



PCBs in Caulking

Real Site Data and Recent
EPA Developments

COMMITMENT & INTEGRITY DRIVE RESULTS

PCBs in Caulking

- What's Suspect?
 - Certain joint caulking used in standard construction practices – 1950s to late 1970s (use date of PCBs)
 - No good visual indicators
 - Known type of caulking with PCBs – polysulfide sealant
 - Added for durability, resistance to degradation, and as a plasticizer



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Industry Use of PCBs (1929 – 1975)

| PCB Use | Pounds (millions) | Percentage of Total |
|-------------------------------|-------------------|---------------------|
| Capacitors | 630 | 50.3% |
| Transformers | 335 | 26.7% |
| Plasticizer uses | 115 | 9.2% |
| Hydraulics and lubricants | 80 | 6.4% |
| Carbonless copy paper | 45 | 3.6% |
| Heat transfer fluids | 20 | 1.6% |
| Petroleum additives | 1 | 0.1% |
| Miscellaneous industrial uses | 27 | 2.2% |
| TOTALS | 1,253 | 100.0% |



EPA, 1/30/97

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PCBs in Caulking - Typical



Caulking up to 140,000 ppm

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PCBs in Caulking - Typical



Caulking = 405,000 ppm



Caulking = up to 130,000 ppm

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PCBs in Caulking - Typical



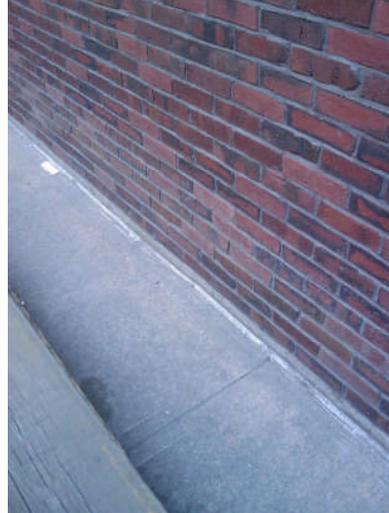
Caulking = 3,200 ppm



Caulking = 120,000 ppm

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PCBs “Not” in Caulking



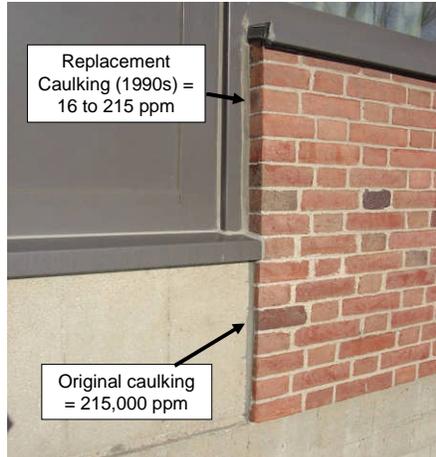
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PCBs “Not” in Caulking



