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Polychlorinated Biphenyl (PCB) Site Revitalization Guidance Under the Toxic Substances Control Act (TSCA)

This policy addresses cleanup and disposal requirements for polychlorinated biphenyls (PCBs) only. This document is intended to be used as an informal reference, and as such, is not a complete statement of all of the applicable PCB requirements. This document does not replace nor supplant the requirements of the Toxic Substances Control Act (TSCA) PCB regulations. Please refer to the regulations at 40 CFR Part 761 for specific regulatory and legal requirements.

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EXECUTIVE SUMMARY

This document was developed as a guide for complying with the Toxic Substances Control Act (TSCA) regulations for the cleanup and disposal of polychlorinated biphenyl (PCB) contamination. The purpose of the document is to provide assistance in navigating the TSCA PCB regulations in Title 40 of the Code of Federal Regulations at Part 761 (40 CFR Part 761).[1] The primary focus of this guidance is the *PCB Remediation Waste* provision at 40 CFR 761.61 which governs the management of PCB waste generated as the result of PCB spills and associated cleanup activities (e.g., contaminated environmental media, rags, debris). Additional PCB requirements that may apply also are mentioned.

This document may be useful to Brownfields grant recipients and other individuals involved in PCB cleanups under TSCA. The document discusses the factors that must be taken into consideration when determining appropriate cleanup levels (e.g., intended use and type of PCB waste). Prescriptive procedures on how to achieve the cleanup levels however are generally not addressed. The requirements for verifying that the cleanup standard has been met and for establishing deed restrictions (where necessary), and the options available for disposing of PCB wastes are discussed. In addition, other relevant TSCA PCB requirements, such as caps, waste storage, marking, manifesting, and recordkeeping requirements, are mentioned. All PCB concentrations are based on total PCBs, rather than individual PCB Aroclors.[2]

Examples are provided on how the "typical" and "worst case" PCB waste cleanup situations may be addressed. Additional examples in the form of a matrix on various PCB contamination and reuse scenarios and applicable TSCA PCB requirements are provided at the end of the document (see Table 7). Finally, the appendices offer guidance on sampling concrete in the field (Appendix A) and excerpts of relevant self-implementing provisions of the PCB regulations for the cleanup and disposal of PCB waste (Appendix B). Appendix A is not a substitute for Subpart O of Part 761 where the regulations require compliance with Subpart O. The cleanup and reuse of property previously contaminated with PCBs may vary widely and will be specific to each site. Therefore, this document is not intended to provide the answer to every question that could surface during the remediation of the site. The reader is encouraged to consult the statute, regulations and the Regional PCB Coordinator whenever questions concerning acceptable remediation practices arise.

This document does not replace or supplant the requirements of the TSCA PCB regulations. Use of this document does not establish a presumption against enforcement should violations of the cleanup and disposal requirements or the PCB use authorizations be discovered. Please refer to the regulations at 40 CFR Part 761 for specific regulatory and legal requirements. The entire text of the Code of Federal Regulations for 40 CFR Part 761 can be found on the U.S. Government Printing Office's website at www.gpo.gov, under "Legislative Resources" and on the PCB website at www.epa.gov/pcb under "Laws and Regulations." Additional assistance on the

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[1] Unless otherwise provided, the terms and abbreviations used herein have the meanings as defined in the PCB regulations at 40 CFR §761.3.

[2] See the definition of PCBs in 40 CFR §761.3 and "Response to Comments Document on the Proposed Rule – Disposal of PCBs; OPPTS Docket #66009A," May 1998, p. 11, Response #5.

TSCA PCB waste requirements is available from the Regional PCB Coordinators. The phone numbers and addresses for each Regional office are provided in this document (see Section VI), and a current listing of the Regional PCB Coordinators is available from the PCB website at www.epa.gov/pcb under "EPA Regional Contacts."

Polychlorinated Biphenyl (PCB) Site Revitalization Guidance Under the Toxic Substances Control Act (TSCA)

Introduction

This Polychlorinated Biphenyl (PCB) Site Revitalization Guidance (the Guidance) provides information on characterizing, cleaning up, containing, and disposing of PCB waste (e.g., soil and other debris generated as a result of any PCB spill cleanup). It has been developed as a guide to assist individuals engaging in PCB remediation efforts in complying with the Toxic Substances Control Act (TSCA) PCB regulations at 40 CFR Part 761. Individuals should contact the Regional PCB Coordinator for additional guidance on the regulatory requirements for site-specific situations or scenarios (see Section VI, pages 28-31).

Some cleanup sites may contain lead-based paint or asbestos which has been contaminated with other compounds such as PCBs, pesticides or mercury. In order to reduce exposure at these sites, it is generally recommended that a balance be struck between a manage-in-place strategy for lead-based paint and asbestos and the removal of other contaminants. Guidance and/or links to information for managing lead-based paints and asbestos contamination are available at EPA's websites at www.epa.gov/lead for lead, and www.epa.gov/asbestos for asbestos. In addition, several States have cleanup requirements that, in conjunction with the requirements addressed in 40 CFR Part 761, must be followed when undertaking a voluntary cleanup under a State response program. Therefore, individuals also are encouraged to consult with their State environmental officials regarding any additional State cleanup requirements.

PCB waste management at properties that have been contaminated with PCBs as a result of a spill, release or other unauthorized disposal requires compliance with the requirements for *PCB remediation waste* as specified in the TSCA PCB regulations at 40 CFR 761.50(b)(3) and 761.61. Refer to those regulations for specific regulatory and legal requirements regarding *PCB remediation waste*. An electronic version of the PCB regulations at 40 CFR Part 761 can be found on the PCB website at www.epa.gov/pcb under "Laws and Regulations." Many of the cleanup examples discussed in this Guidance are based on information regarding known federal Brownfields grant application scenarios available at the time of its development.

Background

Real property contaminated with PCBs may be sold or transferred by a current owner to another party. The transfer is not a release of any obligations of either the seller or the purchaser regarding proper handling, cleanup, or disposal of contaminated material. See August 14, 2003 Memo from Robert Fabricant and Susan Hazen to Barry Breen, John Peter Suarez and the Regional Administrators on the PCB website at www.epa.gov/pcb under "Interpretive Guidance," Policy Statements and Letters. The responsibility for the initial PCB contamination (e.g., spill or other release) resides with the person(s) who caused the contamination or who owned or operated the PCBs or PCB-containing equipment at the time of the contamination. However, after the property transfer, the new owner becomes responsible for controlling and mitigating any continuing and/or future releases of PCBs. In addition, because the use of contaminated portions of real property constitutes the use of PCBs on it, such use is prohibited under section 6(e)(2)(A) of TSCA, unless the owner of

the property contaminated with PCBs complies with all applicable use authorizations. In general, this means that the owner must first clean up the property or decontaminate it before it can be used (see 40 CFR §761.30(u)). As previously mentioned, the individual who caused the PCB contamination, which may or may not be the seller of the property, can generally be held liable for violations of the PCB disposal requirements.

I. Overview of TSCA's Waste Management Approach for PCB Wastes

This Guidance was developed by EPA to assist individuals who are planning or are engaged in PCB remediation activities (e.g., the redevelopment of a Brownfields site with PCB contamination), as well as State officials who are implementing state response programs, in complying with the PCB waste management requirements promulgated under the TSCA PCB regulations.

This Guidance describes the TSCA cleanup and disposal requirements for *PCB remediation waste* as specified under 40 CFR §761.61. Section 761.61 provides several options for cleaning up and disposing of PCB remediation wastes: 40 CFR §761.61(a) establishes requirements for self-implementing cleanups and disposal; 40 CFR §761.61(b) establishes requirements for performance-based disposal; and 40 CFR §761.61(c) establishes a procedure for applying for a risk-based cleanup or disposal approval where an individual wishes to conduct PCB cleanup or disposal in a manner other than prescribed in either 40 CFR §761.61(a) or (b). This guidance is primarily intended to assist individuals in complying with the self-implementing requirements in 40 CFR §761.61(a).

This Guidance also provides information on an activity that has been found to be acceptable to the Agency when PCB cleanup and related activities were conducted in a manner other than prescribed at 40 CFR §761.61(a) or (b); i.e., a risk-based disposal approval for the sampling, cleanup or disposal of PCB remediation waste (see 40 CFR §761.61(c)). Section 761.61(c) requires individuals to submit to the Regional Administrator an application which provides a risk-based demonstration that other procedures or cleanup standards will result in a commensurate level of protection for human health and the environment. In the example at Section III.A. of this guidance, the contaminated site was to be used for industrial purposes after the cleanup. In this particular industrial use scenario, the Agency determined that the proposed sampling procedures, cleanup standards, and engineering and institutional controls were sufficient to protect against an unreasonable risk of injury to health or the environment. EPA expects that these sampling procedures, cleanup standards, and engineering and institutional controls would likely be appropriate for other sites presenting comparable exposure scenarios, although each risk-based application will be evaluated on its merits and approved or disapproved on a site-specific basis.

Waste materials contaminated with PCBs as the result of a spill, an intentional or accidental release or uncontrolled discharges of PCBs, or other unauthorized disposal of PCBs are called *PCB remediation waste*. There are four types of *PCB remediation waste*: *bulk PCB remediation waste*, *porous surfaces*, *non-porous surfaces*, and *liquid PCBs*. Cleanup levels for an area contaminated with PCBs depend upon the degree of exposure to an area with residual contamination. Exposure is measured by the amount of time that people will be spending in the area, and the type of PCB contamination that will remain in place after remediation. The length of occupancy (or how long a person is expected to be exposed to an area of contamination) is generally dependent upon the intended use of the area. Areas that are in continuous or semi-continuous use, such as residences or schools, are generally classified as "high occupancy areas." Under the self-implementing provisions

of Section 761.61(a), areas that are used to a limited extent, such as an electrical substation, are considered to be "low occupancy areas." These terms are defined in 40 CFR 761.3 and discussed in Section II.

To further illustrate how these factors relate, this Guidance provides: 1) examples to illustrate how these variables are applied; and 2) a matrix that provides cleanup levels by waste type and occupancy level (see Table 2, p. 22).

II. What are the Appropriate Cleanup Levels for Self-Implementing Cleanups?

The extent of cleanup required for a property contaminated with PCBs will depend primarily upon two factors: 1) the use of the property (characterized by the length of occupancy); and 2) the type of waste material that is contaminated with the PCBs. The self-implementing procedures may not be used to clean up: surface or ground waters, sediments in marine and fresh water ecosystems, sewers or sewage treatment systems, any private or public drinking water sources or distribution systems, grazing lands, and vegetable gardens (see 40 CFR §761.61(a)(1)(i)). As described below, the required cleanup level for self-implementing cleanups is determined by the type of occupancy after the cleanup is completed. All PCB concentrations are based on total PCBs, rather than individual PCB Aroclors. Within each occupancy group, cleanup levels are supplied for the different types of waste materials. The intended reuse scenarios for a facility or property may result in a cleanup which utilizes a combination of cleanup standards (e.g., high occupancy and/or low occupancy area), depending on whether certain conditions are met (e.g., access is limited in duration; entry is secured, for example, by a key or combination lock). Therefore, consultation with the Regional PCB Coordinator is encouraged. Post-cleanup sampling is also required; sampling requirements are discussed in paragraph D of this Section. The process for determining the applicable PCB cleanup level can generally be broken down into three basic steps:

- Step 1 – How will the contaminated property be used?
- Step 2 – What is the type of waste material that is contaminated with PCBs?
- Step 3 – What are the appropriate cleanup levels?

