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Environmental and Infrastructure Solutions

Solving NLPCB Impediments to Decommissioning

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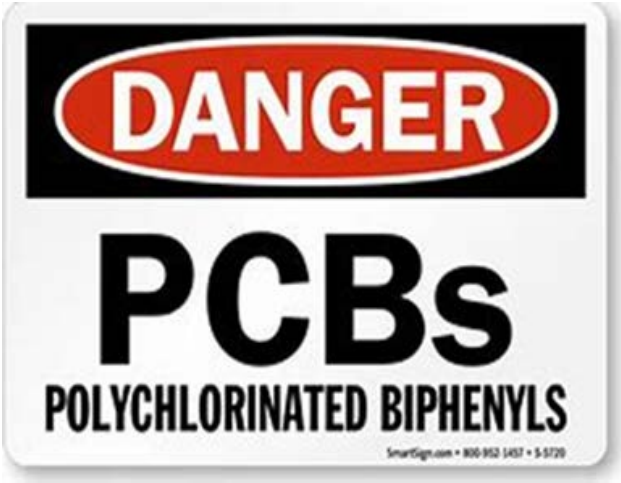
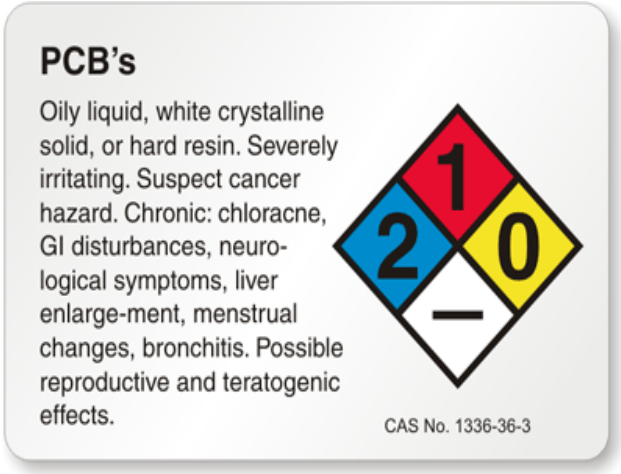
60+ Years of Environmental Excellence

Solving NLPCB Impediments to Decommissioning

Consider PCBs When Decommissioning

- Worker safety requirements
- Distribution in commerce limitations
- Property transfer / reuse due diligence
- Compliance & waste management
- Regulatory agency notifications
- Salvage value impacts
- Decontamination needs
- Disposal cost increases
- Prolonged demolition schedules
- Surprise change orders
- Contract disputes / legal issues





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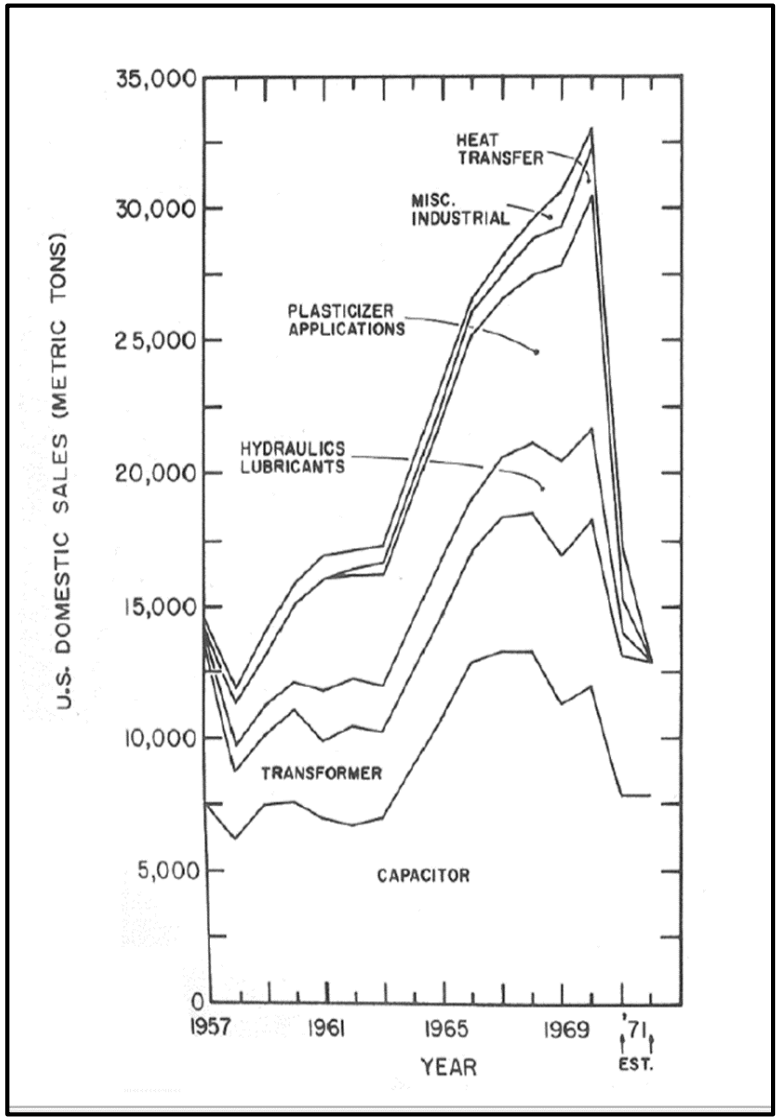
Avoid Surprises That Derail Projects