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PCBs in Caulking



SITE A

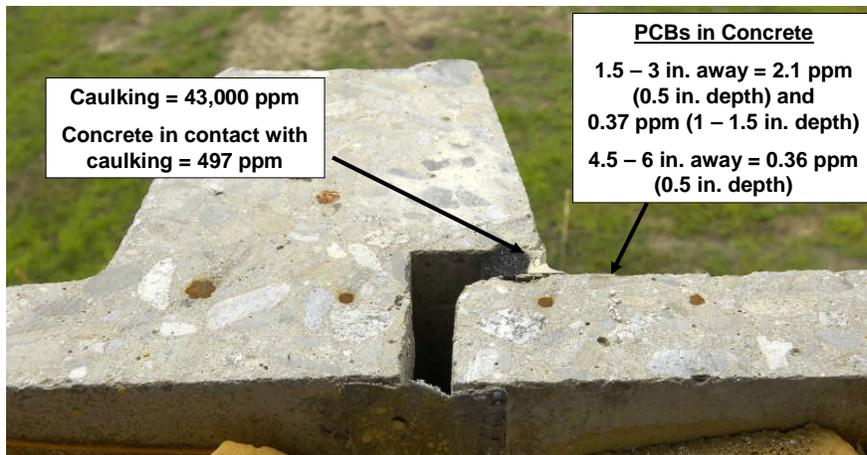


SITE B



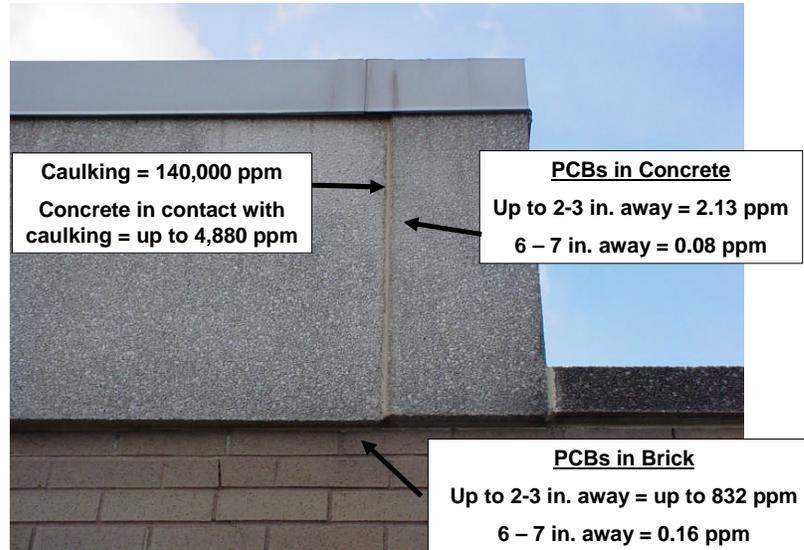
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PCBs in Caulking and Adjacent Materials



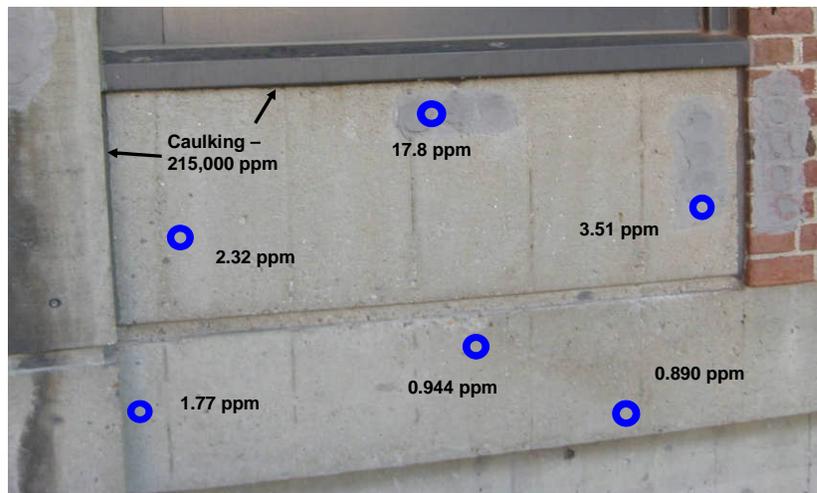
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PCBs in Caulking and Adjacent Materials



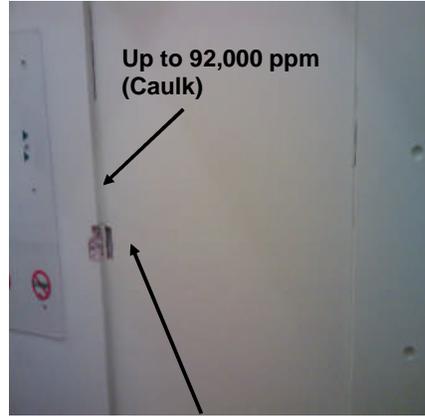
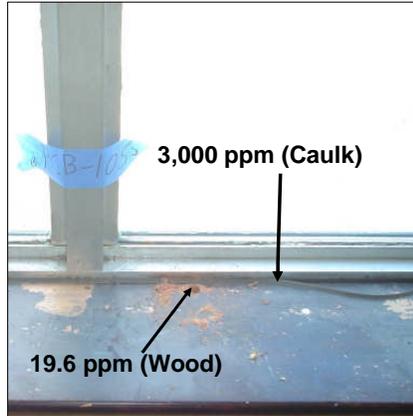
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PCBs in Caulking and Adjacent Materials