Step 1: <u>How will the contaminated property be used?</u>

The new use of a property is classified as a high or low occupancy area under the self-implementing cleanup provisions of 40 CFR §761.61(a). The requirements for both the high occupancy and low occupancy area can be found at 40 CFR §761.61(a).

High occupancy area is generally defined as any area where *PCB remediation waste* has been disposed of on site (including but not limited to any building, any floor/wall of the building, any enclosed space within the building), and where annual occupancy for any individual not wearing dermal and respiratory protection is 840 hours or more (an average of 16.8 hours or more per week) for non-porous surfaces and 335 hours or more (an average of 6.7 hours or more per week) for *bulk PCB remediation waste*. Examples include a residence,

school, day care center, sleeping quarters, a single or multiple occupancy 40 hours-per-week work station, a school classroom, a cafeteria in an industrial facility, a control room, and a work station at an assembly line.

Low occupancy area is generally defined as any area where *PCB remediation waste* has been disposed of on site (including but not limited to any building, any floor/wall of the building, any enclosed space within the building), and where annual occupancy for any individual not wearing dermal and respiratory protection is less than 840 hours (an average of 16.8 hours per week) for non-porous surfaces and less than 335 hours (an average of 6.7 hours per week) for *bulk PCB remediation waste*. Examples include an electrical substation or a location in an industrial facility where a worker spends small amounts of time per week (such as an unoccupied area outside a building, an electrical equipment vault, or in the non-office space in a warehouse where occupancy is transitory).

Step 2: <u>What is the type of waste material that is contaminated with PCBs?</u>

Waste materials contaminated with PCBs as the result of a spill, an intentional or accidental release or uncontrolled discharges of PCBs, or other unauthorized disposal of PCBs are called *PCB remediation waste*. *PCB remediation waste* is managed at its "as-found" PCB concentration and includes, but is not limited to: soil, rags, and other debris generated during a cleanup; environmental media containing PCBs, such as soil and gravel; buildings and other man-made structures contaminated with PCBs; and *porous* and *non-porous surfaces* upon which PCBs were spilled or released (see the definition at 40 CFR §761.3). *PCB remediation waste* sampling should be based on in-situ characterization data (i.e., "as found" per 40 CFR §761.61) rather than post-excavation or demolition composite samples collected from waste piles and roll-off containers.

The four classes of *PCB remediation waste* commonly found at PCB remediation sites include:

- **bulk PCB remediation waste** including, but not limited to, existing piles of soil, in-situ soil, sediments, dredged materials, muds, PCB sewage sludge, and industrial sludge;

- **porous surfaces** including, but not limited to, **non-coated (e.g., unpainted) or coated** structural surfaces such as floors, walls, and ceilings made of concrete, brick, wood, plaster, plasterboard, etc., that have been subsequently contaminated by spills from PCB liquids. Porous surfaces also include paints or coatings that have been applied to a non-porous surface such as metal.

- **non-porous surfaces** including smooth unpainted solid surfaces that limit penetration of liquid containing PCBs beyond the immediate surface (e.g., smooth uncorroded metal, natural gas pipe with a thin porous coating originally applied to inhibit corrosion, smooth glass, smooth glazed ceramics, impermeable polished building stone such as marble or granite, and high density plastics such as

polycarbonates and melamines that do not absorb organic solvents).

- **liquid PCBs**, a homogenous flowable material containing PCBs and no more than 0.5 percent by weight non-dissolved material.

The PCB regulations also contain a provision for the disposal of *PCB bulk product wastes*; i.e., wastes derived from manufactured products containing PCBs in a non-liquid state (see the definition for *PCB bulk product waste* at 40 CFR §761.3). Materials such as debris from the demolition of buildings and other man-made structures manufactured, coated, or serviced with PCBs may be found at sites contaminated with PCBs and are subject to the TSCA PCB disposal requirements at 40 CFR §761.62.

Step 3: What are the appropriate clean-up levels?

The information developed in steps 1 and 2 is used to determine the cleanup levels for *PCB remediation waste* for the two categories of intended use (e.g., high occupancy and low occupancy areas). The required cleanup levels are described in detail in paragraphs A through C of this section; paragraph D provides information on post-cleanup sampling and deed restriction requirements.

IMPORTANT NOTE: For PCB waste management involving porous structural surfaces, such as floors, walls, or ceilings made of concrete, brick, wood, plaster, plasterboard, etc., "clean" is defined by a bulk PCB concentration, e.g., weight/weight or volume/volume, such as a core sample, and not a surface PCB concentration, such as a wipe sample. In characterizing the property, established EPA sampling procedures or guidance such as 40 CFR 761, Subpart N (40 CFR §761.260 et al.), or CERCLA site characterization guidance should be used to determine the appropriate number and location of samples. The attached Appendix A contains a core sampling procedure developed by EPA Region 1 that may be appropriate for use in conjunction with Subpart N to determine the extent of the contamination in concrete. Other reliable and effective methods for collecting a core sample also may be used. *PCB remediation waste* verification sampling must be based on in-situ characterization data (i.e., "as found" per 40 CFR §761.61) rather than post-excavation or demolition composite samples collected from waste piles and roll-off containers. (63 FR 35409, June 29, 1998.) For guidance on sampling and disposing of existing piles or containers, see 40 CFR Part 761, Subpart R, or contact the Regional PCB Coordinator. The discussion of cleanup levels below is based on in-situ sampling.

A. PCB Cleanup Levels for High Occupancy Areas

For PCB waste management involving *bulk PCB remediation waste, porous surfaces* and *non-porous surfaces* in **high occupancy areas,** the PCB cleanup levels listed below apply. When a cleanup activity includes the use of a cap, the owner of the site must maintain the cap in perpetuity and an institutional control, such as a deed restriction, must be implemented. The deed restriction requirements at 40 CFR §761.61(a)(8) include a notation in perpetuity so that potential purchasers receive a disclosure about: the PCB waste that was disposed of on site, the use restrictions that apply

to all future owners, the PCB cleanup levels under the cap, and the owner's obligation to maintain the cap.

Bulk Remediation Waste & Porous Surfaces

- **Less than or equal to 1 part per million (≤1 ppm) PCBs** in the soils, other residual waste or porous surfaces, without further conditions (see 40 CFR §761.61(a)(4)(i)(A)). To verify the completion of cleanup and on-site disposal of *bulk PCB remediation wastes* and porous surfaces, follow the procedures in Subpart O of 40 CFR 761, or a risk-based sampling plan that has been approved by EPA pursuant to 40 CFR §761.61(c).

- **Greater than 1 ppm but less than or equal to 10 ppm (>1 to ≤10 ppm)** if the area is covered with an appropriate cap (see 40 CFR §761.61(a)(4)(i)(A)) as specified at 40 CFR §761.61(a)(7); i.e., when referring to on-site cleanup and disposal of *PCB remediation waste*, a cap means a uniform placement of concrete, asphalt, or similar material of minimum thickness spread over the area where remediation waste was removed or left in place in order to prevent or minimize human exposure, infiltration of water, and erosion. (See the specific requirements at 40 CFR 761.61(a)(7).) To verify the completion of cleanup and on-site disposal of *bulk PCB remediation wastes* and *porous surfaces*, use Subpart O at 40 CFR 761, or a risk-based sampling plan that has been approved by EPA pursuant to 40 CFR §761.61(c).

- **Porous surfaces contaminated by an old spill**[3] of liquid PCBs where the concentration of PCBs in the spill was ≥50 ppm and where the surface concentration of PCBs on the **porous surface is currently greater than**

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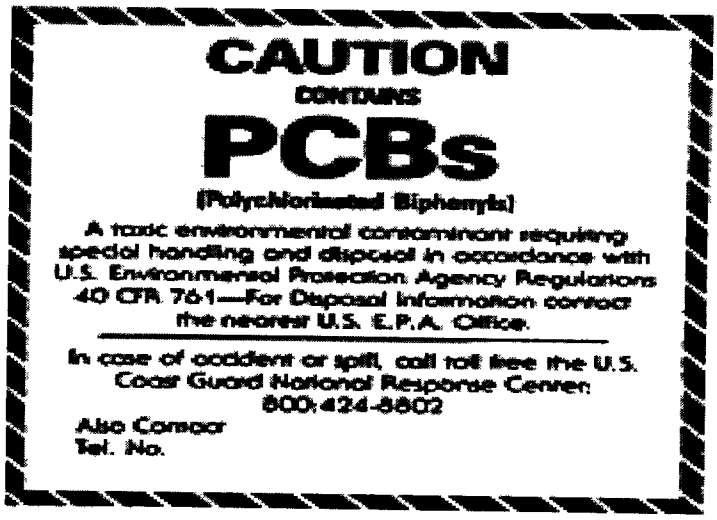
[3] Section 6(e)(2)(A) of the Toxic Substances Control Act (TSCA) banned the use of PCBs after January 1, 1978, unless the PCBs are used in a totally enclosed manner or the use is authorized by rule. In 1998, EPA amended the PCB regulations, in part by authorizing continued use of porous surfaces contaminated by old spills of liquid PCBs (see 40 CFR §761.30(p)). As promulgated, the use authorization for porous surfaces contained a technical error which EPA sought to correct in a subsequent final rule promulgated without notice and comment on June 24, 1999 (see 64 FR 33755). The technical amendment was challenged and set aside in Utility Solid Waste Activities Group v. EPA, 236 F.3d 749 (D.C. Cir. 2001) (USWAG). EPA interprets the authorization as originally promulgated such that individuals who comply with the conditions of the authorization may continue to use porous surfaces that have been contaminated by old spills of liquid PCBs where the concentration of PCBs in the liquid was ≥50 ppm and where the surface concentration of PCBs on the porous surface is currently >10μg/100 cm^2. Porous surfaces contaminated by old spills of liquid PCBs where the concentration of PCBs in the liquid was ≥50 ppm and where the surface concentration of PCBs on the porous surface is currently ≤10μg/100 cm^2 are implicitly authorized for use under 40 CFR §761.30(p) without further conditions.

10 micrograms per 100 square centimeters (>10 μg/100 cm²) may continue in their original use or location provided: (1) the source of contamination has been removed; (2) accessible porous surfaces have been cleaned and completely covered with two solvent resistant and water repellent coatings of contrasting colors, or a solid barrier has been fastened to the surface to cover the contaminated area or all accessible parts of the contaminated area; and (3) the PCB M_L mark (see Figure 1) has been placed in a location where it is visible (see 40 CFR §761.30(p)). Post-verification sampling is not required. Porous surfaces contaminated by old spills of liquid PCBs where the concentration of PCBs in the liquid was ≥50 ppm and where the surface concentration of PCBs on the **porous surface is currently ≤10μg/100 cm²**, are authorized for use under 40 CFR §761.30(p) without further conditions. Although such surfaces may be used without complying with the conditions in §761.30(p), the prohibition on use of contaminated porous surfaces applies if the surface at any time measures >10μg/100 cm², even if it previously measured ≤10μg/100 cm². Therefore, efforts should be initiated on a site-specific, as needed basis to ensure that the PCB contamination of the porous surface remains at levels ≤10μg/100 cm².

