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

COMMITMENT & INTEGRITY DRIVE RESULTS

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

WOODARD &CURRAN

COMMITMENT & INTEGRITY DRIVE RESULTS

PCBs in Caulking - Typical

Caulking up to 140,000 ppm

WOODARD &CURRAN

COMMITMENT & INTEGRITY DRIVE RESULTS

PCBs in Caulking - Typical

Caulking = 405,000 ppm

Caulking = up to 130,000 ppm

WOODARD &CURRAN

COMMITMENT & INTEGRITY DRIVE RESULTS

PCBs in Caulking - Typical

Caulking = 3,200 ppm

Caulking = 120,000 ppm

WOODARD &CURRAN

COMMITMENT & INTEGRITY DRIVE RESULTS

PCBs “Not” in Caulking

WOODARD &CURRAN

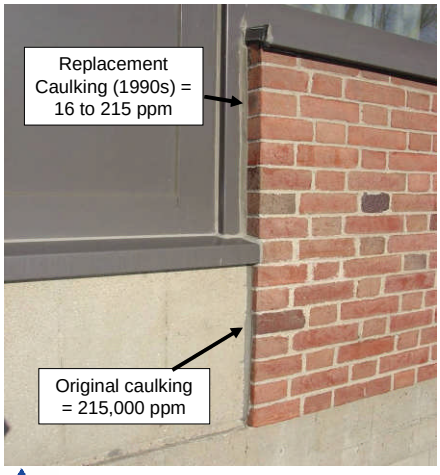