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PCBs in Caulking and Adjacent Materials



PCBs in Plaster

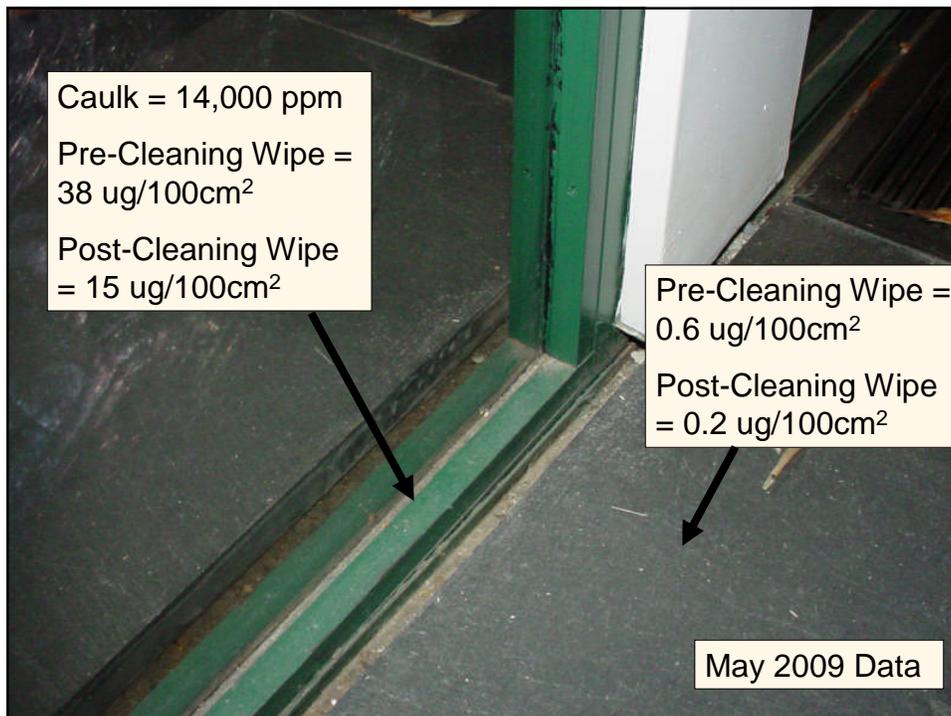
1 in. away = 34 – 44 ppm

4-5 in. away = 4.04 ppm

12-13 in. away = 4.1 ppm



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Why the Concern?

- Health & Safety - % levels of PCBs
 - Building Occupants and Users (direct contact, indoor air, etc.)
 - Reno/Demo Workers and Facility Workers
- Impacts to Adjacent Materials (Concrete, Bricks, Metal Window Frames, and Soils)
 - Migration/Leaching
 - Contaminant Spread During Uncontrolled Work
- Regulatory & Enforcement
 - Proper Management and Disposal – TSCA and 40 CFR Part 761; April 2010 ANPR Reassessment of Use Authorizations
 - NYC Schools CAFO – January 2010
- More Awareness
 - Contractors, EPA web page, Press/Internet, etc.



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PCBs in Caulking - Regulatory

- **If ≥ 50 ppm:** Unauthorized use (caulking on a building is not in a totally enclosed manner)
 - EPA requires removal and proper disposal
 - If PCB caulking is turned into waste (e.g., renovation project), must follow disposal requirements
- **If > 1 and < 50 ppm:** Options
 - Could Meet Excluded PCB Product Definition - use authorization not needed; still need to manage at as-found concentration; or
 - PCB Remediation Waste – if impacted from a “source” > 50 ppm; manage in accord with 40 CFR 761



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What are Regulatory Requirements for Continued Use of PCBs in Caulking?