If the PCB containing equipment is removed and the subsequent use of the contaminated surface is to change, for example, a former transformer vault is intended to be reused as office space, then all contaminated porous surfaces must be cleaned to ≤1 ppm or a standard meeting the requirements of a §761.61(a) approval.

Figure 1: PCB M_L Mark



Non-Porous Surfaces

- **Less than or equal to 10 micrograms per 100 square centimeters ($\leq$10 µg/100 cm^2)**, without further conditions (see 40 CFR §761.61(a)(4)(ii)). Use one of the decontamination procedures listed at 40 CFR §761.79(b) to remove or separate PCBs from non-porous surfaces (e.g., chopping, scraping, scarification or the use of abrasives or solvents) or another appropriate procedure as specified in §761.61(a)(5)(ii). Sampling locations must be selected in accordance with 40 CFR Part 761, Subpart P for non-porous surfaces, or a risk-based sampling plan that has been approved by EPA pursuant to 40 CFR §761.61(c). (40 CFR §761.61(a)(4)(ii)).

Example 1: Renovation of an Old Warehouse to Artists Studios – Use of the Self-Implementing Provision at 40 CFR §761.61(a)

An old warehouse constructed of concrete walls and floors is being renovated and will be subdivided into artists studios. The new owners also plan to install a child-care facility for the children of the artists. The concrete floor which is contaminated with PCBs must be cleaned up in compliance with the appropriate cleanup standard prior to use. What clean-up level is required?

Answer: The converted warehouse will be used as a *high occupancy area*, i.e., the artists and/or children will be occupying the building for 6.7 hours per week or more. The flooring is a *porous surface*, therefore, the standard applicable for *bulk PCB remediation waste* applies. The concrete floor must be removed, at least in part, and replaced if it cannot be decontaminated to required levels (i.e., cleaned up to $\leq$1 ppm PCBs). The material contaminated with PCBs must be disposed of as *PCB remediation waste*. Disposal options for non-liquid cleanup wastes at any concentration (e.g., cleaning materials, personal protective equipment, non-porous surfaces, etc.) and *bulk PCB remediation wastes* including *porous surfaces* at <50 ppm include: an approved PCB disposal facility, a permitted municipal solid waste or non-municipal non-hazardous waste facility pursuant to §761.61(a) or (c), or a RCRA Sec. 3004 or 3006 permitted hazardous waste landfill (40 CFR §§761.61(a)(5)(i)(B)(2)(ii) and 761.61(a)(5)(v)(A)). Disposal of $\geq$50 ppm *PCB remediation waste* is limited to an approved PCB disposal facility or a RCRA Sec. 3004 or 3006 permitted hazardous waste landfill (40 CFR §761.61(a)(5)(i)(B)(2)(iii)); also see Section IV. A different combination of cleanup, engineering and institutional controls can be approved and implemented under 40 CFR §761.61(c). For more specific guidance, contact the Regional PCB Coordinator.

B. PCB Cleanup Levels for Low Occupancy Areas

For PCB waste management involving *bulk PCB remediation waste, porous surfaces* and *non-porous surfaces* in **low occupancy areas**, the PCB cleanup levels listed below apply. Also, when

the procedures and requirements for a low occupancy area are used (e.g., a fence or cap is used), an institutional control such as a deed restriction must be implemented. The deed restriction requirements include a notation in perpetuity so that potential purchasers receive a disclosure about: the PCB waste that was disposed of on site, the use restrictions that apply to all future owners, the PCB cleanup levels inside the fence or under the cap, and the owner's obligation to maintain the fence/cap. (See 40 CFR §761.61(a)(8) for the specific requirements.)

Bulk Remediation Waste & Porous Surfaces

- **Less than or equal to 25 ppm (≤25 ppm)** in the soils, other residual waste or porous surfaces (see 40 CFR §761.61(a)(4)(i)(B)), and an institutional control (i.e., deed restriction; see 40 CFR §761.61(a)(8)). To verify the completion of cleanup and on-site disposal of *bulk PCB remediation wastes* and *porous surfaces*, use Subpart O at 40 CFR 761, or a risk-based sampling plan that has been approved by EPA pursuant to 40 CFR §761.61(c).

- **Greater than 25 ppm, but less than or equal to 50 ppm (>25 ppm to ≤50 ppm)** in the soils, other residual waste or porous surfaces (see 40 CFR §761.61(a)(4)(i)(B)) provided the site is secured by a fence, marked with a sign that includes the PCB M_L mark (see Figure 1, p. 7) and an institutional control (i.e., deed restriction; see 40 CFR 761.61(a)(8)) is implemented. To verify the completion of cleanup and on-site disposal of *bulk PCB remediation wastes* and *porous surfaces*, use Subpart O at 40 CFR 761, or a risk-based sampling plan that has been approved by EPA pursuant to 40 CFR §761.61(c).

- **Greater than 25 ppm, but less than or equal to 100 ppm (>25 ppm to ≤100 ppm)** provided the site is covered with an appropriate cap (i.e., a uniform placement of concrete, asphalt, or similar material of minimum thickness spread over the area where *PCB remediation waste* was removed or left in place in order to prevent or minimize human exposure, infiltration of water, and erosion) and an institutional control (i.e., deed restriction) is implemented. (See specific requirements at 40 CFR §§761.61(a)(4)(i)(B) and 761.61(a)(7) and (a)(8).) To verify the completion of cleanup and on-site disposal of *bulk PCB remediation wastes* and *porous surfaces*, use Subpart O at 40 CFR 761, or a risk-based sampling plan that has been approved by EPA pursuant to 40 CFR §761.61(c).

- **Porous surfaces contaminated by an old spill** of liquid PCBs where the concentration of PCBs in the spill was ≥50 ppm and where the surface concentration of PCBs on the **porous surface is currently greater than 10 micrograms per 100 square centimeters (>10 μg/100 cm²)** may continue in their original use or location provided: (1) the source of contamination has been removed; (2) accessible porous surfaces have been cleaned and completely covered with two solvent resistant and water repellent coatings of contrasting colors, or a solid barrier has been fastened to the surface to cover the contaminated area or all accessible parts of the contaminated area; and (3) the PCB M_L mark (see Figure 1) has been placed in a location where it is visible (see 40 CFR §761.30(p)). Post-verification sampling is not required.

  Porous surfaces contaminated by old spills of liquid PCBs where the concentration of PCBs in the liquid was ≥50 ppm and where the surface concentration of PCBs on the **porous surface is currently less than or equal to 10 micrograms per 100 square centimeters (≤10μg/100 cm²)**, are authorized for use under 40 CFR §761.30(p) without further conditions. Although such surfaces may be used without complying with the conditions in §761.30(p), the prohibition on use of contaminated porous surfaces applies if the surface at any time measures >10μg/100 cm², even if it previously measured ≤10μg/100 cm². Therefore, precaution should be taken to ensure that the PCB contamination of the porous surface remains at levels ≤10μg/100 cm². (See Footnote #3 on page 6.)

  If the PCB containing equipment is removed and the subsequent use of the contaminated surface is to change, for example, a former transformer vault is intended to be reused as office space, then all contaminated porous surfaces must be cleaned to ≤1 ppm or a standard meeting the requirements of a §761.61 approval.

Non-Porous Surfaces

- **Less than 100 μg/100 cm² (<100 μg/100 cm²)** and an institutional control must be implemented (see 40 CFR §§761.61(a)(4)(ii) and 761.61(a)(8)). Use one of the decontamination procedures listed at 40 CFR §761.79(b) to remove or separate PCBs from *non-porous surfaces* (e.g., chopping, scraping, scarification or the use of abrasives or solvents). Sampling locations should be selected in accordance with 40 CFR Part 761, Subpart P or a risk-based sampling plan that has been approved by EPA pursuant to 40 CFR §761.61(c).

Example 2: Conversion of an Abandoned Building to Condominiums – Use of the Self-Implementing Provision at 40 CFR §761.61(a)

An abandoned building containing walls and floors contaminated with PCBs will be converted into condominiums. The basement will be used for storage only and thus will only be accessed by the tenants occasionally. What are the clean-up requirements for the building? Does the fact that the basement will be used much less than the remainder of the building factor into the requirements?

Answer: Ideally, the entire building would be cleaned up as a *high occupancy area* (i.e., all PCB contamination in/on the walls and floors would be decontaminated to ≤1 ppm or the walls/floors would be removed and replaced – see Example 1). However, the basement may be cleaned up as a *low occupancy area* (i.e., a lower standard) provided individual access is restricted to occupying the basement for less than 6.7 hours per week. Consultation with the Regional PCB Coordinator is advisable to ensure all issues regarding potential exposure pathways have been addressed.

C. *Cleanup Levels for Liquid PCBs*

Liquid PCB wastes not in compliance with the decontamination levels below must be disposed of in an approved incinerator in accordance with 40 CFR §761.60(a) or by an alternative disposal technology in accordance with 40 CFR §761.60(e). In both high and low occupancy areas, the decontamination standards (e.g., cleanup levels) for liquid PCBs at 40 CFR §761.61(a)(4)(iv) are as follows:

(a) For water containing PCBs: (i) **less than 200 micrograms per liter (<200 µg/L, or approximately<200 ppb PCBs) for non-contact use in a closed system** where there are no releases; (ii) for water **discharged to a treatment works or to navigable waters, less than 3 µg/L (<3 µg/L, or approximately 3 ppb)** or a PCB discharge limit included in a permit issued under Sec. 307(b) or 402 of the Clean Water Act; or (iii) **less than or equal to 0.5 µg/L (approximately ≤0.5 ppb PCBs) for unrestricted use**. (See 40 CFR §761.79(b)(1).)

(b) The decontamination standard for **organic liquids and non-aqueous inorganic liquids containing PCBs is less than 2 milligrams per kilogram (<2 ppm PCBs)**. (See 40 CFR §761.79(b)(2).)

Liquid samples may consist of a single liquid phase, multi-phasic liquids, or a combination of liquid and non-liquid material. The sampling requirements at 40 CFR §761.269 and the extraction and analytical procedures provided at 40 CFR §761.272 may be used to sample liquid PCB remediation wastes. (40 CFR §761.61(a)(2) and Subpart N.) When separating liquid and non-liquid phases of waste, you may sample the non-liquid phase in accordance with 40 CFR §761.265. (40 CFR §761.61(a)(2) and Subpart N.) Decontamination waste and residues are required to be disposed of at their existing PCB concentration, unless otherwise specified (see 40 CFR §761.79(g)).

D. Post-cleanup Sampling and Deed Restriction Requirements

The following post-cleanup sampling procedures and deed restriction requirements also apply for PCB waste management activities addressed under Sections A through C above (for a summary of these requirements, see Table 1, p. 14).

(1) Sampling and Analysis.

Post-cleanup sampling and analysis to verify cleanup must be conducted in accordance with the applicable **Cleanup Verification** requirements at 40 CFR §761.61(a)(6) and 40 CFR Part 761, Subpart O for bulk remediation waste and porous materials, and 40 CFR §761.61(a)(6) and 40 CFR Part 761, Subpart P for non-porous materials. Contact the Regional PCB Coordinator for guidance regarding a risk-based approval (see 40 CFR §761.61(c)) to use Appendix A or some other appropriate sampling procedure in conjunction with, or in lieu of, Subpart O for determining sample size and sample collection procedures for concrete and other similar porous surfaces.