COMMITMENT & INTEGRITY DRIVE RESULTS

PCBs “Not” in Caulking

WOODARD &CURRAN

COMMITMENT & INTEGRITY DRIVE RESULTS

PCBs in Caulking

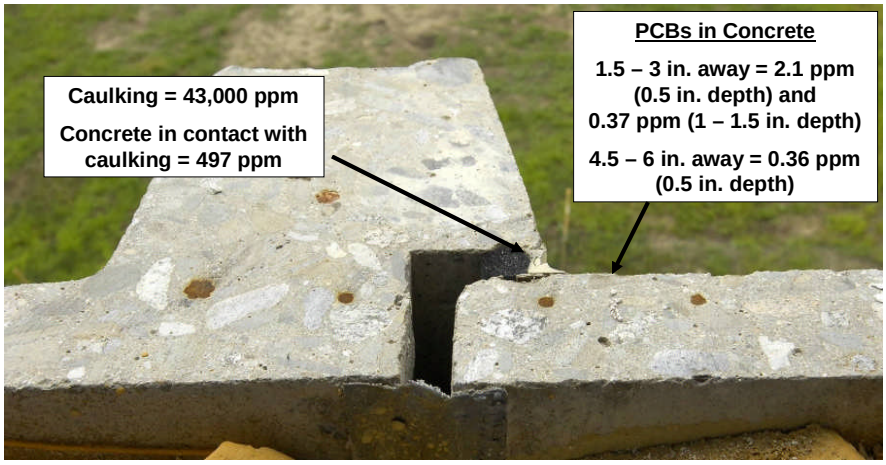


SITE A

SITE B

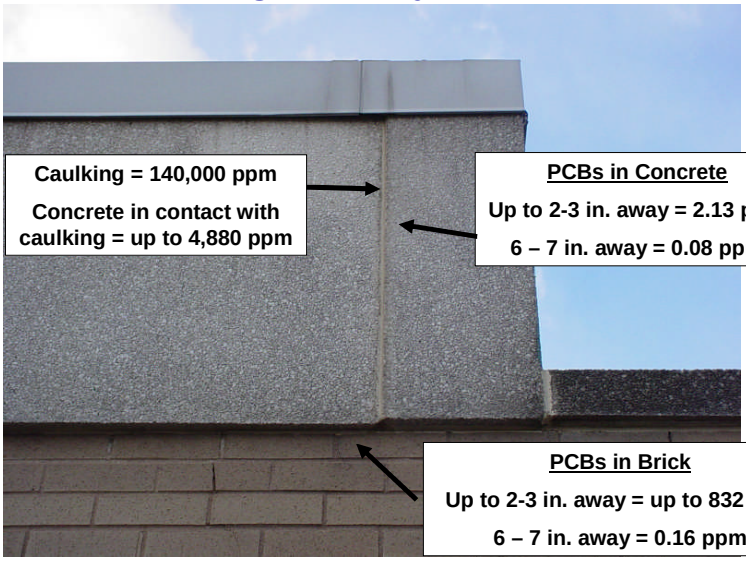
WOODARD &CURRAN

PCBs in Caulking and Adjacent Materials



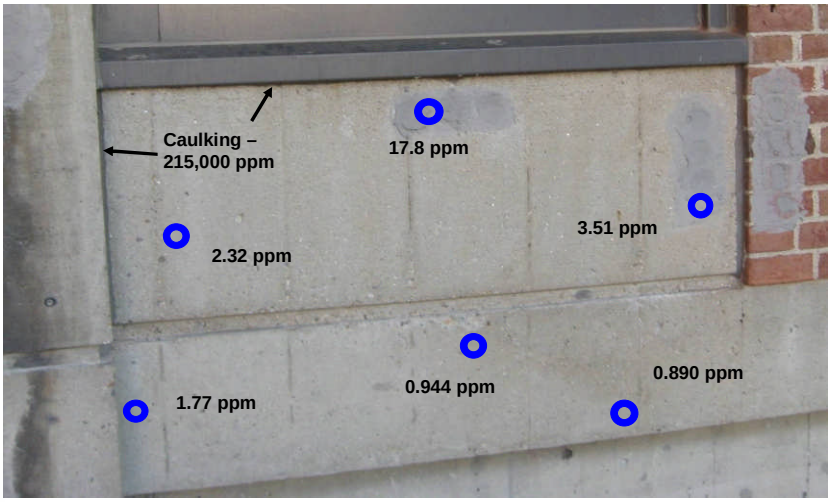
WOODARD &CURRAN

PCBs in Caulking and Adjacent Materials



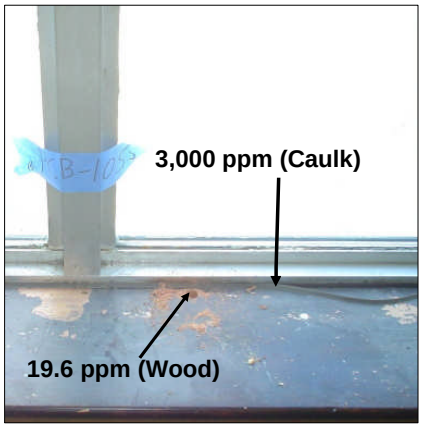
WOODARD &CURRAN

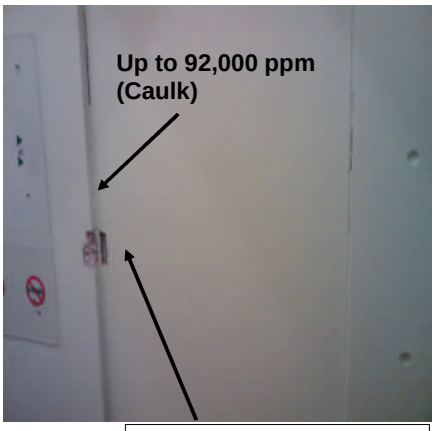
PCBs in Caulking and Adjacent Materials



WOODARD &CURRAN

PCBs in Caulking and Adjacent Materials





PCBs in Plaster