- **Use** of PCBs in caulking \geq 50 ppm prohibited (not an authorized use)
- Because a prohibited use exists, owner is in violation of the TSCA Statute
- But no regulations specific to building materials with \geq 50 ppm PCBs still in use (i.e., no continued use provision for left in place material)



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September 25, 2009 EPA Guidance

EPA Announces Guidance to Communities on PCBs in Caulk of Buildings Constructed or Renovated Between 1950 and 1978

EPA to Gather Latest Science on PCBs in Caulk

WASHINGTON – The U.S. Environmental Protection Agency today announced that building owners and school administrators should be aware of the fact that caulking in many buildings constructed or renovated between 1950 and 1978 may contain polychlorinated biphenyls (PCBs). EPA is also conducting new research to better understand research will guide EPA in making further research on exposure as well as ways to minimize and carry out public health.

Polychlorinated biphenyls, or PCBs, are man-made chemicals that were widely used in construction materials and electrical systems, reproductive systems, nervous or cancer-causing if they build up in the body over time.

"PCBs have been banned for the last 30 years for Jackson. That unfortunately high levels of PCBs contained prior to the PCB ban, including those the potential risks associated with exposure to these common sense ways to reduce this exposure as a building owners and administrators who want to EPA in providing additional guidance to help the determine whether mitigation steps are necessary contained resources that make this a particular.

The Agency has created a website, www.epa.gov/pcb, to provide information on PCBs in caulk. Concerned parties can also call an EPA hot line.

Although Congress banned the manufacture and use of PCBs in 1979, there is evidence that many buildings constructed between 1950 and 1978 may have PCBs at high levels in the caulking materials and in other building materials. EPA has estimated that the amount of PCBs released from the caulk into the air, dust, and soil. EPA has estimated that the amount of PCBs released from the caulk into the air, dust, and soil. EPA has estimated that the amount of PCBs released from the caulk into the air, dust, and soil.

Although this is a serious issue, the potential for exposure is low. Buildings were erected or renovated before 1979 may have PCBs at high levels in the caulking materials and in other building materials. EPA has estimated that the amount of PCBs released from the caulk into the air, dust, and soil.



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CONTRACTORS

Handling PCBs in Caulk During Renovation



United States Environmental Protection Agency
EPA 747-F-09-005
September 2009
Office of Pollution Prevention and Toxics (7404)

EPA Preventing Exposure to PCBs in Caulking Material

Fact Sheet for Schools: Caulk containing PCBs may be present in older schools and buildings

Between 1950 and 1978, caulk containing polychlorinated biphenyls (PCBs) was commonly used in new buildings, including schools. Although PCBs were banned in 1979, contaminated caulk may still exist in older schools, homes, and commercial buildings.

Contractors who are exposed to PCBs by:
• Working with old caulk containing PCBs
• Working with old caulk containing PCBs
• Working with old caulk containing PCBs

PCBs were not added to caulk after 1978. Therefore, in general, schools built after 1978 do not contain PCBs.

What are PCBs?
PCBs are organic chemicals that were once a popular sealant material and electrical insulator but have been found in many buildings and other materials. PCBs are also found in many other materials, including food, paint, and plastic.

How are people exposed to PCBs?
PCBs can be released from old caulk containing PCBs during renovation or repair work. PCBs can also be released from old caulk containing PCBs during renovation or repair work. PCBs can also be released from old caulk containing PCBs during renovation or repair work.

Does the caulk in my home or other places contain PCBs?
PCBs were not added to caulk after 1978. Therefore, in general, schools built after 1978 do not contain PCBs.

What can I do to reduce PCBs in caulk?
If caulk containing PCBs is discovered, PCBs should not be disturbed. Contractors should use proper procedures to remove and dispose of caulk containing PCBs. Contractors should use proper procedures to remove and dispose of caulk containing PCBs.