To Sample and Analyze PCB Waste Use:

- 40 CFR §761.61(a)(2) and Subpart N: to adequately characterize the site; also, the Appendix A sampling procedures for concrete (or other reliable and effective methods) may be appropriate for use to determine the appropriate number and location of samples;
- 40 CFR §761.61(a)(6) and Subpart O: to verify cleanup and on-site disposal of *bulk PCB remediation wastes* and *porous surfaces*;
- 40 CFR §761.61(a)(6) and §761.269: to sample *liquid PCB* remediation wastes for verification of cleanup, and when separating liquid and non-liquid phases of a waste, sample the non-liquid phase in accordance with 40 CFR §761.265; and
- 40 CFR §761.61(a)(6) and Subpart P: to sample, analyze and interpret results of *non-porous surfaces*.

(2) Deed Restriction Requirements.

The **deed restriction requirements** at 40 CFR §761.61(a)(8) must be implemented for any site where PCBs remain at concentrations above the specified high occupancy "walk-away" level of ≤1 ppm for bulk remediation waste and porous surfaces, and ≤10 μg/100 cm^2 for non-porous surfaces. Deed restriction requirements for cleanups that result in the installation of a cap or fence, and cleanups following the procedures and requirements for low occupancy areas include a notation in perpetuity so that potential purchasers receive a disclosure about: the PCB waste that has been disposed of on site, the use restrictions that apply to all future owners, the PCB cleanup levels inside the fence or under the cap, and the owner's obligation to maintain the fence or cap. (See 40 CFR §761.61(a)(8) for the specific requirements.) Deed restrictions may also apply to the reuse of properties cleaned up according to a risk-based disposal approval. Such restrictions may require, among other things, a disclosure in perpetuity that PCB waste has been disposed of on site, that all future owners must maintain the protective coating or barrier when one is required, and that the use of the property is limited to a particular use, e.g., industrial use only.

Required PCB Institutional Control

The only institutional control that is required under the PCB regulations is a deed restriction. A deed restriction is essentially a permanent notice executed in accordance with state law and recorded on the deed or some other instrument normally examined during a title search which indicates contained contamination remains at the site. Deed restrictions are required for any PCB cleanup in an area that is designated as a low occupancy area, and in high occupancy areas whenever a cap is installed. (See 40 CFR §761.61(a)(8)). The Agency has also approved the use of deed restrictions for site-specific, risk-based approvals where cleanup activities were conducted to establish the property as an industrial area. The deed notation was required to include language that limits the future use of the property to industrial use only (i.e., no children under the age of six may have access to the property).

Table 1. Post-Cleanup Sampling Procedures and Deed Restriction Requirements

Cleanup Action	Applicable Regulations/ Specific Requirements
(A) **Bulk PCB remediation waste cleanup requirements**	Cleanup Verification: 40 CFR §761.61 (a)(6) & Subpart O, or a risk-based sampling plan that has been approved by EPA pursuant to 40 CFR §761.61(c).
Porous surface cleanup requirements	Cleanup Verification: 40 CFR §761.61(a)(6) & Subpart O, or a risk-based sampling plan that has been approved by EPA pursuant to 40 CFR §761.61(c).
Non-porous surface cleanup requirements	Cleanup Verification: 40 CFR §761.61(a)(6) & Subpart P, or a risk-based sampling plan that has been approved by EPA pursuant to 40 CFR §761.61(c).
PCB Liquids	Confirmatory sampling: 40 CFR §761.269.
(B) **High Occupancy Areas for Bulk PCB Remediation Waste & Porous Surfaces:** implement deed restrictions if PCB concentrations are >1 ppm but ≤10 ppm. **Low Occupancy Areas for Bulk PCB Remediation Waste & Porous Surfaces:** implement deed restrictions if PCB concentrations are either >25 ppm but ≤50 ppm, or >25 ppm but ≤100 ppm. **Other Reuse Scenarios:** deed restrictions may vary depending on cleanup proposed.	Deed Restriction: 40 CFR §761.61(a)(8)

III. Cleanup Levels for Other Re-Use Scenarios

A risk-based disposal approval (see §761.61(c)) is available for cleanup, storage and disposal when the self-implementing cleanup and disposal standards of §761.61(a), or the performance-based disposal requirements of §761.61(b), are not the remedy of choice. Individuals must submit a written application to the EPA Regional Administrator in the Region where the sampling, cleanup, disposal or storage site is located when those activities will occur in a single EPA Region; or to the Director of the National Program Chemicals Division when the activities occur in more than one EPA Region. Each application must contain the information required for the notification under the self-implementing procedures (see the TSCA PCB regulations at §761.61(a)(3)(i)). EPA may request other information necessary to evaluate the application. EPA may use the OSWER guidance for superfund risk assessment (issued in 1989 and amended in 2003)[4] as well as the superfund PCB guidance (issued in

[4]"Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual (Part A), Interim Final," EPA/540/1-89/002, December 1989. This guidance pertains to the selection of human health toxicity values, data necessary in developing PCB cleanup levels.

1990)[5] as a reference when reviewing any request for a risk-based approval submitted under the provisions of 40 CFR §761.61(c) and deciding on an appropriate risk-based method for the cleanup and disposal of PCB remediation wastes. EPA will issue a written decision on each application and will approve an application only when a finding can be made that the method will not pose an unreasonable risk of injury to health or the environment. However, no person may conduct cleanup and/or related activities prior to obtaining written approval from EPA. Unlike the self-implementing process, the risk-based disposal approval process does not contain automatic triggers for an approval from EPA.

A. Example of Risk-Based PCB Cleanup Levels for an Industrial Area

The following cleanup scenario is an example of a risk-based cleanup that EPA approved for a site that would be used as an *"industrial area"* after the cleanup was completed. The sampling procedures, cleanup standards, and engineering and institutional controls were based on a site-specific risk assessment which assumed no children under the age of six would occupy the space at any time. In this reuse scenario, the *"industrial area"* was not to house a day care center, school, or any other place where children under the age of six may be found. For PCB waste management involving porous structural surfaces, such as floors, walls, or ceilings made of concrete in this **industrial area**, the following considerations were applied when the bulk PCB concentrations fell in the ranges indicated below.

The averaging of individual samples was based on a uniform depth of concrete, rather than compositing various sample depths (e.g., all samples were taken at a uniform depth of no more than 2 inches, for example). Also, when the procedures for this *"industrial area"* were used, an institutional control (i.e., deed restriction) was implemented. The deed restriction requirements include a notation in perpetuity so that potential purchasers would receive a disclosure about: the PCB waste that was disposed of on site, the use restrictions that apply to all future owners, and the owner's obligation to maintain the coating or barrier, where required. (See 40 CFR §761.61(a)(8) for the specific requirements.)

(a) Where the average PCB concentration in the concrete was **greater than 5 ppm, but less than or equal to 10 ppm (>5 ppm to ≤10 ppm), with a maximum concentration of 25 ppm in any sample,** at a maximum depth of contamination of no more than 15 centimeters (6 inches): two coats of paint or epoxy of contrasting colors were applied (or a solid barrier installed) and had to be maintained; the contaminated surface was marked with the PCB M_L mark in a location easily visible to individuals present in the area; and the coating or barrier had to be maintained through a

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The 1989 guidance was updated in 2003. This guidance, on a hierarchy for the selection of human health toxicity values, can be found on the following web site http://www.epa.gov/superfund/programs/risk/hhmemo.pdf.

[5]"Guidance on Remedial Actions for Superfund Sites with PCB Contamination" EPA/540/G-90/007, August 1990, which can be found at the following link http://www.epa.gov/superfund/resources/remedy/pdf/540g-90007-s.pdf.

deed restriction for the site specifically **limiting the property to industrial use only**.

(b) Where the average PCB concentration in the concrete was **less than or equal to 5 ppm (≤5 ppm), with a maximum concentration of 10 ppm in any sample**, at a maximum depth of contamination of no more than 5 centimeters (2 inches), a deed restriction was established for the site, specifically **limiting the property to industrial use only.**

(c) The self-implementing requirements of 40 CFR §761.61(a) for a high occupancy area cleanup (see Section II.A.) would also have been appropriate for this scenario. If the high occupancy area cleanup standard was used (i.e., less than or equal to 1 ppm (≤1 ppm)), a deed restriction would not have been required, and the restriction on the presence of children under the age of six would not have applied.

Example 3: Renovating An Old Warehouse to Include Both Office and Warehouse Space – Use of Risk-Based Provision at 40 CFR §761.61(c)

An old warehouse is being converted into a distribution center, which will include both office space and warehouse space. The floor is contaminated with PCBs. What are the clean-up requirements?

Answer: This is an example of a reuse scenario in which the cleanup standards and other protective measures described in the "industrial use" example in section III.A. might be appropriate. A risk-based application would have to be submitted to the Regional Administrator, ATTN: Regional PCB Coordinator, to obtain approval for cleanup of this site under §761.61(c). As described in the "industrial use" scenario, occupation restrictions on children and engineering or institutional controls such as a deed restriction limiting the property to "industrial use" only might be necessary. Using the attached guidance (see Appendix A) or other appropriate procedures for sampling concrete, the PCB concentration in the cement would need to be determined to assess whether additional cleanup activities must be initiated. If this cleanup was being conducted under the self-implementing procedures in 40 CFR §761.61(a), the cleanup standards for a *high occupancy area* would likely apply.

B. Additional Cleanup Examples

In a multi-level building where the area of PCB remediation is confined to the basement of the building, there are no restrictions on the use of the upper levels of the building. Prior to occupying the building, the cleanup requirements for the basement must be determined based on the intended new use of the basement, and the PCB waste must be properly managed. PCB contamination occupying a limited portion of the property would not otherwise affect the use of portions of the property that are not contaminated. The tables and examples in this Guidance summarize relevant information concerning the management of PCB waste. All PCB concentrations are based on total PCBs, rather than individual PCB Aroclors. Although the tables and examples may be used as informal references, they ***should not*** be used as "stand-alone documents" (i.e., the tables and examples may not contain a complete statement of all of the applicable requirements and do not replace nor supplant the requirements of the PCB regulations at 40 CFR Part 761). For instance, Table 2 provides a summary of the cleanup standards for high and low occupancy use categories (see p. 22). It also summarizes the cleanup standards for the industrial use example described in Section III.A. of this document. In addition, examples are presented in Section VII regarding the various types of PCB contamination that may be found at a site and the potential reuse scenarios for the property (see Table 7, p. 39). Consultation with the EPA Regional PCB Coordinator may be appropriate for determining the applicable cleanup standards.

Example 4: Multi-story Building Intended for A Combination of Uses – Use of the Self-Implementing Provision at 40 CFR §761.61(a)

A multi-story building with concrete floors and walls once housed PCB liquids that were stored in the basement where evidence of liquid spills to the basement floor was found. Data indicate the PCBs have migrated through the basement floor into the subsurface soil. No other source(s) of PCBs are present or are known to have been used at the site. Potential plans for the future use of the building would likely make it a high occupancy area and would include a shopping mall, residential townhouses, or a public facility; i.e., a medical facility, school, or a recreational center. How should the contamination in the basement and soil be managed; how would the cleanup requirements differ if the basement was used as a low occupancy area?