- **Project:** Contractor selected for demolition based on investment recovery, payment on demo cost vs. asset value recovery.
- **Issue:** Contractor assumed painted steel unregulated for salvage, but PCBs found to be widespread on painted infrastructure and equipment. Bid specs vague and work stopped for EPA guidance, resulting in schedule/cost impact, salvage value loss.
- **Result:** Contract dispute / litigation, with consultant later pulled in to help sort it out.

Estimated Industry PCB Use 1929-1975



Huntzinger, 1974; USACE 200-1-126, 2012

PCB Use	Pounds (Millions)	Percentage of Total
Capacitors	630	50.3%
Transformers	335	26.7%
Plasticizer Uses	115	9.2%
Hydraulics / Lubricants	80	6.4%
Carbonless Copy Paper	45	3.6%
Heat Transfer Fluids	20	1.6%
Petroleum Additives	1	0.1%
Misc. Industrial Uses	27	2.2%
TOTAL	1,253	100.0%

EPA, 1997

Common Aroclors for Various Former PCB End Uses

Use	Aroclor					
	1242	1248	1254	1260	1262	1268
Capacitors			•			
Transformers	•		•	•		
Heat Transfer	•					
Hydraulics/Lubricants						
Hydraulic Fluids		•	•			
Vacuum Pumps		•	•			
Gas-transmission Turbines	•					
Plasticizers						
Rubbers	•	•	•			•
Synthetic Resins		•	•	•	•	•
Carbonless Paper	•					
Miscellaneous						
Adhesives	•	•	•			
Wax Extenders	•		•			•
Dedusting agents			•	•		
Inks			•			
Cutting Oils			•			
Paint			•			
Sealants and Caulking Compounds			•			

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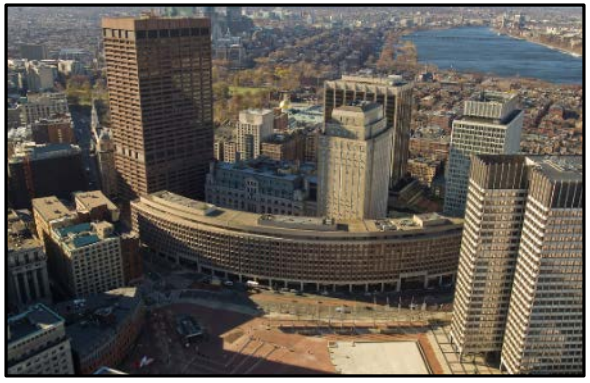

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Consider Non-Liquid PCB Materials

- PCBs intentionally incorporated into solid materials that are not the result of a spill.
- *NLPCB building products may include dried paint, caulk, adhesives, mastic, Galbestos.*
- PCB concentrations 10% - 20% by weight
- Continued use is not authorized.
- No proactive testing requirement to assess status while in use nor a removal timeline.
- No removal standard except paint on meta
- Characterize when demo certain because materials regulated for disposal ≥ 50 ppm.