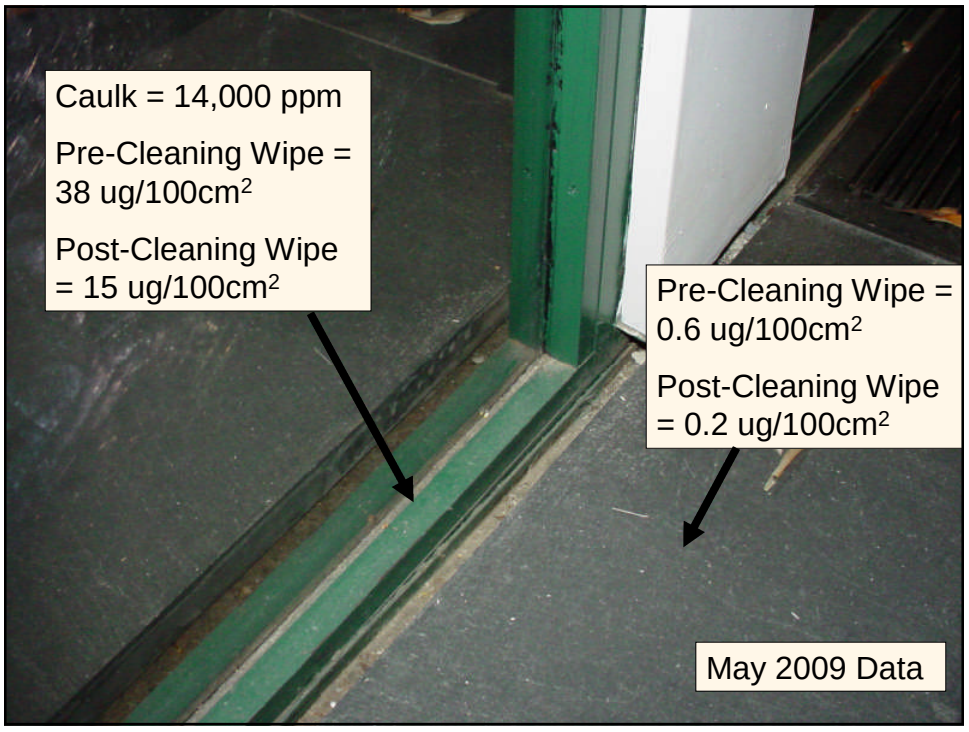
1 in. away = 34 – 44 ppm

4-5 in. away = 4.04 ppm

12-13 in, away = 4.1 ppm

WOODARD &CURRAN

COMMITMENT & INTEGRITY DRIVE RESULTS



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.

WOODARD &CURRAN

COMMITMENT & INTEGRITY DRIVE RESULTS

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

WOODARD &CURRAN

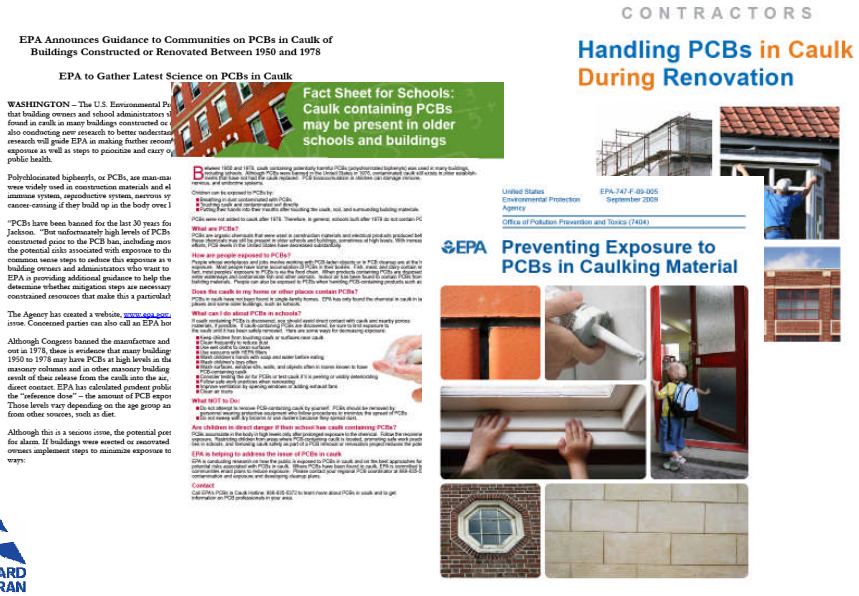
COMMITMENT & INTEGRITY DRIVE RESULTS

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

- **Use** of PCBs in caulking ≥ 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 ≥ 50 ppm PCBs still in use (i.e., no continued use provision for left in place material)