Answer: The cleanup requirements are based on the type of waste material and the intended use of the property. In this example, the waste materials include a *porous surface* and subsurface soil (i.e., *bulk PCB remediation waste*). No cleanup is required of the upper floors where there is no PCB contamination. There are no restrictions regarding the use of the upper floors since the PCBs are known to have not been transferred to those areas. The self-implementing procedures at 40 CFR §761.61(a) can be applied.

For use of the basement as a *high occupancy area*, the basement floor and subsurface soil have to be cleaned to 1 part per million or less (≤1 ppm), without further conditions (40 CFR §761.61(a)(4)(i)(A)). Post-cleanup sampling is required. Use of the basement in a residential setting or as public access areas generally requires compliance with the most stringent cleanup standard.

- Decontamination of the *porous surface* (basement floor) is not an option because the spill is more than 72 hours old.
- In addition, the PCB concentration in the subsurface soil must be determined.
- If the decision is made to remove and replace all or part of the concrete floor, the PCB concentration of the subsurface soil must be 10 ppm or less, and the new concrete floor must be at least 6 inches deep (i.e., the equivalent of the cap requirements at §761.61(a)(7)).
- The cap must be maintained in perpetuity, and an institutional control; i.e., a deed restriction, must be implemented.
- If the subsurface soil is cleaned to ≤1 ppm, the new concrete floor is not required to meet the 6 inch cap requirement, and the deed restriction is not necessary.

For a *low occupancy area*, the cleanup process would be the same, although the cleanup standard is 25 ppm or less (≤25 ppm) in both the concrete and the subsurface soil, and a deed restriction is required (40 CFR §761.61(a)(4)(i)(B)(1)). Use as a boiler room, electrical room, etc. would be likely uses of the basement for a *low occupancy use*.

Example 5: Multi-story Building Intended for A Combination of Uses – Use of the Risk-Based Provision at 40 CFR §761.61(c)

Same scenario as *Example 4*, except the basement is intended for use as an industrial area.

Answer: This scenario provides another example of when cleanup standards similar to those approved for the industrial area scenario described in this section might apply. A risk-based application would have to be submitted to the Regional Administrator, ATTN: Regional PCB Coordinator, to obtain approval for cleanup of this site under 761.61(c). EPA may use the OSWER guidance for superfund risk assessment (issued in 1989 and amended in 2003; see Footnote #4, page 14) as well as the superfund PCB guidance (issued in 1990; see Footnote #5, page 15) as a reference when reviewing any request for a risk-based approval and deciding on an appropriate risk-based method for the cleanup and disposal of PCB remediation waste. The following cleanup standards which rely on the maximum PCB concentration found in samples taken at depths of 15 or 5 centimeters might be appropriate. Other limitations might apply such as occupation restrictions on children or engineering or institutional controls such as a deed restriction.

1. Maximum PCB concentration of 25 ppm in any sample, at a maximum uniform depth for each sample of no more than 15 centimeters (≤15 cm) where the average of all samples taken is greater than 5 ppm, but less than or equal to 10 ppm (>5 ppm to ≤10 ppm). Two coats of paint or epoxy of contrasting colors would be applied (or a solid barrier might be installed over the accessible areas of the contaminated surface); the surface would be marked with the PCB M_L mark in a location easily visible to individuals present in the area; and the intact coating or barrier would be maintained through a deed restriction for the site specifically limiting the property to industrial use only. ***OR***

2. Maximum PCB concentration of 10 ppm in any sample, at a maximum uniform depth for each sample of no more than 5 centimeters (≤5 cm) where the average of all samples taken is less than or equal to 5 ppm (≤5 ppm), and a deed restriction would be implemented for the site specifically limiting the property to industrial use only.

Although these cleanup standards and protective measures might be appropriate for this reuse scenario, different combinations of cleanup, engineering and institutional controls may also be submitted to the Regional Administrator in the request for an approval under 40 CFR §761.61(c). For additional guidance, contact the Regional PCB Coordinator.

Example #6: Multi-parcel, Commercial, Light Industrial, and Residential Mixed Use Property – Use of the Self-Implementing Provision at 40 CFR §761.61(a)

A municipality has purchased several adjoining parcels of land and intends to redevelop the combined property for a variety of uses, including retail, condominiums, office space, a park, and a parking facility. The project's primary parcel includes a former textile mill where there is evidence of PCB contamination. None of the other parcels has been contaminated with PCBs. The mill building has a concrete (i.e., porous) floor in the basement where there is evidence of spills of liquid PCBs. There is no evidence of PCB contamination in any other part of the building. The municipality plans to preserve the facade and basic structure of the mill building. The redevelopment plan includes putting retail and office space on the first two floors of the building and condominiums on upper floors. The basement of the building will be used for parking and building utilities. What level of cleanup is required to implement this mixed-use scenario?

Answer: From the details provided above, it appears that the textile mill will be redeveloped for both high (retail and office space, condominiums) and low (parking and building utilities) occupancy use. In this scenario, the assumption is that test results confirm the PCB contamination is limited to the basement floor, and that no cleanup of PCBs is required of the upper floors. However, use of the upper floors, if contaminated with PCBs, is not authorized unless those areas are in compliance with an EPA cleanup standard (see 40 CFR §761.30(u)). To determine that cleanup is required only in the basement, it is recommended that random sampling for PCBs be conducted of the entire building to ensure there has been no transfer of the contamination in the basement to other portions of the building, and that no PCB-containing coatings have been applied and/or used in any portion of the mill. Based on the results of that sampling, a determination can then be made regarding PCB contamination in other parts of the building.

It is also logical to assume that spills of liquid PCBs were from PCB-containing equipment. Certain PCB-containing equipment that may have been abandoned on site must be drained of all free-flowing liquids prior to disposition of it (40 CFR §761.60(b)). The liquids must be tested to determine their PCB concentration unless they are disposed of in an incinerator that complies with 40 CFR §761.70. Used oil at concentrations of less than 50 ppm may be marketed and burned for energy recovery (see the TSCA requirements at 40 CFR §761.20(e)). Liquids containing PCBs at concentrations of 50 ppm or greater must be disposed in accordance with 40 CFR §761.60(a) (e.g., via a TSCA permitted incinerator or a high efficiency boiler, if appropriate) or §761.60(e). The equipment (e.g., transformer carcass) must be disposed of in accordance with its classification; see 40 CFR §761.60(b)).

The concrete floor in the basement of the mill must be cleaned up for low occupancy use. Under the self-implementing provisions, the cleanup standard is 25 ppm or less with an institutional control such as a deed restriction (see 40 CFR §§761.61(a)(4)(i)(B) and

Example #6: Multi-parcel, Commercial, Light Industrial, and Residential Mixed Use Property – Use of the Self-Implementing Provision at 40 CFR §761.61(a) (Continued)

761.61(a)(8)). The written notification and certification requirements of 40 CFR §761.61(a)(3) also apply (see Section V. of this Guidance (p. 27) for information concerning the notification and EPA's review of the information). Individual occupancy of the remediated area is limited to less than 6.7 hours a week. Verification of the cleanup standard is required using Subpart O of 40 CFR 761 (see 40 CFR §761.61(a)(6)(i)), or a risk-based sampling plan that has been approved by EPA (see 40 CFR §761.61(c)).

A different set of cleanup standards, engineering and institutional controls may be proposed to the Regional Administrator in a written request for a site-specific, risk-based approval under 40 CFR 761.61(c). Each application must contain the information required for the notification under the self-implementing procedures (see 40 CFR §761.61(a)(3)(i)). (See Section III.A. and Example 5 for an illustration of where the risk-based approach has been used for concrete flooring in an industrial setting.) EPA may use the OSWER guidance for the superfund risk assessment (issued in 1989 and amended in 2003; see Footnote #4, page 14) as well as the superfund PCB guidance (issued in 1990; see Footnote #5, page 15) as a reference when reviewing any request for a risk-based approval submitted under the provisions of 40 CFR §761.61(c) and deciding on an appropriate risk-based method for the cleanup and disposal of PCB remediation wastes. EPA may request other information necessary to evaluate the application and will issue a written decision on each application. EPA will approve an application if a finding can be made that the cleanup method and associated controls will not pose an unreasonable risk of injury to health or the environment. Unlike the self-implementing process, the risk-based disposal approval process does not contain automatic triggers signaling EPA approval. No person may conduct cleanup and/or related activities *prior* to obtaining written approval from EPA. For additional guidance, contact the Regional PCB Coordinator.

Table 2. *TSCA PCB Waste Management Options* (***NOTE:*** All PCB concentrations are total PCBs.)

Waste Type	Redevelopment Goal		
	High Occupancy	***Low Occupancy***	***Industrial Area*** [1]
Bulk PCB Remediation Waste[2] including Porous Surfaces	**Definition** *≥6.7 hrs/wk without dermal or respiratory protection* (see 40 CFR 761.3 for the complete definition) **Cleanup standards** ≤ 1 ppm in residual waste or porous surface w/o further conditions > 1 to ≤ 10 ppm if site covered w/appropriate cap & institutional control implemented (deed restriction)	**Definition** *< 6.7 hrs/wk without dermal or respiratory protection* (see 40 CFR 761.3 for the complete definition) **Cleanup standards** ≤ 25 ppm in residual waste or porous surface, unless otherwise specified in 40 CFR 761.61(a)(4)(i)(B) & institutional control implemented (deed restriction) > 25 ppm to ≤ 50 ppm if secured by fence, marked per 40 CFR 761.45 & institutional control implemented (deed restriction) >25 ppm to ≤ 100 ppm w/appropriate cap & institutional control implemented (deed restriction)	*Reuse scenario assumed no access by children under age 6 at any time.* **Cleanup standards** > 5 ppm to ≤ 10 ppm avg. in concrete w/max. concentration 25 ppm at max. depth 15cm : two contrasting colors of solvent resistant/ water repellent paint or epoxy were to be applied (or a solid barrier over accessible areas), the location was marked and maintained by implementing a deed restriction ***limiting property to industrial use only*** ≤ 5 ppm avg. in concrete w/max conc. 10 ppm at max. depth 5 cm: a deed restriction was implemented ***limiting property to industrial use only***
PCB Spills to Porous Surfaces[3]	**Cleanup standards** ≤ 10 µg/100 cm^2 for spills to concrete **<72 hours old** (unrestricted use)[4] **Continued Use of Porous Surfaces From Old Spills[5]:** If use/location are not changed: remove the source of contamination; clean accessible porous surfaces and completely cover with two solvent resistant and water repellent coatings of contrasting colors, or fasten a solid barrier to the surface to cover the contaminated area or all accessible parts of the contaminated area; and place PCB M_L mark where visible (§761.30(p)). However, if the use of the contaminated surface is to change, decontaminate ≤1 ppm or remove and dispose of all contaminated surfaces. ***All Other Scenarios Involving Porous Surfaces***: Consult with Regional PCB Coordinator.	**Cleanup standards** ≤ 10 µg/100 cm^2 for spills to concrete **<72 hours old** (unrestricted use)[4] **Continued Use of Porous Surfaces From Old Spills[5]:** If use/location are not changed: remove the source of contamination; clean accessible porous surfaces and completely cover with two solvent resistant and water repellent coatings of contrasting colors, or fasten a solid barrier to the surface to cover the contaminated area or all accessible parts of the contaminated area; and place PCB M_L mark where visible (§761.30(p)). However, if the use of the contaminated surface is to change, decontaminate to ≤1 ppm or remove and dispose of all contaminated surfaces. ***All Other Scenarios Involving Porous Surfaces***: Consult with Regional PCB Coordinator.	**Cleanup standards** > 5 ppm to ≤ 10 ppm avg. in concrete w/max. concentration 25 ppm at max. depth 15cm : two contrasting colors of solvent resistant/ water repellent paint or epoxy were to be applied (or solid barrier over accessible areas), the location was marked and maintain by implementing a deed restriction ***limiting property to industrial use only*** ≤ 5 ppm avg. in concrete w/max conc. 10 ppm at max. depth 5 cm: a deed restriction was implemented ***limiting property to industrial use only***