How can I reduce my exposure to PCBs?
Avoid disturbing old caulk containing PCBs. Avoid disturbing old caulk containing PCBs. Avoid disturbing old caulk containing PCBs.

What should I do if I am exposed to PCBs?
If you are exposed to PCBs, you should contact your doctor and inform them of your exposure. If you are exposed to PCBs, you should contact your doctor and inform them of your exposure.

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EPA HQ's Key Steps – PCBs in Caulking

- Review any available test data and building history/construction date
- Assess location and condition (e.g., deteriorated caulk, etc.)
 - Link between presence and exposures is not well understood – research on-going
 - Recommends testing or immediate removal of deteriorated caulk



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EPA HQ's Key Steps – PCBs in Caulking

- Determine potential for human exposure:
 - Frequency, duration, and receptors
 - Testing may be needed
 - No specific EPA regulatory requirement to test caulking for PCBs that are not being disposed/managed
 - Consider indoor air testing to supplement best practices



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EPA HQ's Key Steps – PCBs in Caulking

- Identify interim actions or best practices to minimize exposure (> 50 ppm PCBs need to be ultimately removed)
 - Minimize contact (temporary barriers, etc.)
 - Reduce exposure (cleaning, ventilation, etc.)
 - Adopt safe work practices (washing hands, etc.)
 - Remove during planned renovations
- Develop and Implement Interim and/or Permanent Remedial Solution(s)



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PCBs in Caulking - Remediation

- Disposal of PCB impacted caulking usually falls under:
 - 40 CFR 761.62 PCB Bulk Product Waste (manufactured with PCBs)
 - 40 CFR 761.61 PCB Remediation Waste (if material impacted from a release, such as contaminated concrete or soil)
 - 40 CFR 761.79 Decontamination
 - State Regulations (CTDEP PCB Program)



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40 CFR 761.50 - Roadmap

PCB LIQUIDS 761.50(b)(1)

Liquid with PCB conc. > 50 ppm and NOT a PCB Remediation Waste (i.e. flowable oil containing PCBs, such as transformer or switch oils)

- ☐ For DISPOSAL - Go To 761.60(a)
- ☐ For DECONTAMINATION - Go To 761.79

PCB ITEMS 761.50(b)(2)

PCB Articles, Containers, and Equipment (i.e. transformers, capacitors, hydraulic machines, tanks, drums, electronic equipment, fluorescent light ballasts) that contain PCBs and whose surface (s) has been in direct contact with PCBs.

- ☐ Intact and non-leaking items
 - ☐ For DISPOSAL - Go To 761.60(b) or (c)
 - ☐ For DECONTAMINATION - Go To 761.79
- ☐ Non-intact or leaking items
 - ☐ DISPOSE as PCB Bulk Product Waste - Go To 761.62 (a) or (c)
- ☐ Fluorescent light ballasts w/ PCBs in potting material
 - ☐ Dispose as PCB Bulk Product Waste - Go To 761.62(b)

POROUS SURFACES 761.50(b)(8)

Surface that allows PCBs to penetrate itself (i.e., paint, fibrous glass, ceramics, wood, concrete, plaster/wallboard, asphalt, etc.)

- ☐ For DISPOSAL of PCB Remediation Waste (i.e., from releases/spills) - Go To 761.61
- ☐ For DISPOSAL of PCB Bulk Product Waste (i.e., manufactured product w/ PCBs) - Go To 761.62
- ☐ For DECONTAMINATION of concrete from a fresh spill, if decon starts within 72 hours of the spill - Go To 761.79(b)(4) or PCB Spill Cleanup Policy - see Chart 3
- ☐ For DECONTAMINATION of metal with a porous coating - Go To 761.79(b)(3)

PCB BULK PRODUCT WASTE 761.50(b)(4)

Waste derived from manufactured products containing PCBs > 50 ppm at the time designated for disposal (i.e., out of service). Includes: building demo debris, plastics, paints, caulking, adhesives, felts/fabrics, etc.

