chemical stability, high boiling point, and electrical and thermal insulating properties. PCBs were also added to many building products as a plasticizer, which imparted flexibility.

Buildings constructed or renovated from the 1950's through the 1970's may include building products manufactured with PCBs. Examples of potentially PCB-containing building products include:

- Caulking and grout in floor and wall joints
- Oil-based paint coating floors and walls
- Mastic and adhesives used under flooring (tiles and carpets)
- Sealants and finishing used on flooring
- Gaskets around windows and doors and in heating, ventilation, and air conditioning systems and ducting
- Window glazing
- Roofing and siding

Building products found to contain ≥ 50 ppm PCBs are classified as **PCB bulk product* waste** under federal regulations through the Toxics Substances Control Act (TSCA) found in Chapter 40 of the Code of Federal Regulations (CFR) (40 CFR 761). **PCB bulk product waste*** is "unauthorized for use" and must be removed and disposed of in accordance with 40 CFR 761.62.

Materials that have come into contact with **PCB bulk product waste*** may have become contaminated with PCBs. These materials are then considered **PCB remediation waste** and must be managed in accordance with 40 CFR 761.61.

Examples of **PCB remediation waste** in buildings include:

- Concrete adjacent to caulked or grouted joints
- Concrete, wood, or other substrate coated with a PCB-containing paint
- Flooring materials, including tiles and carpets, from mastic, adhesives, sealants, etc.
- Window materials in contact with gaskets and glazing
- Soil beneath caulked or grouted joints
- Flooring impacted by a release of PCB-containing hydraulic, cutting, or transformer oils
- Light fixtures impacted by a release of PCBs from PCB-containing ballast

The purpose of this brochure is to guide a building owner through the process of evaluating:

- When to sample and test for PCBs in a building
- Suspect **PCB bulk product waste*** (identifying and sampling)
- The extent of PCB contamination in the building
- Whether or not to remediate **PCB remediation waste** to the cleanup standards specified in 40 CFR 761.61(a) or leave it in place and eliminate exposure to remaining PCBs through encapsulation under 40 CFR 761.61(c)
- Disposal options for **PCB bulk product waste*** and **PCB remediation waste**

When Should Building Materials be Sampled and Tested for PCBs?

Buildings constructed or renovated from the 1950's through the 1970's may include building products manufactured with PCBs. Although the use of products with PCB concentrations greater than 50 ppm is unauthorized, there is no regulatory requirement to test products in use to determine their PCB concentration. However, **PCB bulk product waste*** is regulated for disposal regardless of whether its PCB concentration has been measured.

In general, there are three scenarios that could prompt consideration for PCB sampling and testing of building products:

- Demolition
- Renovation
- Concern regarding the potential health risk due to the potential presence of PCB-containing building materials.

Demolition

Demolition waste that contains **PCB bulk product waste**^{*} and/or **PCB remediation waste** generated during demolition must be properly disposed. To evaluate the building materials and determine the appropriate disposal options:

- Perform a thorough survey of the building to identify suspect **PCB bulk product waste**^{*} (see below sections of this brochure for guidance).
- Fully characterize suspect **PCB bulk product waste**^{*} for disposal. If **PCB bulk product waste**^{*} is identified, characterize the adjacent substrate to determine if it is **PCB remediation waste** and its extent.
- Consider conducting verification sampling of the extent of the **PCB remediation waste** prior to demolition.

Renovation

PCB bulk product waste^{*} and **PCB remediation waste** generated during renovation must be properly disposed. **PCB bulk product waste**^{*}, within or even in areas not planned for renovation, are not authorized for use and must be removed and properly disposed. **PCB remediation waste** may be left in place when appropriately managed (e.g. encapsulated). To evaluate the building materials and determine the appropriate disposal options:

- Characterize suspect **PCB bulk product waste**^{*} that will be removed or disturbed as a result of renovation activities.
- If **PCB bulk product waste**^{*} is identified, characterize the adjacent substrate to determine if it is **PCB remediation waste** and its extent.
- Evaluate removing **PCB remediation waste** versus leaving it in place and encapsulating to eliminate exposure to remaining PCBs (see below sections of this brochure for guidance).

Concern for Potential Health Risks

Air sampling may be performed to evaluate the potential for increased risk to building occupants as a result of exposure to suspect **PCB bulk product waste**. A recommended, phased approach, to manage the amount of **PCB remediation waste** is:

- Sample air for PCBs and compare the results to established appropriate public health levels or Occupational Health and Safety (OSHA) exposure limits.
- If PCBs are detected in air samples at levels that could pose added risk to occupants, perform a phased approach to evaluating and removing the source (i.e. **PCB bulk product waste**^{*}) of PCBs to indoor air.
- Address each potential source individually, and re-test indoor air.