Waste Type	Redevelopment Goal		
	High Occupancy	***Low Occupancy***	***Industrial Area*** [1]
Non-porous Surfaces[6] **Contaminated by PCB Spills**	**Definition** *≥16.8 hrs/wk without dermal or respiratory protection* (see 40 CFR 761.3 for the complete definition) **Cleanup standards** ≤ 10 μg/100 cm² w/o further conditions	**Definition** *< 16.8 hrs/wk without dermal or respiratory protection* (see 40 CFR 761.3 for the complete definition) **Cleanup standards** <100 μg/100 cm² with institutional control implemented (deed restriction)	*Reuse scenario assumes no access by children under age 6 at any time.* **Cleanup standards** ≤ 10 μg/100 cm² w/o further conditions for high occupancy <100 μg/100 cm² with institutional control implemented (deed restriction) for low occupancy
Liquid PCBs	**Cleanup standards** Water: <200 ppb PCBs for non-contact use in a closed system; or <3 ppb PCBs for discharges to treatment works or navigable waters or PCB discharge limit in CWA Sec. 307(b) or 402 permit; or ≤0.5 ppb PCBs for unrestricted use. Organic liquids & non-aqueous inorganic liquids: <2 ppm PCBs.	**Cleanup standards** Water: <200 ppb PCBs for non-contact use in a closed system; or <3 ppb PCBs for discharges to treatment works or navigable waters or PCB discharge limit in CWA Sec. 307(b) or 402 permit; or ≤0.5 ppb PCBs for unrestricted use. Organic liquids & non-aqueous inorganic liquids: <2 ppm PCBs.	**Cleanup standards** Water: <200 ppb PCBs for non-contact use in a closed system; or <3 ppb PCBs for discharges to treatment works or navigable waters or PCB discharge limit in CWA Sec. 307(b) or 402 permit; or ≤0.5 ppb PCBs for unrestricted use. Organic liquids & non-aqueous inorganic liquids: <2 ppm PCBs.

[1] These cleanup standards are an example of standards used for a risk-based cleanup which required approval from the Regional Administrator. These procedures, standards, and controls may be appropriate for other sites presenting comparable exposure scenarios, although each risk-based application will be evaluated on its merits and approved or disapproved on a site-specific basis.

[2] Including but not limited to: environmental media containing PCBs, such as soil, sediment, dredged materials, muds, PCB sewage sludge, industrial sludge and gravel; and soil, rags and other debris generated as a result of a PCB spill; see full definition for *PCB remediation waste* at 40 CFR §761.3.

[3] Including but not limited to: floors, walls, and ceilings, made of concrete, brick, wood, plaster, etc.; see full definition for *Porous surface* at 40 CFR §761.3.

[4] Spill cleanup requirements for recent spills (<72 hours old) to porous surfaces which may occur during PCB remediation activities are managed differently than old spills (see 40 CFR §761.79(b)(4), and §761.125(b) or (c)).

[5] This is an authorization for the continued use of contaminated surfaces (40 CFR §761.30(p)). Conditions apply when spills of liquid PCBs were at concentrations of ≥50 ppm which resulted in porous surface contamination at levels of >10μg/100cm². While contaminated porous surfaces of ≤10μg/100cm² may continue to be used without complying with the conditions of 40 CFR §761.30(p), PCB contamination of the porous surface must remain at levels of ≤10μg/100cm².

[6] Including but not limited to: smooth surfaces of metal, glass, glazed ceramic; marble, granite; see full definition for *Non-porous surface* at 40 CFR §761.3.

IV. What are the Appropriate Disposal Requirements?

A. Disposal Requirements for PCB Remediation Waste

PCB remediation wastes must be disposed of using one (or a combination, if appropriate) of the approved disposal options (see Table 3, p. 25, for a summary of these options). Non-liquid cleanup waste (e.g., non-liquid cleaning materials, personal equipment) at any concentration and *bulk PCB remediation wastes* at concentrations of less than 50 ppm (<50 ppm) may be disposed of at: an approved PCB disposal facility; or when disposed pursuant to Sec. 761.61(a) or (c), a permitted municipal solid waste or non-municipal non-hazardous waste facility; or a RCRA Sec. 3004 or Sec. 3006 permitted hazardous waste landfill. Manifesting and recordkeeping requirements do not apply (40 CFR §§761.61(a)(5)(i)(B)(2)(ii) and 761.61(a)(5)(v)(A)). *Bulk PCB remediation waste* at concentrations of 50 ppm or greater (≥50 ppm) must be disposed of in a RCRA Sec. 3004 or 3006 permitted hazardous waste landfill or an approved PCB disposal facility (e.g., incinerator, chemical waste landfill; via an approved alternate disposal method or coordinated approval; a brief description is provided below). (40 CFR §761.61(a)(5)(i)(B)(2)(iii).) A current listing of EPA approved TSCA PCB disposal facilities can be found on the EPA's PCB website at www.epa.gov/pcb under "PCB Waste Handlers."

(1) In an **incinerator** approved by an EPA Regional Administrator or the Director, National Program Chemicals Division in the Office of Pollution Prevention and Toxics in accordance with technical specifications and procedural requirements at 40 CFR §761.70.

(2) In a **chemical waste landfill** approved by an EPA Regional Administrator in accordance with the technical specifications and procedural requirements at 40 CFR §761.75 (non-liquid PCB waste only).

(3) In a **hazardous waste landfill** that has been permitted by EPA under section 3004 of RCRA, or by a State authorized under section 3006 of RCRA (non-liquid PCB waste only).

(4) Using an **alternate disposal technology** (e.g., chemical dechlorination) that has been approved by an EPA Regional Administrator or the Director, National Program Chemicals Division in the Office of Pollution Prevention and Toxics as achieving a level of performance equivalent to an incinerator. This disposal option is only available for wastes such as PCB liquids, PCB articles, PCB transformers, PCB capacitors, PCB hydraulic machines, PCB-contaminated electrical equipment. (Specific requirements are located at 40 CFR §761.60(e).)

(5) In accordance with a **TSCA PCB Coordinated Approval** issued by an EPA Regional Administrator for the Region in which the PCB activity is located pursuant to the requirements specified at 40 CFR §761.77. Under a Coordinated Approval, the Regional Administrator may accept, with or without additional conditions, PCB cleanup requirements which are implemented under a different authority.

(6) In accordance with a **TSCA PCB risk-based disposal approval** issued by an EPA Regional Administrator for the Region in which the PCB activity is located in response to a written request to sample, cleanup or dispose of *PCB remediation waste* in a manner which is not provided for in the regulations. (Specific requirements are located at 40 CFR §761.61(c).)

Individuals who generate PCB wastes at concentrations of 50 ppm or greater must use a **manifest** (e.g., a Uniform Hazardous Waste Manifest) to ship that waste off-site, except as provided at 40 CFR §§761.61(a)(5)(i)(B)(2)(ii) and 761.61(a)(5)(v)(A). A signed copy of each manifest must be retained for a period of three years (40 CFR §761.209(a)). The generic PCB identification number (i.e., "40 CFR Part 761") is required to be used on the manifest by individuals who do not have a waste storage facility on site; i.e., only those generators of PCB waste who are exempt from the notification requirements at 40 CFR §761.205. However, individuals may prefer to have a unique EPA identification number which is obtained by submitting a Notification of PCB Activity using EPA Form 7710-53 in accordance with the PCB requirements at 40 CFR §§761.202 and 761.205; this form is available on the PCB website at www.epa.gov/pcb under "Databases and Forms." This Guidance does not authorize the re-disposal of PCB waste on site without obtaining the necessary PCB disposal approvals.

Table 3. Disposal Options for PCB Remediation Waste

Disposal Option	Applicable Regulations/Specifications
(A) **Approved incinerator**	40 CFR §761.70
(B) **Approved chemical waste landfill**	40 CFR §761.75
(C) **RCRA permitted landfill**	RCRA Sec. 3004 or State authorized under RCRA Sec. 3006
(D) **Alternate disposal approval**	Issued in accordance with 40 CFR §761.60 (e)
(E) **TSCA PCB Coordinated Approval**	Issued under 40 CFR §761.77
(F) **TSCA PCB risk-based disposal approval**	Issued under 40 CFR §761.61(c) for on-site disposal only

B. Disposal Requirements for Other PCB Wastes

For other types of PCB waste, the specific PCB requirements are listed below and summarized in Table 4, p. 26.

(1) Dispose of **PCB containing electrical equipment** (e.g., transformers, mining equipment, heat transfer systems, hydraulic systems, electromagnets, switches, voltage regulators) and **PCB containers** in an incinerator, chemical waste landfill or as otherwise specified in accordance with 40 CFR §§761.60(b) and (c).

(2) Dispose of **PCB bulk product waste** (i.e., items originally manufactured with PCBs as a component or contaminant in a non-liquid state at PCB concentrations of 50 ppm or greater – dried paint, caulking, etc.) in an incinerator, chemical waste landfill, or as otherwise specified in accordance with 40 CFR §761.62.

Table 4. Other PCB Wastes

Other Types of PCB Waste Requiring Disposal	Applicable Regulations/Specifications
(A) **PCB containing electrical equipment** (e.g. transformers, mining equipment, heat transfer systems, hydraulic systems, electromagnets, switches, voltage regulators) and **PCB containers**	40 CFR §§761.60(b) & (c)
(B) **PCB Bulk Product Waste** (i.e. items originally manufactured with PCBs as a component or contaminant in a non-liquid state at PCB concentrations ≥ 50 ppm -- dried paint, caulking, etc.)	40 CFR §761.62

C. Other Applicable Requirements in the TSCA PCB Regulations

To appropriately address PCB wastes at sites of contamination and comply with Part 761, the following TSCA PCB regulations must be followed where applicable. A summary of these requirements is provided in Table 5 (see p. 27).

