Understanding TSCA for Sites with PCBs
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Agenda

• Introduction/General Regulatory Provisions
• Self-Implementing Cleanup and Disposal
• Performance-Based Disposal
• Risk-Based Disposal
• Semi-Hypothetical Examples
• Subpart Q and Soxhlet Extraction
• Reflections on the Regulations
Brief Regulatory History

- **1976** - Due to PCB Toxicity and Environmental Persistence Concerns, Congress enacted Section 6(e) of the Toxic Substances Control Act (TSCA)

- **1979** - PCBs banned except for “totally enclosed uses”, such as transformers, capacitors, vacuum pumps and hydraulic fluids (a.k.a., authorized uses)

- **1998** - PCB Disposal Amendments (a.k.a., the Mega Rule)
General Regulatory Provisions

- **Prohibitions** - The TSCA PCB regulations (40 CFR Part 761) placed prohibitions on the use (manufacture), processing, and distribution in commerce and specify storage and disposal requirements for PCBs and PCB items.

- **Remedial/Disposal Frameworks** - Governs owners, operators, and/or persons conducting cleanup of PCB-contaminated property where the PCB contamination exceeds allowable concentrations under the regulations.

- **Not Delegated** - TSCA authority is not delegated to the states; therefore both TSCA and state regulations will apply.
Climbing into Compliance

- **When to look for PCBs?** Depends on the Conceptual Site Model (CSM). Potential PCB sources may be obvious (e.g., transformer release) or less obvious (e.g., uncontrolled filling/dumping site, contaminant tracking).

- **If detected, is cleanup and disposal of PCBs regulated under TSCA?** Not necessarily. More on this to follow.

- **If TSCA, what are the regulatory options?** There are three primary regulatory options: a) Self-implementing cleanup and disposal, b) Performance-based disposal, c) Risk-based disposal.
Conceptual Site Model Considerations

- Transformers
- Capacitors
- Hydraulic fluids
- Oil-based paints
- Fluorescent light ballasts
- Lubricating & cutting oils
- Floor finishes
- Fire retardants
- Thermal insulation materials
- Caulk/sealants/waterproofing
- Coatings for wire/electrical gear
- Carbonless copy paper
- Inks and dyes
- Adhesives/mastics
- Auto shredding fluff
- Waste oil

...and more...
Key Distinctions

- PCB Remediation Waste
- PCB Bulk Product Waste
- Excluded PCB Product
- Each defined in 40 CFR Section 761.3

Site Contamination Context

- PCB Remediation Waste is the primary category driving remedial action for non-building scenarios, but for buildings may be unauthorized uses of Non-liquid PCBs
https://www.epa.gov/pcbs/polychlorinated-biphenyl-pcb-guidance-reinterpretation
Game on! PCB Remediation Waste

As Found Concentration

- ≥ 50 PPM Total PCBs
- Pre-April 18, 1978 Disposal

Source Concentration

- ≥ 500 PPM Total PCB Source
- Beginning April 18, 1978
- Any PCB concentration As Found

Unauthorized Source

- Any PCB concentration As Found

- ≥ 50 PPM Total PCBs
- Beginning July 2, 1979
- Any PCB concentration As Found

Be careful of data dilution...
But wait...

Doesn’t 40 CFR 761.50(b)(3)(i)(A) Cut Me Some Slack?

_Sites containing these wastes are presumed not to present an unreasonable risk of injury to health or the environment from exposure to PCBs at the site._

Factors to be considered for no unreasonable risk determination
- Location, PCB concentration, site use, receptors

Recommendations for engaging EPA
- Early communication to avoid project delay
- EPA streamlining tool
The Three Options for Site Remediation

Self-Implementing cleanup and disposal (a.k.a., 761.61(a))
- Highly prescriptive with a stipulated review period and established clean-up standards, but only for soil and bulk materials (e.g., concrete, asphalt, brick)

Performance-based disposal (a.k.a., 761.61(b))
- Requires no EPA approval for removal/disposal, allows for fast action, disposal options are limited and conservative
- Cleanup to 1 ppm, but if no reached further work may be required per 61(a) or 61(c)

Risk-based disposal (a.k.a., 761.61(c))
- Site specific approach applicable to all impacted media
- Utilize EPA streamlining tool any time employing 61(c)
EPA Streamlining Tool

Developed in Region 9

- Outgrowth of an October 2014 EPA Region 9 Lean Six Sigma event
- Published May 2017

Bottom Line

- Lays out a collaborative process between EPA and the Responsible Party
- Encourages early communication, facilitates agreement upon site goals and objectives, and encourages elevation of issues and concerns.
Self-Implementing Cleanup and Disposal (a.k.a., 761.61(a))