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PCB Bulk Product Waste (§761.3)

- EPA provided disposal provisions for NLPCB products as *PCB Bulk Product Waste* (1998).
- Waste from manufactured products with PCBs in *non-liquid* state *at any concentration* where the concentration at the time of designation for disposal is *≥ 50 ppm*.
- Includes: wastes or debris from demolition of buildings and structures *manufactured, coated, or serviced* with PCBs.
- Does not include: debris from demolition contaminated by *spills* from regulated PCBs not been addressed according to Subpart D.
- Implies < 50 ppm 'excluded PCB product' that may be distributed in commerce.

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Bulk Product Waste Disposal (§761.62)

- 761.62(a) - Manage as TSCA waste:
  - Incinerator (761.70)
  - Chemical waste landfill (761.75)
  - Hazardous waste landfill (3004 or 3006)
  - Alternative disposal approval (761.60(e))
  - Decontamination provisions (761.79)
- 761.62(b) - Some BPWs may be disposed of in *nonhaz landfills at any concentration*:
  - Plastics; molded rubber; applied dried paints, varnishes, waxes, coatings, and sealants; caulking; building demolition and shredding of automobiles and appliances.
- 761.62(c) – Risk-based approvals for other scenarios requiring approval of EPA

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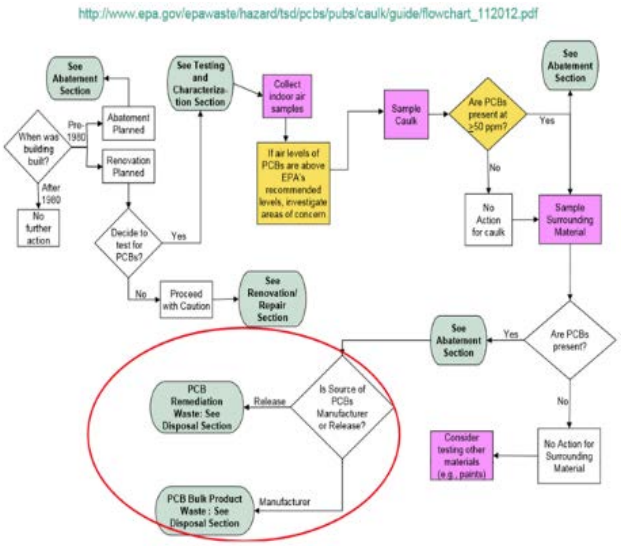
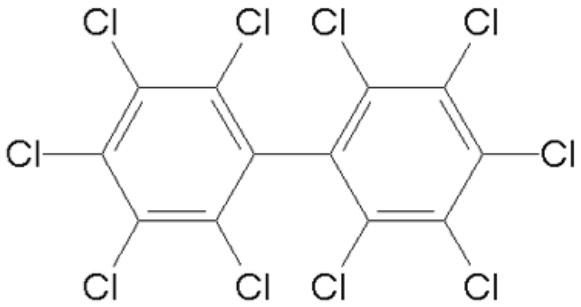
Finding NLPCB Starts The Detective Work

- Investigation should consider:
  - Bulk product waste to be managed based on age, condition, and PCB knowledge
  - Any nearby historical PCB spills that have affected the product and building substrate.
  - Presence of 'non-standard' Aroclors (1262, 1268) that differentiate NLPCB from spills.
- Consider disposal requirements:
  - Bulk product waste unrestricted at ≤ 50 ppm
  - Media affected by spills unrestricted ≤ 1 ppm
- Identify the scenario(s) to address:
  - Bulk product waste vs waste from old spills
  - Bulk product waste vs 'excluded PCB product'
  - Bulk product impact on building substrate.