- ☐ For DISPOSAL - Go To 761.62
- ☐ For DECONTAMINATION of painted metal - Go To 761.79

PCB REMEDIATION WASTE 761.50(b)(3)

Soil, debris, and/or waste containing PCBs as a result of a spill, release, or unauthorized disposal

- ☐ To DEFINE - Go To 761.3 - See Chart 2
- ☐ To CATEGORIZE - Go To 761.50(b)(3) See Chart 3
- ☐ For CLEANUP/DISPOSAL - Go To 761.61
 - Fresh spills (< 72 hours) - See Chart 4
 - All other spills - see Chart 5

PCB RADIOACTIVE WASTE 761.50(b)(7)

- ☐ DISPOSE based on both PCB and radioactive concentrations

PCB HOUSEHOLD WASTE 761.50(b)(5)

- ☐ For DISPOSAL - Go To 761.63

PCB R&D WASTE 761.50(b)(6)

- ☐ For DISPOSAL - Go To 761.64



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Containment/Control Procedures



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Dust Controls and Perimeter Monitoring



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PCB Decontamination



Roto-peening Concrete



Containment for Sand Blasting



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PCB Decontamination – Chemical Wash



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Soil Removal



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Encapsulation/Barrier Systems

- Option for adjacent materials (concrete, brick, etc.) that cannot be removed/decontaminated:
 - Physical barrier
 - Interim measure
 - Long-term monitoring and maintenance
 - Potential deed restrictions/notices
- Limited products applied at sites – uncertainty until products field-tested over time
 - Surface preparation for specific products



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Encapsulation Techniques



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Encapsulation Techniques



Epoxy type encapsulant



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Encapsulation Techniques



Acrylic based clear coating encapsulant



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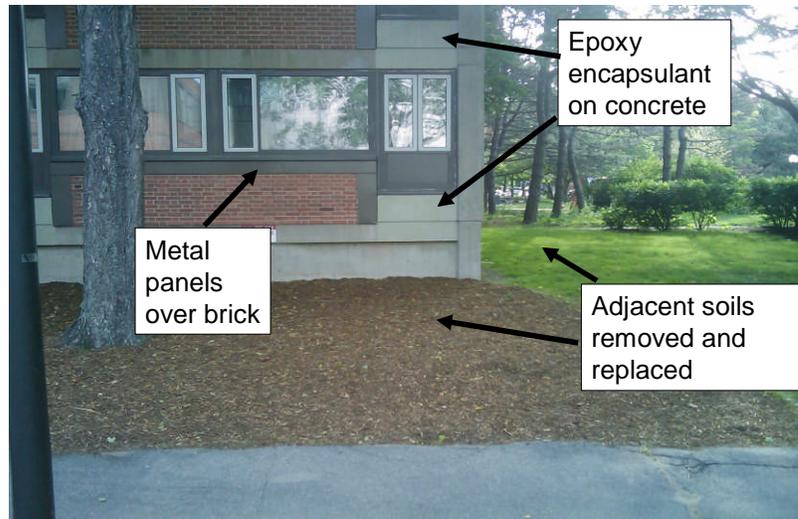
Encapsulation Techniques



Temporary cover over caulking – interim measure

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Post-Remediation



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Project Impacts



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Project Implications

- Upfront Planning/Due Diligence
- Risk Management/Risk-Based Approaches
- Schedule
- Planning/Submittals
- Communications – all stakeholders
- Special Worker and Remediation Requirements
- Special T&D Requirements



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Going Forward

- Incorporate into Projects along with other Potentially Suspect Materials
 - Lead, Asbestos, and now PCBs
- Develop and Implement a Management Program for Multiple Building Sites to Deal with Planned and Unplanned Projects
- Need to Manage the Process- Significant Impacts to Project Schedule and Costs Can Occur



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Questions and Discussion

Contact Information

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