

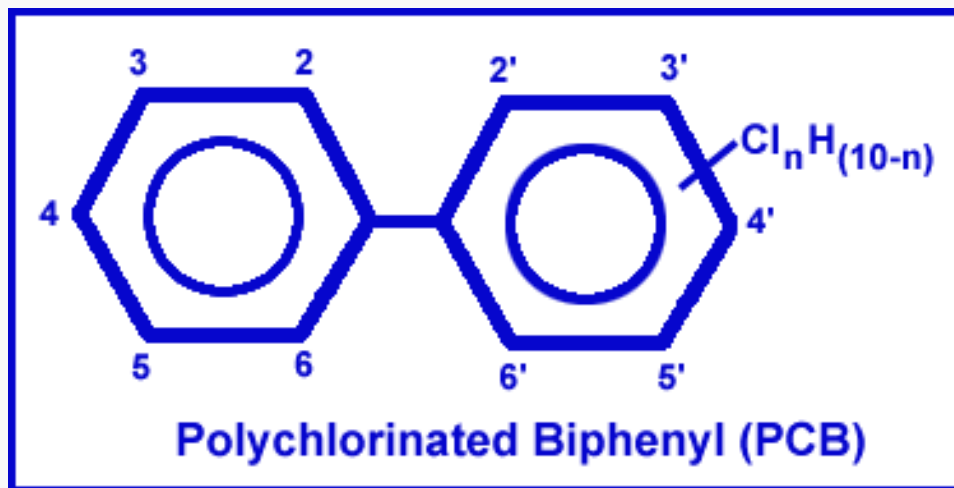
# PCBs

## Caulking in Older Buildings



# What are PCBs?

- Polychlorinated biphenyls
- Man-made organic chemicals
- Industrial and commercial applications





# Health Effects of PCBs

- Probable human carcinogen
- Cause cancer in animals
- Serious non-cancer effects on the immune, reproductive, nervous and endocrine systems
- EPA banned the processing or use of PCBs in 1979



# PCBs in Caulk in Older Buildings

Caulk containing high levels of PCBs (polychlorinated biphenyls) has been found in many buildings built or remodeled before 1979. Because PCBs can migrate from the caulk into air, dust, surrounding building materials, and soil, EPA is concerned about potential PCB exposure to building occupants.





# Exposure Pathways

Exposure to PCBs from contaminated caulking may come from the following sources:

- The only way to be sure that caulk has PCBs is to have a professional test the caulk.
- Exposure may occur when a person comes in contact with the caulk and any surrounding materials into which the PCBs may have been released (e.g., brick, concrete, wood).
- Exposure may also occur through contact with PCB-contaminated soil adjacent to buildings.



# Occupant Exposure Prevention

Building owners in public and commercial buildings need to follow PCB-safe renovation practices to minimize potential exposures to building occupants resulting from renovations.



# Contractor Exposure Prevention

It is important to manage the removal in a way that minimizes workers' exposure to the PCBs and prevents the release of PCBs into the environment.