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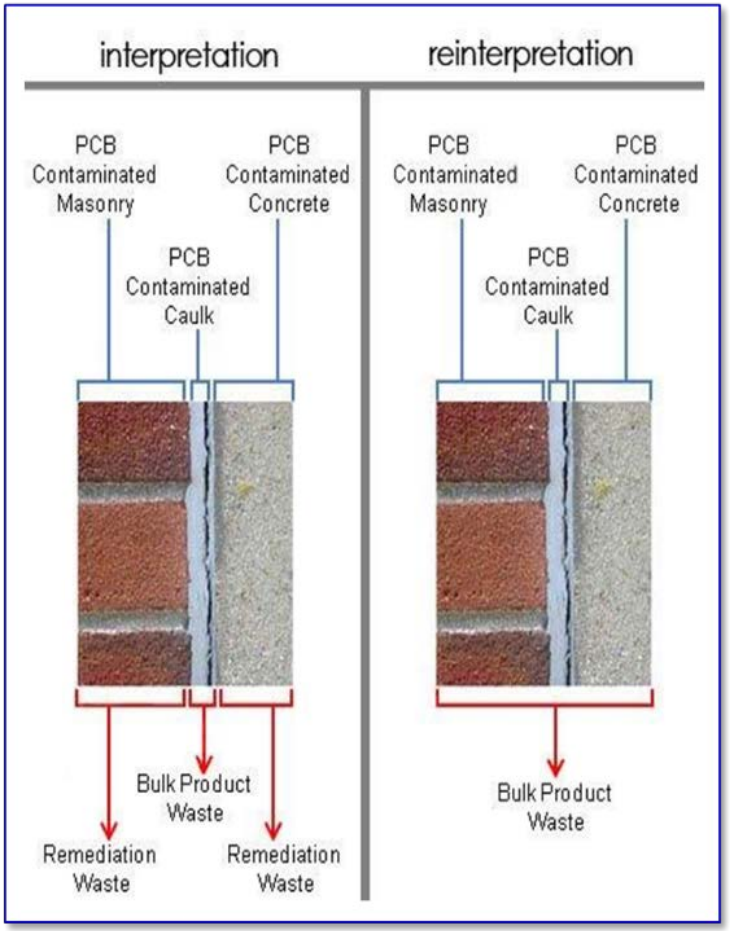
Substrate Affected by Bulk Product

- Bulk product waste removal complicated when high NLPCB concentration affects substrate
- Previously bulk product regulated to ≤ 50 ppm but cross-contaminated porous substrate regulated to ≤ 1 ppm as if affected by a spill.
- EPA 2012 'PCB Guidance Reinterpretation' now allows building substrate coated with BPW to be handled as BPW if simultaneous disposal.
- Substrate impacted by bulk product waste left in place under a risk based approval to be managed for eventual disposal as PCB waste.
- Substrate classification as PCB bulk product waste may or may not be helpful for disposal.



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Example 1: Paint On Equipment

- **Project:** 1940s gas power plant undergoing selective dismantlement for adaptive reuse
- **Issue:** PCB >50 found in paint on non-PCB equipment for salvage with nearby PCB oil mishandling and spills known.
- **Solution**: Decontaminated paint from the equipment per 761.79 NACE Standard 2 white blast finish with visual inspection. Disposed of paint and grit blast waste as TSCA waste with spill history uncertain. Approach allowed 740 tons of equipment to be salvaged/reused instead of more expensive TSCA landfilling (50% savings).

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Example 2: Paint on Infrastructure

- **Project**: 1960s coal-fired power plant undergoing refit for air pollution controls
- **Issue**: Nine-story tall electrostatic precipitator demolition halted when client due diligence found PCB <50 ppm on painted steel, with past spills from nearby transformer fires suspected, impeding contractor's steel salvage plans.
- **Solution**: Assessed paint to differentiate PCBs from spills vs manufacture. Since PCB in paint < 50 ppm found structure wide, EPA concurred PCB < 50 ppm in paint was "excluded PCB product" not from spill. Demolition moved forward without TSCA disposal requirements.