Overview:
- **Best Fit:** Small-moderate sized sites (< 1-acre)
- **Applicability:** Soil, building, and bulk materials only
- **Notification & Certification:** EPA, state, local
- **EPA Review Timeframe:** 30 days (but only if *ALL* procedural elements are followed)

What ifs:
- **Missing information:** Notification is incomplete *(761.61(a)(3)(ii))*
- **Doesn’t check all the boxes:** Procedural requirements not met
- **Flexibility:** Emergency Waivers *(761.61(a)(3)(iii))
Prescriptive Approach for Sampling
⇒ Must comply with ALL sampling and extraction/analytical procedures

Characterization Sampling
⇒ In-situ (as found) sampling with no compositing
⇒ Subpart N – 3-meter (10 foot) N-S grid, but Subpart O if segregating for disposal

Verification Sampling
⇒ Subpart O – 1.5-meter (5 foot) grid
⇒ Rubric for determining minimum number of samples
⇒ Strictly speaking, sample core intervals should be no more than 7.5-centimeters (3 inches)
⇒ Porous surfaces – Region 1 Porous Surfaces SOP
⇒ Compositing allowed per specific rules
### 761.61(a) REMEDY AVENUES CHEAT SHEET

<table>
<thead>
<tr>
<th>PCB Concentration in Soil (parts per million)</th>
<th>Unrestricted Site Use</th>
<th>Deed Restriction*</th>
<th>Cap**</th>
<th>Fence***</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A.) High Occupancy Area ( &gt; 6.7 hours/week )</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≤ 1</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>&gt; 1 but ≤ 10</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td><strong>B.) Low Occupancy Area ( &lt; 6.7 hours/week )</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≤ 25</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>&gt; 25 but ≤ 50</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>&gt; 25 but ≤ 100</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

* When cleanup includes a cap or fence, a deed restriction will be used.

** A cap shall consist of any of the following: concrete or asphalt with a minimum thickness of 6-inches, or soil with a minimum thickness of 10-inches and:
- Permeability ≤ 1.0 x 10^{-7} cm/sec
- 30 percent passing No. 200 Sieve
- Liquid Limit > 30
- Plasticity Index > 15

*** Fence will be marked with the PCB ML symbol
Self-Implementing (continued)

**Verification Sampling Requirements**

- Detailed and prescriptive (see 761.61(a)(6))

**Important Elements of Clean-up Verification**

<table>
<thead>
<tr>
<th>Number of samples</th>
<th>Subpart O spacing (5 x 5)</th>
<th>Composite sampling</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>- 9 sample maximum</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Point source approach</td>
</tr>
<tr>
<td>Depths and locations</td>
<td>Extraction and analysis</td>
<td>- Non-point source approach</td>
</tr>
</tbody>
</table>

- Cleanup continues until cleanup levels are reached at each location
  - Exposure point calculations not considered

- Composite sampling can be complex
  - Consultation with Regional PCB Coordinator recommended
Self-Implementing (continued)

Disposal of PCB Remediation Waste

- Liquids (see 761.60(a) and 761.79)

- ≥ 50 ppm (dewatered waste)
  - Existing TSCA facilities
  - RCRA hazardous waste landfill

- < 50 PPM (dewatered waste)
  - Existing TSCA facilities
  - RCRA hazardous waste landfill
  - State approved solid waste landfill
Self-Implementing (continued)

Documentation

⇒ Planning vs. Closure

Planning – EPA (see 761.61(a)(3) & EPA SIP checklist)
- Cover letter
- Site background/history
- Nature of contamination
- SOP Summary
- Site map
- Copies of analytical
- Proposed technology & approach
- Certification
- QA/QC Plan
- If cap, provide design and x-sections

Closure - EPA
- Completion Report
- Certification for recording of deed restriction, if applicable

Integration with State Program
- Same content can be integrated into state program plans & closures
Performance-Based Disposal (a.k.a., 761.61(b))

- **Notification to EPA** – Not required for removal/disposal of PCB remediation waste

- **Removal Objective** – Less than 1 ppm per Subpart O (if not, perform remainder by Self-Implementing (61(a)) or Risk-based (61(c))

- **Disposal** - TSCA approved facility (some special provisions can apply to dredged sediments)

- **Documentation of Cleanup** - Kept on file
Performance-Based Disposal (a.k.a., 761.61(b))

Documentation

⇒ Planning vs. Closure

Planning - EPA
- No specific plan required for submittal to EPA
- Only specifically details disposal requirements
- May consult with EPA on objectives for the proposed work

Closure - EPA
- No closure documentation required for submittal to EPA; however, EPA requires that all information be retained ≥ 5 years (761.125(c)(5))

Integration with State Program
- Follow state program - dictates where PCBs are reportable at the state level
Risk-Based Disposal Approval (a.k.a., 761.61(c))