(1) **Cap requirements** which limit exposure to PCBs that have been disposed of by means of land containment pursuant to 40 CFR §761.61(a)(7);

(2) **Recordkeeping requirements** which document the various aspects of the cleanup, such as the source of the contamination, estimated or actual date of contamination, completion date of the cleanup, location and description of the contamination, pre-cleanup sampling data, description of solid surfaces that were cleaned, approximate depth of soil excavation and the amount of soil removed, and post-cleanup verification sampling data (see 40 CFR §§761.61(a)(9) and 761.79(f));

(3) **Storage of PCB waste** which is in compliance with the technical requirements for a PCB facility (e.g., adequate roof, walls and floors; no drains or other openings, floors and curbing of Portland cement or other acceptable materials; and not located below the 100-year flood water elevation). Subject to certain conditions (see the provision at 40 CFR §761.65(c)(9)), bulk PCB remediation waste may be stored at the cleanup site or site of generation for 180 days. PCB wastes also may be stored in compliance with RCRA Sec. 3004 and Sec. 3005, or in a State authorized Sec. 3006 unit permitted for hazardous waste (for specific storage options, see 40 CFR §761.65);

(4) **Notification and manifesting requirements** for off-site movement of PCB waste

for purposes of storage and/or disposal pursuant to 40 CFR Part 761, Subpart K;

(5) **Marking requirements for the disposal of PCBs** when residual waste is left on site (see 40 CFR §761.61(a)(4)(B)) and when PCB wastes are being stored or transported (see 40 CFR §761.40(h));

(6) **PCB use authorizations** for contaminated equipment, structures, other non-liquid or liquid materials that have been decontaminated pursuant to the applicable decontamination procedures (see 40 CFR §761.30(u)); and

(7) **Spill cleanup requirements for recent spills (<72 hours old)** to porous surfaces which may occur during PCB remediation activities are managed differently than old spills. The cleanup standard is less than or equal to 10 micrograms per 100 square centimeters ($\leq 10\ \mu g/100\ cm^2$). (See 40 CFR §§761.79(b)(4) and 761.125(b) or (c).)

Table 5. Other Applicable Requirements in the TSCA PCB Regulations

Activity	Applicable Regulations/Specifications
Caps	40 CFR §761.61 (a)(7)
Recordkeeping	40 CFR §761.61 (a) (9)
Storage	40 CFR §761.65
Notification and Manifesting	40 CFR 761 Subpart K
Marking for Disposal	40 CFR §761.61(a)(4)(B) on site residual; 40 CFR §761.40(h) storage and/or transport
Use of Decontaminated Equipment, Structures, or Other Non-liquid and Liquid Materials	40 CFR §761.30(u)
Cleanup of Recent Spills (<72 hours old) to Concrete	40 CFR §§761.79(b)(4) and 761.125(b) or (c)

V. Notification and Review

Written notification as described in the *PCB remediation waste* provision at 40 CFR §761.61(a)(3)(i)(A) - (E) must be provided at least 30 days prior to the date that the cleanup of a site begins. Notification must be sent to the EPA Regional Administrator (ATTN: Regional PCB Coordinator), the Director of the State or Tribal environmental protection agency, and the Director of the county or local environmental protection agency where the cleanup will be conducted. If the EPA Regional Administrator does not respond within 30 calendar days of receiving the notice, the person submitting the notification may assume that it is complete and acceptable and proceed with the cleanup according to the information that was provided to the EPA Regional Administrator (see 40 CFR

§761.61(a)(3)(ii)). Applicants for EPA Brownfields grants may eliminate any duplication of effort in complying with the notification requirement at 40 CFR §761.61(a)(3)(i)(A)-(E) by submitting the Brownfields grant application (or appropriate portion(s) of the application) provided it contains the information that is required for the notification. A copy of the relevant portion(s) of the grant application plus any supplemental information that may be needed to satisfy the notification requirement may be forwarded to the Regional PCB Coordinator under a cover letter which identifies the portions of the grant application materials that respond to each of the requirements at 40 CFR §761.61(a)(3)(i)(A)-(D). Remember to include the written certification required by 40 CFR §761.61(a)(3)(i)(E).

Once cleanup is underway, the person conducting the cleanup must provide any proposed changes from the notification to the EPA Regional Administrator (ATTN: Regional PCB Coordinator) in writing no less than 14 calendar days prior to the proposed implementation of the change. The EPA Regional Administrator will determine whether to accept the change and will respond verbally within 7 calendar days and in writing within 14 calendar days of receiving the notification. If the EPA Regional Administrator does not respond within these time frames, the change notice may be deemed to be acceptable and the cleanup may proceed according to the information that was provided to the EPA Regional Administrator (see 40 CFR §761.61(a)(3)(ii)). A summary of the notification requirements is provided in Table 6 below.

Table 6. Notification and Review for Sites with PCB Contamination

Specific Requirements	Notice Recipients	Time Frame	Action
40 CFR §§761.61 (a)(3)(i)(A)-(E) and 40 CFR 761.61(a)(3)(ii)	– U.S. EPA Regional Administrator (ATTN: Regional PCB Coordinator), – Director of State or Tribal environmental agency, and – Director of County or Local environmental agency.	Submit notice 30 days prior to start of cleanup. Once the cleanup is underway, submit notice to the EPA Regional Administrator (ATTN: Regional PCB Coordinator) 14 days prior to implementing any changes to an approved cleanup plan.	If EPA does not respond within 30 days of receipt of the notification, cleanup may proceed. If EPA does not respond (within 7 days verbally and 14 days in writing) to the change notification, the change may be implemented.

VI. Consultation with USEPA Regional PCB Coordinators and State Officials

There may be occasions when this Guidance does not fully address a specific cleanup scenario, e.g., a large cleanup site for which the guidance may be inappropriate; alternative risk-based sampling approaches which require EPA approval under the TSCA PCB regulations at 40 CFR §761.61(c). An application for a risk-based approval is required whenever the proposed cleanup and disposal practices

would fail to satisfy the requirements of the TSCA PCB regulations (i.e., the self-implementing provision at §761.61(a) or the performance-based requirements at §761.61(b)). In those situations, owners of sites contaminated with PCBs are encouraged to contact the Regional PCB Coordinator. A listing of the Regional PCB Coordinators follows. The most current listing of the Regional PCB Coordinators can always be found on the EPA's PCB website at www.epa.gov/pcb under "EPA Regional Contacts."

Finally, EPA cannot emphasize too strongly the importance of ensuring that cleanup activities adequately address the requirements of both Federal and State environmental programs. Individuals are encouraged to discuss their PCB issues with the appropriate USEPA and State environmental official to ensure the cleanup is accomplished in a manner which satisfies the cleanup requirements and goals of both programs.

USEPA Region 1, Boston, MA: (Covering CT, MA, ME, NH, RI, and VT)

Telephone: 617-918-1527
Address: EPA-New England Regional Administrator
ATTN: PCB Coordinator (Mail Code: CPT)
U.S. Environmental Protection Agency-New England
1 Congress Street, Suite 1100
Boston, MA 02114-2023

USEPA Region 2, Edison, NJ: (Covering NJ, NY, PR, and VI)

Telephone: 732-906-6179
Address: Regional Administrator
ATTN: PCB Coordinator (Mail Code: MS105)
U.S. Environmental Protection Agency Region 2
2890 Woodbridge Avenue
Edison, NJ 08837

USEPA Region 3, Philadelphia, PA: (Covering DE, DC MD, PA, VA, and WV)

Telephone: 215-814-2177
Address: Regional Administrator
ATTN: PCB Coordinator (Mail Code: 3WC33)
U.S. Environmental Protection Agency Region 3
1650 Arch Street
Philadelphia, PA 19103-2029

USEPA Region 4, Atlanta, GA: (Covering AL, FL, GA, KY, MS, NC, SC, and TN)

Telephone: 404-562-8990

Address: Regional Administrator
ATTN: PCB Coordinator
U.S. Environmental Protection Agency Region 4
Atlanta Federal Center
61 Forsyth Street, SW
Atlanta, GA 30303-8960

USEPA Region 5, Chicago, IL: (Covering IL, IN, MI, MN, OH, and WI)

Telephone: 312-353-2291
Address: Regional Administrator
ATTN: PCB Coordinator (Mail Code: DT-8J)
U.S. Environmental Protection Agency Region 5
77 W. Jackson Boulevard
Chicago, IL 60604

USEPA Region 6, Dallas, TX: (Covering AR, LA, NM, OK, and TX)

Telephone: 214-665-7579
Address: Regional Administrator
ATTN: PCB Coordinator (Mail Code: 6EN-AT)
U.S. Environmental Protection Agency Region 6
1445 Ross Avenue, Suite 1200
Dallas, TX 75202-2733

USEPA Region 7, Kansas City, KS: (Covering IA, KS, MO, and NE)

Telephone: 913-551-7395
Address: Regional Administrator
ATTN: PCB Coordinator (Mail Code: ARTD/CRIB)
U.S. Environmental Protection Agency Region 7
901 North 5th Street
Kansas City, KS 66101

USEPA Region 8, Denver, CO: (Covering CO, MT, ND, SD, UT, and WY)

Telephone: 303-312-6027
Address: Regional Administrator
ATTN: PCB Coordinator (Mail Code: 8P-P3T)
U. S. Environmental Protection Agency Region 8
999 18th Street
Denver, CO 80202-2466

USEPA Region 9, San Francisco, CA: (Covering AZ, CA, HI, NV, AS, and GU)

Telephone: 415-947-4163
Address: Regional Administrator
ATTN: PCB Coordinator (Mail Code: CMD-4)
U.S. Environmental Protection Agency Region 9
75 Hawthorne Street
San Francisco, CA 94105

USEPA Region 10, Seattle, WA: (Covering AK, ID, OR, and WA)

Telephone: 206-553-6693
Address: Regional Administrator
ATTN: PCB Program Manager (Mail Code: AWT-128)
U.S. Environmental Protection Agency Region 10
1200 Sixth Avenue
Seattle, WA 98101-1128

VII. Typical and Worst Case Scenarios for the Management of PCB Wastes

EPA does not have prescriptive procedures for cleaning porous surfaces contaminated by spills of liquid PCBs. Rather, the selected procedures would be based on site-specific conditions, including PCB concentration and degree of PCB migration into the concrete. If the cleanup of the concrete floor or walls do not meet the criteria for low or high occupancy areas, the owner may apply to the Regional Administrator for a risk-based cleanup approval under 40 CFR §761.61(c) or an alternate decontamination approval under 40 CFR §761.79(h) in order to establish different cleanup levels and different engineering and/or administrative controls.

A. Typical Cleanup Situation and Applicable Responses

Background: An abandoned warehouse (or factory) is being redeveloped for use as an office building. PCB fluids were found stored in the basement, and PCB-containing paint had been used previously to cover the floor/walls (which are porous) of the basement. It has not been determined whether the painted floor/walls have also been contaminated by spills of PCB fluids. No PCB contamination has been found on the upper floors. Restrictions on the use of the basement are contingent upon the cleanup level achieved for that area. No restrictions apply to the upper floors, where PCB contamination has not been found.

Beginning the Cleanup. There are at least two sources of PCB contamination in the basement in this example: the liquid PCBs and the PCB-contaminated paint. The liquid PCBs stored in the basement should be removed and incinerated in a permitted TSCA incinerator (40 CFR §761.60(a)) or

by an alternate disposal technology approved by EPA (40 CFR §761.60(e)). A list of currently approved disposal facilities can be found at the PCB website, www.epa.gov/pcb.

The floor/walls with surfaces of PCB-contaminated paint could be either *PCB bulk product waste* or *bulk PCB remediation waste*. The disposal requirements are based on the type of PCB waste, that is, the actual PCB source; e.g., was the item soiled by PCBs (remediation waste) or was the non-liquid item manufactured with PCBs (bulk product waste).