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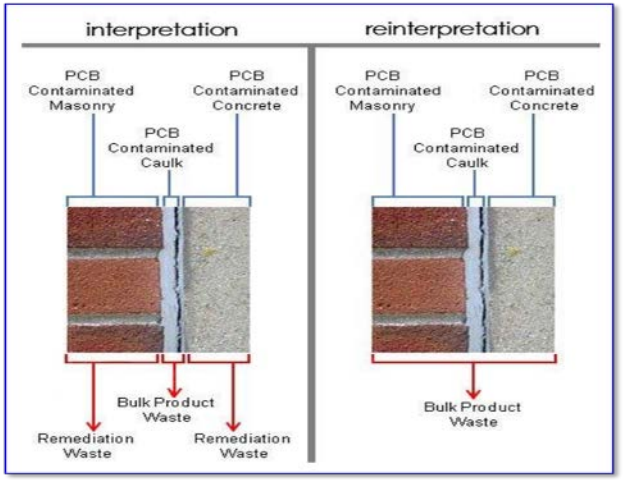
Example 3: Caulk in Foundation Joints

- **Project**: 1950s gas-fired plant undergoing complete demolition for reuse as parkland
- **Issue**: PCBs > 10,000 ppm in caulk in plant foundation joints contaminated adjacent concrete and impeded in place closure.
- **Solution**: Saw cut out caulk and adjacent PCB-affected concrete for disposal as bulk product waste per 761.62(a) as no PCB spills in the area were known. Remaining unaffected concrete closed in place onsite.



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Example 4: Caulk in Building Facade

- **Project**: Significant multi-year renovation of 8-story building for continued public use.
- **Issue**: 20,000 ppm PCB caulk in concrete facade joints deteriorating with concerns for interior/exterior dust during renovation. The concrete panels cross-contaminated.
- **Solution**: Obtained EPA 761.62(c) risk-based authorization to remove caulk, wire brush and encapsulate affected exposed façade, allowing removal of deteriorating product but maintaining concrete in place for now.

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Example 5: Mastic on Concrete

- **Project**: A 1950s era gas-fired power plant undergoing complete demolition
- **Issue**: Adhesive/mastic with PCB Aroclor 1262 > 50 ppm found on concrete during demolition of plant boiler foundation
- **Solution**: Broke out concrete with mastic for disposal as a PCB bulk product waste under 761.62(b) as no PCB spills known. Remaining concrete closed in place.

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Example 6: Insulation Adhesive

- **Project**: Initial PCB assessment for spills discovered more widespread PCB presence on non-spill surfaces
- **Issue**: Deteriorating PCB-containing roof insulation with Aroclor 1254 > 50 ppm, depositing dust / debris on building equipment and other painted surfaces
- **Solution**: Partial building dismantlement ("skinning") to remove deterioriating NLPCB insulation for replacement and more cost effective decontamination.

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Example 7: Interior Paneling

- **Project**: An operating 1950s-1960s gas fired power plant with PCB discharge concerns.
- **Issue**: PCB found in plant oil bath led to cleaning of plant ventilation shaft that was not easily cleaned. Deteriorating Galbestos (Aroclor 1268) discovered to be a source.
- **Solution**: Galbestos was removed and disposed of so that shaft and oil bath could be finally cleaned to allow ongoing use.

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Example 8: Exterior Building Siding

- **Project**: 700,000 SF aluminum plant built in 1942 being repurposed for industrial use.
- **Issue**: Siding containing 40,000 ppm PCB (Aroclor 1268) in tar coating. Material found to be deteriorating Galbestos thought to be cross-contaminating interior and exterior.
- **Solution**: Removed Galbestos roofing and wall paneling due to its deterioration at significant cost to allow effective decon for long term building revitalization and reuse for new industrial tenants as part of an economic redevelopment initiative.

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Example 9: Exterior Building Siding

- **Project**: Cleanup of a large hangar built in 1929 for air ship (i.e., blimp) construction
- **Issue**: Roofing/siding was Galbestos with 40,000 ppm PCB in tar coating found to be deterioriating and causing detected cross-contamination of interior surfaces.
- **Solution**: Avoided expensive removal by cleaning equipment, coating floors, and removing affected soil/concrete, with EPA "Consent Agreement & Final Order" to enable ongoing use with air monitoring.

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