If after removal of a PCB source and indoor air levels are acceptable, no additional PCB sources may need to be identified.

By starting with air sampling rather than initially testing all suspect **PCB bulk product waste**^{*}, the extent of the sampling, **PCB bulk product waste** removal, and the adjacent **PCB remediation waste** removal or encapsulation may be managed.

Identify Suspect **PCB Bulk Product Waste**^{*} and **PCB Remediation Waste**

- Identify and document the locations of each type of suspect **PCB bulk product waste**, noting similar materials of varying color and age. (In maintenance shops, garages, and around electrical equipment, document stained areas of flooring.)
- Sample the suspect **PCB bulk product waste**^{*}, **PCB remediation waste** and stained areas, collecting a representative sample of each different type of suspect **PCB bulk product waste**^{*}, **PCB remediation waste** or stained area.
 - o Collect bulk samples as opposed to wipe samples.
 - o Collect grab samples as opposed to composite samples.
 - o For concrete, use the sampling method described in Region 1 EPA-New England Draft Standard Operating Procedure for Sampling Concrete in the Field. The following hyperlink will provide additional information, <http://www.epa.gov/osw/hazard/tsd/pcbs/pubs/pcb-guid3-06.pdf>
- Sampling of potential **PCB remediation waste** may best be conducted after test results confirm the presence of **PCB bulk product waste**^{*}.

Evaluate the results of chemical testing:

- Bulk product sample results greater than 50 ppm PCBs indicate that the material is **PCB bulk product waste**^{*} and must be removed.
 - o Removal and off-site disposal of **PCB bulk product waste**^{*} does not require EPA approval. Disposal options are listed on the following page.

- o The adjacent substrate (i.e. concrete underlying a paint or adjacent to a caulked expansion joint) must also be evaluated for PCBs. Materials contaminated by **PCB bulk product waste**^{*} are **PCB remediation waste** and EPA approval may be required to clean up the **PCB remediation waste**.
- Bulk sample results less than 50 ppm PCBs indicate that the material may be considered an excluded PCB product under 40 CFR 761.3 and if so, continued use is allowed.
 - o Material adjacent to an excluded PCB product, even if contaminated by PCBs, is not **PCB remediation waste** and does not need to be remediated.
 - The case for excluded PCB product must be strong.
 - Sufficient data is necessary to conclude that the PCB concentration is less than 50 ppm.
 - The original product and its original installation date must both be prior to October 1, 1984.

Excluded Product Scenario: Caulking in the expansion joints of a building that was originally constructed in 1969 has been removed and replaced over the years as part of regular maintenance activities. PCBs were detected at concentrations less than 50 ppm in caulking that was replaced within the last 10 years. This caulking cannot be considered an Excluded PCB Product under 40 CFR 761.3 for the following reasons:

1. The caulking is not the originally installed caulking and was not installed prior to October 1, 1984.
2. The caulking may have been re-contaminated by residual PCB product in the joint that had greater than 50 ppm PCBs. As a result, the newly installed caulking is considered **PCB remediation waste** and must be remediated.
3. The material adjacent to the caulking is considered **PCB remediation waste** and must be remediated.

Remove or Leave in Place?

The removal and proper disposal of **PCB bulk product waste**^{*} is required under TSCA. EPA may issue an approval to leave in place the adjacent materials that have been contaminated by the **PCB bulk product waste**^{*}. The adjacent materials are considered **PCB remediation waste**, if certain conditions are met.

Information Needed to Make the Decision:

- Adequately characterize the extent of PCB contamination in the adjacent substrate.
 - o Characterize the extent of PCB contamination in accordance with 40 CFR Subpart N. However, EPA may approve a reduced sampling frequency.
 - o Perform a cost/benefit analysis of remediating the building to meet the clean-up standards specified in 40 CFR 761.61(a) versus leaving the contaminated material in place. Leaving contaminated material in-place will require en-encapsulating or capping the PCB-contaminated surfaces to prevent exposure, long term monitoring and maintenance of the encapsulated/capped surfaces, and recording of a deed restriction for the property.