WOODARD &CURRAN

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

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

CONTRACTORS

Handling PCBs in Caulk During Renovation

EPA

Preventing Exposure to PCBs in Caulking Material

WOODARD &CURRAN

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

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

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)

WOODARD &CURRAN

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)

WOODARD &CURRAN

COMMITMENT & INTEGRITY DRIVE RESULTS

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

WOODARD &CURRAN

COMMITMENT & INTEGRITY DRIVE RESULTS

Containment/Control Procedures

WOODARD &CURRAN

COMMITMENT & INTEGRITY DRIVE RESULTS

Dust Controls and Perimeter Monitoring

WOODARD &CURRAN

PCB Decontamination

Roto-peening Concrete

Containment for Sand Blasting

WOODARD &CURRAN

PCB Decontamination – Chemical Wash

WOODARD &CURRAN

COMMITMENT & INTEGRITY DRIVE RESULTS

Soil Removal

WOODARD &CURRAN

COMMITMENT & INTEGRITY DRIVE RESULTS

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

WOODARD &CURRAN

Encapsulation Techniques

WOODARD &CURRAN

Encapsulation Techniques

Epoxy type encapsulant

WOODARD &CURRAN

COMMITMENT & INTEGRITY DRIVE RESULTS

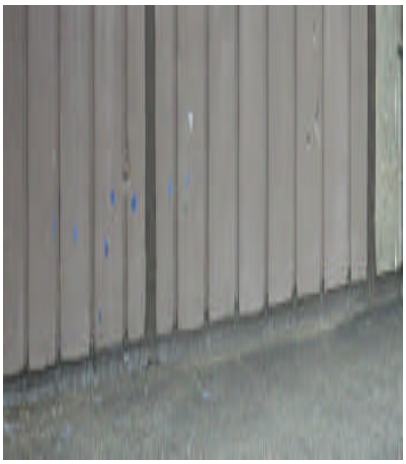
Encapsulation Techniques

Acrylic based clear coating encapsulant

WOODARD &CURRAN

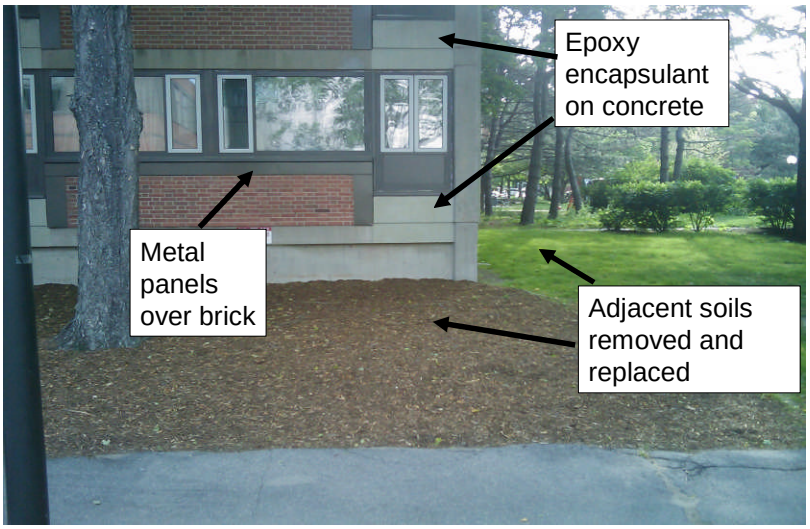
COMMITMENT & INTEGRITY DRIVE RESULTS

Encapsulation Techniques



Temporary cover over caulking – interim measure

Post-Remediation



Project Impacts

WOODARD &CURRAN

COMMITMENT & INTEGRITY DRIVE RESULTS

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

WOODARD &CURRAN

COMMITMENT & INTEGRITY DRIVE RESULTS

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

Questions and Discussion

Contact Information

Jeffrey Hamel, LEP, LSP
Woodard & Curran
35 New England Business Center Drive, Suite 180
Andover, MA 01810

Tel: 978-557-8150
Fax: 978-557-7948
www.woodardcurran.com