- **Typical Use** – Complex or large sites and all media types, including sediment and groundwater

- **EPA Involvement** –
  - Requires written EPA approval
  - EPA may engage contractor support for highly technical sites
  - Review period not stipulated and can be extensive

- **Notification** – A public notification process may be required

- **Risk Assessment** – State and Federal programs will likely be different (especially ecological risk)

- **Other Use** – Avenue for EPA to approve reasonable modifications to Self-Implementing procedures (a.k.a., blended approval)
## Site Remediation Buyer’s Guide

<table>
<thead>
<tr>
<th>Program</th>
<th>Flexibility</th>
<th>Timing</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-Implementing (61(a))</td>
<td>Moderate(^1)</td>
<td>Moderate</td>
<td>Planning – $</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Implementation – $ to $$$</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Disposal – $ to $$$</td>
</tr>
<tr>
<td>Performance-based (61(b))</td>
<td>Limited/Low</td>
<td>Advantageous</td>
<td>Planning – $</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Implementation – $</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Disposal – $$$$$(^3)</td>
</tr>
<tr>
<td>Risk-based disposal (61(c))(^4)</td>
<td>Advantageous</td>
<td>Long</td>
<td>Planning – $$ to $$$$$</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Implementation – $$ to $$$$</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Disposal – $ to $$$</td>
</tr>
</tbody>
</table>

1 – Departures from SIP, if allowed, lead to blended approval. 30-day approval not applicable in this case
2 – Highly project/site specific
3 – Limited/expensive disposal options
4 – Not including blended approval discretion exercised for SIP modifications/departures
Risk-Based Disposal Approval (a.k.a., 761.61(c))

Documentation

Planning vs. Closure

Planning - EPA
- Cover letter
- Site background/history
- Nature of contamination
- SOP Summary
- Site map x-referenced to sample IDs
- Copies of analytical
- Proposed technology & approach with contingency plan
- Evaluation of cleanup alternatives
- Human health and ecological risk assessments
- Certification

Planning (continued)
- QA/QC Plan
- Potential for 30-day public notice/comment
- If cap, provide design, x-sections, and deed restriction
- EPA Streamlining Toolbox (FAST)

Closure - EPA
- Completion Report and FAM
- As-builts of caps and deed restriction, as applicable

Integrable with State Programs
EXAMPLE 1 - Historically Filled Site (Soil Impacts Only)

Key Elements
- Activity pre-1978 fill activity over several decades
- Also developed pre-1978 without additional modification
- Large Areas (>30 acres)
- Other soil contaminants present (site is also in state program)
- Broad grid sampling program (50 foot) with vertical delineation
- Not associated with unauthorized use or other later spills
- One in-situ location ≥ 50 ppm PCBs in soil

Approach
- Self-Implementing Plan, including plan for advanced in-situ Subpart-O sampling
- Spot-removal integrated with state-level planning/remediation
- Blended 61(a)/61(c) approval
- Closure reporting integrated with state-level reporting
EXAMPLE 2 - Energy Facility with Complex Infrastructure

Key Elements
- Performance-based removal excavated soil to limits of safety
- Residual soil concentrations over 1 ppm Total PCBs

Approach
- Wrap-up remediation under Self-Implementing or Risk-Based Disposal Approval (a.k.a., 761.61(a) or 761.61(c))
- Supplemental delineation and cap installation
EXAMPLE 3 - Impacted Wetland Sediments

Key Elements
- Wetland impacted by runoff/migration from PCB-impacted fill site
- Residual soil and sediment concentrations over 1 ppm Total PCBs

Approach
- Risk-Based Disposal Approval (a.k.a., 761.61(c))
- Harmonized EPA/state ecological risk assessment approach with site-specific toxicological testing to develop site specific clean up targets for wetland soil and sediment
- Hot spot removal and sub-aqueous capping for sediment contaminated over site-specific clean-up target

Note
- Upland managed per separate Risk-Based Disposal Approval (a.k.a., 761.61(c)) to integrate building and exposure barrier construction
Soxhlet Extraction and Subpart Q

**Subpart Q Alternative Method:** If an alternative method of extraction and/or analysis is/will be used, then any submitted plan must certify that a comparison study which meets or exceeds the requirements of Subpart Q has been completed prior to the verification sampling.

**Regulatory changes under consideration:** Potential addition of allowable extraction/analytical methods
If you had a chance to change the regulations, what would be your top wishes, and why?
Reflection on the Regulations

If the regulations were to change, what provisions would you *not* like to see changed, and why?
Reflection on the Regulations

- Are there regulatory or policy changes coming that we should prepare for (i.e., what’s coming down the road)?
Thank you for your time and attention!