The cost/benefit analysis should consider:

- Costs for removal, verification sampling, and disposal.
- Cost and effectiveness of method of encapsulation (coatings, concrete cap).
- Costs of long term monitoring and maintenance of cap.
- Effect of deed restriction on property value.
- Public perception.

Cleanup Plan

A Cleanup Plan must be prepared for the **PCB remediation waste**.

- o When remediating waste to the standards specified in 40 CFR 761.61(a), prepare a Cleanup Plan in accordance with the Notification and Certification requirements of 40 CFR 761.61(a)(3). Written EPA approval is not required if characterization and remediation are performed in strict accordance with 761.61(a). If there are deviations in the characterization sampling or in the proposed verification sampling, then EPA approval is required.
- o When not remediating to the standards specified in 40 CFR 761.61(a), prepare a Cleanup Plan for EPA approval documenting the results of site characterization, the rationale for not remediating to the standards in 40 CFR 761.61(a), plans for encapsulating **PCB remediation waste**, a risk characterization documenting that the proposed method(s) of encapsulation will be effective at preventing exposure to remaining PCBs, a long term monitoring and maintenance plan for the encapsulated surfaces, and record a deed restriction for the property in accordance with 40 CFR 761.61(a)(8).

Bulk PCB Remediation Waste Cleanup Levels (40 CFR 761.61[a])

High occupancy areas (e.g. residence, day care, school, work station in a commercial or industrial facility)

- ≤1 ppm without further conditions
- >1 ppm and ≤10 ppm with a cap and a deed restriction

Low occupancy areas (e.g. unoccupied areas of a facility or areas where occupancy is transitory)

≤25 ppm with a deed restriction

- >25 ppm and ≤50 ppm if the site is secured by a fence and marked with a sign including the Mark M_L and a deed restriction
- >25 ppm and ≤100 ppm with a cap and a deed restriction

Disposal

PCB bulk product waste* must be disposed of in accordance with 40 CFR 761.62. Typical options include (under 761.62[a]):

- An EPA-approved incinerator
- An EPA-approved chemical waste landfill
- An EPA or State-permitted RCRA landfill

Other options for disposal of **PCB bulk product waste*** are available under 40 CFR 761.62(b) through (d) for certain types of **PCB bulk product waste***.

PCB Remediation Waste must be disposed of in accordance with 40 CFR 761.61.

- ≥50 ppm PCBs
 - o No sampling required
 - o Disposal facilities
 - RCRA Hazardous waste landfill permitted by EPA or State
 - EPA Approved PCB disposal facility
- <50 ppm PCBs
 - o Sample in accordance with 40 CFR Subpart O or obtain EPA approval of alternate sampling frequency
 - o Disposal facilities
 - State licensed municipal solid waste facility
 - State licensed non-municipal non-hazardous waste facility
 - RCRA Hazardous waste landfill permitted by EPA or State
 - EPA approved PCB disposal facility.

References

EPA Website: <http://www.epa.gov/epawaste/hazard/tsd/pcbs/index.htm>.

The following documents are available at the EPA website:

- *Code of Federal Regulations Part 761.*
- *The Polychlorinated Biphenyl (PCB) Site Revitalization Guidance, Nov. 2005.*
- *PCB Questions and Answers Manual, Updated January 2009.*
- *Draft Standard Operating Procedure for Sampling Concrete in the Field, EPA-Region 1, New England, December 30, 1997.*

**NOTE: In an effort to accelerate cleanups and provide a straighter path for disposal, especially from school sites, USEPA accepted comments through March 30, 2012 to its proposed reinterpretation of the status of PCB-contaminated building materials. As of publication of this brochure, twenty five comments were received by USEPA; no final reinterpretation was published by USEPA as of brochure publication. Information first indicated with a "*" in brochures 1 and 4 of this series may be subject to change based on the Agency's final reinterpretation.*

This guidance document addresses cleanup and disposal requirements for Polychlorinated Biphenyls (PCBs) only. This guidance document does not replace or supplant the requirements of the Toxic Substances Control Act (TSCA) PCB regulations. Please refer to the PCB regulations at 40 CFR Part 761 for specific regulatory and legal requirements.

The EPA is proposing a reinterpretation of their position which would allow building material (i.e., substrate) "coated or serviced" with PCB bulk product waste (e.g., caulk, paint, mastics, sealants) to be managed as a PCB bulk product waste at the time of disposal, even if the PCBs have migrated from the overlying bulk product waste into the substrate.

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For **State Contact Information**, please see Brochure #5 - **PCB Articles, Containers and Liquids**