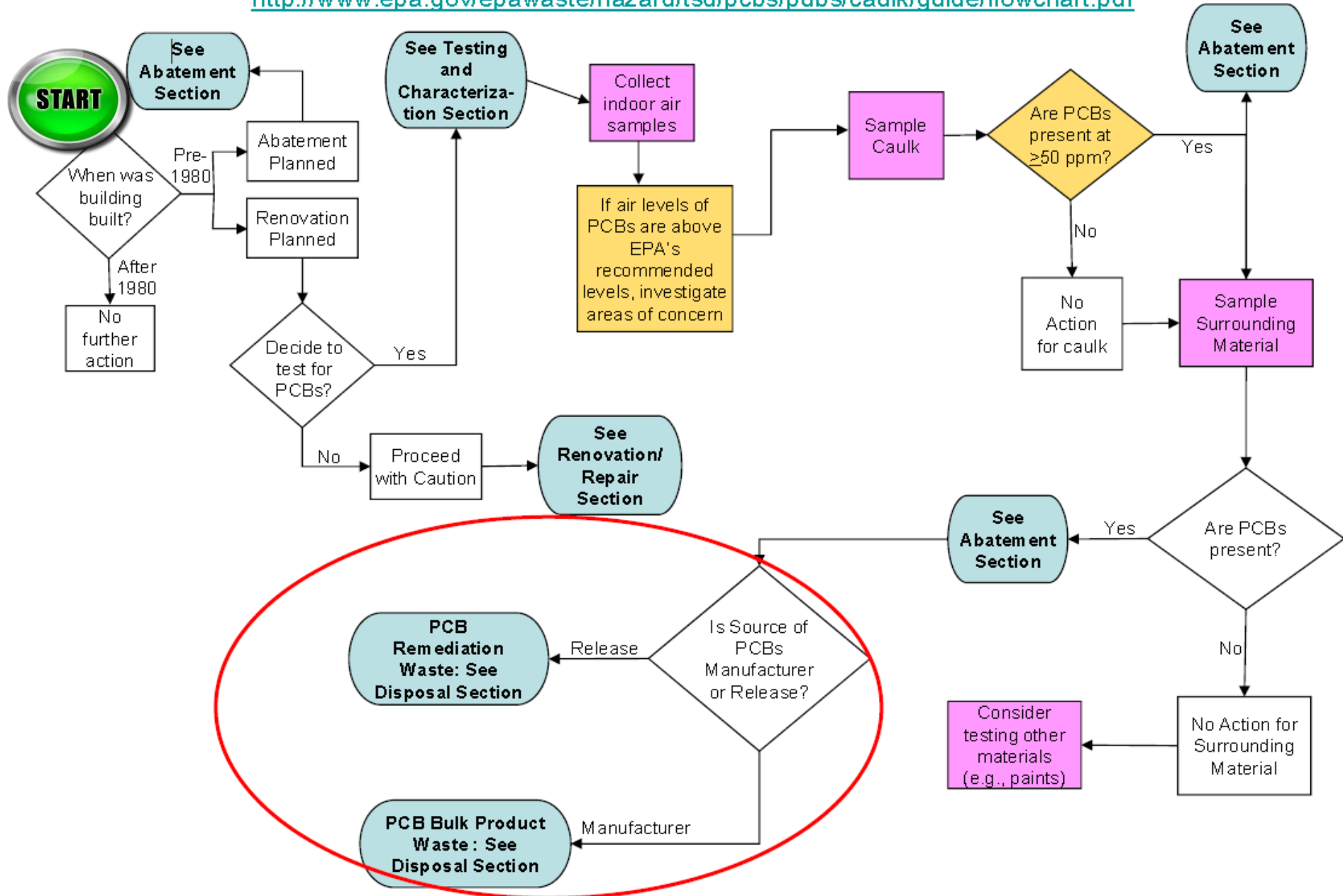
# Prior to Removal

- The following steps can help reduce exposure to PCBs in caulk until it can be safely removed:
  - Clean frequently to reduce dust and residue inside buildings.
  - Use a wet or damp cloth or mop to clean surfaces.
  - Use vacuums with high-efficiency particulate air (HEPA) filters.
  - Do not sweep with dry brooms and minimize the use of dusters.
  - Wash hands with soap and water after cleaning and before eating or drinking.



# Current Version on EPA Website

<http://www.epa.gov/epawaste/hazard/tsd/pcbs/pubs/caulk/guide/flowchart.pdf>





# Cleanup Requirements

Caulk containing PCBs at levels  $\geq 50$  ppm is not authorized for use under the PCB regulations and must be removed.

Caulk containing PCBs at levels  $< 50$  ppm may remain in place.

Any surrounding building material that is contaminated by  $\geq 50$  ppm PCB-containing caulk, is considered *PCB bulk product waste* if the caulk is still attached to the building materials.



# Testing the Air

For determining the presence of PCBs in indoor air, EPA has two approved methods from the Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air:

1. Method TO-4A [High Air Volume]
2. Method TO-10A [Low Air Volume]

Publication: EPA/625/R-96/010b, Second Edition, January 1999



# Testing the Air

## Public Health Levels of PCBs in School Indoor Air (ng/m<sup>3</sup>)

Assuming a background scenario of no significant PCB contamination in building materials and average exposure from other sources, these concentrations should keep total exposure below the reference dose of 20 ng PCB/kg-day.

Age 1-<2 yr	Age 2-<3 yr	Age 3-<6 yr	Age 6-<12 yr Elementary School	Age 12-<15 yr Middle School	Age 15-<19 yr High School	Age 19+ yr Adult
70	70	100	300	450	600	450



# Testing Caulk Flakes or Chips

EPA Method 3500B/3540C from EPA's SW-846, Test Methods for Evaluating Solid Waste; or an alternative method validated under subpart Q.



# Wipe Sampling

- Guidance from June 23, 1987 Revised and Clarified on April 18, 1991.
- For use on non-porous surfaces only.
- Wipe sampling area should be 100 square centimeters.
- Wipe pre defined area with solvent soaked gauze.



# What Does it Cost

Approximate costs for various testing procedures are as follows:

Air Analysis: \$550 per sample

Wipe analysis: \$100 per sample

Caulk analysis: \$100 per sample

Soil Analysis: \$100 per sample



# Contractors: Handling PCBs in Caulk

**It is important to make sure affected parties are well informed before beginning a remedial task involving PCBs in buildings.**

- Notify Interested Parties and Plan for Emergencies
- Communicate the goals, type, and length of projects and specific behavior rules to the affected groups (PTA, school principal, etc.)
- Have an emergency contact list (hospitals, police, etc.).
- Ensure workers are properly trained.
- Prevent unauthorized persons from entering the site.





# Contractors: Handling PCBs in Caulk

## **Before Starting the Job, Consider the Types of Tools and Machinery Needed for Removing Caulk**

- Manual tools are recommended for soft flexible caulk:
  - Advantages: no dust and no heat
  - Disadvantages: labor intensive and slow
- Electromechanical tools are recommended for hardened/brittle caulk:
  - Advantages: faster, less labor intensive
  - Disadvantages: generate heat (which can volatilize the PCBs) and dust, requiring added protective measures. Also must consider the potential abrasive effects on sensitive adjoining structures (e.g., wood and metal).
- EPA recommends removing as much of the old caulk as possible, since any residual caulk left in place can contaminate any new caulk or sealant that is applied.



# Disposal Options

- ***PCB bulk product waste:*** The disposal of *PCB bulk product waste* is regulated under 40 CFR § 761.62 of TSCA. Under this provision, PCB bulk product waste must be disposed of in one of two ways: disposal in a permitted solid waste landfill or via risk-based disposal approval process.



# Disposal Options

- ***Disposal in solid waste landfills:*** Certain PCB bulk product waste, such as PCB-containing caulk, even if the concentration of PCBs in the caulk is equal to or greater than 50 ppm, may be disposed of in non-hazardous waste landfills permitted by states.
- Anyone sending PCB bulk product waste to a non-hazardous waste landfill permitted by a state must send written notice to the landfill prior to shipment of the waste stating that the waste contains PCBs at greater than 50 ppm (see 40 CFR 761.72(b)(4)(ii)).
- EPA bulk product waste disposal guidance does not supersede state requirements which may be more stringent than those mandated by the federal government for management of this debris.



# Disposal Options

- ***Risk-based option:*** The risk-based option allows for a site-specific, risk-based evaluation of whether *PCB bulk product waste* may be disposed of in a manner other than under the performance-based disposal option or the solid waste landfill disposal option.
- Disposal of *PCB bulk product waste* under this option requires you to obtain approval from EPA based on a finding that the disposal will not present an unreasonable risk of injury to health or the environment.



# Disposal Options

- ***PCB remediation waste:*** The disposal of PCB remediation waste is regulated under 40 CFR § 761.61 of TSCA. There are three options for management of *PCB remediation waste*:

***Self-implementing cleanup and disposal***

***Performance-based disposal***

***Risk-based cleanup and disposal***



# Disposal Options

- ***Self-implementing cleanup and disposal:*** The self-implementing option links cleanup levels with the expected occupancy rates of the area or building where the contaminated materials are present. The disposal requirements for the self-implementing regulatory option vary based on the type of contaminated material and concentration of PCBs in the materials, among other things.
- Cleanup and disposal under this option requires you to notify your [EPA Regional PCB Coordinator](#).



# Disposal Options

- ***Performance-based disposal:*** The performance-based option allows for disposal of the contaminated materials in either a TSCA chemical waste landfill or TSCA incinerator, through a TSCA-approved alternate disposal method, under the TSCA-regulated decontamination procedures, or in a facility with a coordinated approval issued under TSCA.
- Disposal under this option generally does not require you to obtain approval from EPA.



# Disposal Options

- ***Risk-based cleanup and disposal:*** The risk-based option allows for a site-specific evaluation of whether *PCB remediation waste* may be cleaned up or disposed of in a manner other than the alternatives provided under the self-implementing or the performance-based disposal options.
- Disposal of PCB remediation waste under this option requires you to obtain an approval from EPA based on a finding that the disposal will not present an unreasonable risk of injury to health or the environment.





# Locating a Disposal Facility

- A listing of TSCA approved disposal facilities is located on [EPA's web site](#).
- To find a solid waste disposal facility that will accept PCB-containing caulk, please contact your state environmental agency. Information on how to contact the state agencies is located on [EPA's web site](#).



# Summary

- Caulk containing PCBs at levels  $\geq 50$  ppm is not authorized for use under the PCB regulations and must be removed.
- Building owners in public and commercial buildings need to follow PCB-safe renovation practices to minimize potential exposures to building occupants resulting from renovations.
- Cleaning frequently with a damp cloth or mop will help prevent the spread of dust and particulates containing PCBs.
- Test the air, PCB product materials and substrate or surrounding materials for leached or deposited PCBs.
- Dispose of the PCB impacted material in accordance with the appropriate regulations.



# EPA Region 7 Contact Information

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For More Information

<http://www.epa.gov/pcbsincaulk>

EPA's PCBs Toxic Substances Control Act (TSCA) Hotline: 888-835-5372