Managing PCB Bulk Product Waste. If the PCB-contaminated paint is the only source of the contamination on certain portions of the porous floor/walls, the PCB waste is a *PCB bulk product waste*; see 40 CFR §761.3. Disposal of the bulk product waste must be in accordance with 40 CFR §761.62(a) or (b), or, as with *PCB remediation waste*, there is an option to deviate from the requirements for the disposal of *PCB bulk product waste* if the proposed activities can be justified based on an evaluation of the risk; see 40 CFR §761.62(c). Decontamination in accordance with 40 CFR §761.79 is also an option for disposing of this waste; see 40 CFR §761.62(a)(5). Following removal of the PCB-contaminated paint, sampling of the bare *porous surface* (e.g., walls/floor) is strongly recommended to determine whether additional cleanup measures are needed. If the PCBs have leached into the concrete (from either the paint application or the combination of applied PCB paint and spilled liquid PCBs), additional cleanup may be required. At that point, the concrete is generally considered a *bulk PCB remediation waste*, and the procedures listed below for *bulk PCB remediation* waste should be followed.

Self-Implementing Cleanup Requirements for PCB Remediation Waste: If the PCB-painted concrete is a *bulk PCB remediation* waste because it was contaminated from a spill of liquid PCBs or PCBs that have leached from the paint into the concrete, the concrete must be cleaned up or removed and disposed of per 40 CFR §761.61(a). Otherwise, concrete painted with PCB-containing paint (e.g., floor/walls) should be treated as *PCB bulk product waste;* see the discussion above on *PCB bulk product waste*. At least thirty (30) days prior to initiating cleanup activities, provide written notifications to the EPA Regional Administrator (ATTN: Regional PCB Coordinator), the Director of the State or Tribal environmental protection agency, and the Director of the county or local environmental protection agency where the cleanup will be conducted per 40 CFR §761.61(a)(3)(i)(A)-(E). These notifications are required only for *PCB remediation waste*. Cleanup levels are determined based on the intended use of the building and contaminated medium. Post-cleanup verification sampling of the *porous surfaces* (e.g., floor/walls) is required to determine that the cleanup standards have been met. Follow the verification sampling procedures as required in 40 CFR §761.61(a)(6), Subpart O, or a verification sampling plan approved under a risk-based approval (40 CFR 761.61(c)). Another option for PCB remediation waste is to apply for a risk-based cleanup and disposal approval per 40 CFR §761.61(c). Under this provision, decisions regarding the sampling, cleanup levels and disposal of PCB remediation waste are based on an evaluation of the risk of exposure to PCBs as a result of the proposed activities. PCB contamination located in a limited portion of the property would not otherwise affect the use of those portions of the property where no PCB contamination exists.

Porous Materials: The cleanup level for *PCB remediation waste* in the form of porous surfaces in a *high occupancy area* is one part per million or less ($\leq$1 ppm) without further conditions. The cleanup level for porous surfaces in a *low occupancy area* is 25 ppm or less ($\leq$25 ppm) with a

deed restriction. Cleanup levels not specified at 40 CFR §761.61(a) also may be appropriate based on an assessment and evaluation of the resulting risks under an approval issued by the Regional Administrator for a risk-based sampling, cleanup or disposal procedure (40 CFR §761.61(c)) or for an alternative decontamination or sampling procedure (40 CFR §761.79(h)). For example, in one risk-based cleanup where the site would be used after cleanup for industrial use, the Agency approved the following cleanup levels. Use of the site by children under the age of six was prohibited. The cleanup levels for *porous surfaces* were: (1) an average concentration of greater than 5 ppm (>5 ppm) but less than or equal to 10 ppm (≤10 ppm) in concrete with a maximum concentration of 25 ppm at a depth of 15 centimeters (15 cm or 6 inches) *provided* a deed restriction limiting the use of the basement to an *industrial use* only, plus two applications of a paint or epoxy coating of contrasting colors (or a barrier over accessible areas) and posting the PCB M_L mark are implemented; or (2) an average concentration of less than or equal to 5 ppm (≤5 ppm) in concrete with a maximum concentration of 10 ppm at 5 centimeters (5 cm or 2 inches) *provided* that there was a deed restriction limiting the use of the site to an *industrial use* only (refer to Table 2).

Storage and Disposal Requirements: Storage of PCB waste must be in conformance with 40 CFR §761.65 (e.g., a TSCA PCB facility; a RCRA Sec. 3004, Sec. 3005 or Sec. 3006 State authorized hazardous waste storage unit) if any PCB wastes are to be stored prior to disposal. All PCB wastes are required to be disposed of properly. *PCB bulk product waste* must be disposed of in accordance with 40 CFR §761.62. Non-liquid cleanup waste (e.g., non-liquid cleaning materials, personal equipment) at any concentration and *bulk PCB remediation wastes* at concentrations of less than 50 ppm (<50 ppm) may be disposed of at: an approved PCB disposal facility, a permitted municipal solid waste or non-municipal non-hazardous waste facility under 40 CFR 761.61(a) or (c), or a RCRA Sec. 3004 or Sec. 3006 permitted hazardous waste landfill; manifesting and recordkeeping requirements do not apply (40 CFR §§761.61(a)(5)(i)(B)(2)(ii) & 761.61(a)(5)(v)(A)). *Bulk PCB remediation waste* at concentrations of 50 ppm or greater (≥50 ppm) must be disposed of in a RCRA Sec. 3004 or 3006 permitted hazardous waste landfill or an approved PCB disposal facility (e.g., incinerator, chemical waste landfill; an approved alternate disposal method or coordinated approval). (See 40 CFR §761.61(a)(5)(i)(B)(2)(iii).) A Uniform Hazardous Waste Manifest must accompany PCB waste at concentrations of 50 ppm or greater (≥50 ppm) to any off-site storage or disposal facilities (see 40 CFR §761.208), except as provided at 40 CFR §§761.61(a)(5)(i)(B)(2)(ii) and 761.61(a)(5)(v)(A). A signed copy of each manifest must be retained for a period of three years (40 CFR §761.209(a)). The notification and certification and cleanup records required under 40 CFR §761.61(a) must be retained for five years (40 CFR §§761.61(a)(9) and 761.125(c)(5)). The requirements for annual records and the annual document log at 40 CFR §761.180(a) are relevant *only if* the quantity of PCBs used or stored at any one time is at least 45 kilograms (99.4 pounds) of PCBs.

TYPICAL PCB WASTE MANAGEMENT CLEANUP SCENARIO

Background: This chart is a summary of the information that was presented in the example at Section VII.A. An abandoned warehouse is being redeveloped as an office building. PCB fluids were found in the basement, and PCB-containing paint had been used to cover the floor/walls (which are porous) of the basement. No PCB contamination has been found on the upper floors. Restrictions on the use of the basement are contingent upon the cleanup level achieved for that area. No restrictions apply to the upper floors where PCB contamination has not been found. Cleanup activities may be completed in any number of ways; therefore, this chart should not be considered a comprehensive listing of all applicable requirements. Consult the Regional PCB Coordinator whenever you have questions or require assistance.

ACTIVITY	***TIME FRAME***	***EPA RESPONSE, WHERE NEEDED***
– Properly containerize ***PCB fluids*** for transport to a permitted storage facility or TSCA permitted incinerator. – Complete Uniform Hazardous Waste Manifest. – Manifest must include an EPA identification number, either the generic "40 CFR Part 761" or an unique EPA ID number. – Retain signed copy of all manifests for at least 3 years from the date the PCB waste was accepted by the initial transporter.	– Immediate removal is recommended; removal of liquids does not require a §761.61(a) notification.	– Not applicable.
– For ***PCB bulk product waste***, submit §761.62(c) application and await approval of the method to remove ***PCB-containing paint*** from floor/walls of the basement. – Dispose of the paint as PCB bulk product waste. (See disposal requirements below.) – After the PCB-containing paint has been removed, sample ***bare porous surfaces***.	– Submit at any time, but paint removal activities may not commence before receipt of EPA approval under §761.62(c).	– RA may issue a risk-based approval under §761.62(c), request additional information or deny the request. There is no regulatory time frame for the approval to be issued.
– ***Self-implementing Cleanup Notification***. Notify: RA, USEPA (ATTN: PCB Coord.), Director, State or Tribal EPA, and Director, County or Local EPA (see §761.61(a)(3)).	– 30 days prior to cleanup. Required only if waste meets criteria of PCB remediation waste.	– If EPA does not respond within 30 days of receiving the notification, you may proceed with cleanup. Otherwise, address concerns identified by the RA before initiating cleanup.

ACTIVITY	***TIME FRAME***	***EPA RESPONSE, WHERE NEEDED***
– If PCBs have migrated into porous materials, generally handle as ***bulk PCB remediation waste***. (See disposal requirements below.) – Clean up contaminated porous areas; ≤1 ppm for high occupancy without furhter conditions, ≤25 ppm w/deed restriction for low occupancy (see requirements at §761.61(a)(3) for notification & (4) for cleanup levels), or as approved based on a §761.61(c) risk evaluation. – Verify cleanup per sampling as required by §761.61(a)(6) and Subpart O (or via a risk-based approval).	– If sampling is to be conducted per a §761.61(c) approval, await receipt of approval from EPA.	– If a request is submitted to the RA for a risk-based sampling, cleanup or disposal approval under §761.61(c), there is no regulatory time frame for the approval to be issued.
– Several options for ***storage of waste*** prior to disposal (see 761.65): permitted TSCA PCB storage facility or RCRA Sec. 3004, 3005 or 3006 State authorized hazardous waste storage unit. The TSCA annual records and annual document log requirements are not applicable if the quantity of PCBs used/stored at any one time is less than 45 kilograms (99.4 pounds).	– EPA recommends storage for no longer than 9 months in order to ensure disposal occurs within the mandatory 1-year time frame.	– Not applicable.
– ***Disposal options for PCB bulk product waste***. Performance-based options include: a TSCA permitted incinerator or chemical waste landfill, a hazardous waste landfill permitted or authorized under RCRA Sec. 3004 or 3006, a TSCA approved alternate disposal technology, decontamination under §761.79, or a TSCA PCB Coordinated Approval. Certain PCB bulk product wastes may be disposed of in a solid waste landfill, see §761.62(b) for specifics. A risk-based disposal approval is also available under §761.62(c).	– Must be disposed of within 1 year of the date the PCB waste was designated for disposal.	– Not applicable.
– ***Disposal options for bulk PCB remediation wastes*** that include non-liquid cleanp waste, at any concentration, and less than 50 ppm bulk PCB remediation waste are: a TSCA permitted PCB disposal facility, a permitted RCRA Sec.	– Must be disposed of within 1 year of the date the PCB waste was designated for disposal.	– Not applicable.

ACTIVITY	***TIME FRAME***	***EPA RESPONSE, WHERE NEEDED***
3004 or 3006 hazardous waste landfill, or when disposed pursuant to §761.61(a) or (c), a permitted municipal solid waste or non-municipal non-hazardous waste facility. Manifesting and recordkeeping requirements are not applicable. All other bulk PCB remediation wastes must be disposed of in either a TSCA permitted PCB disposal facility, or a permitted RCRA Sec. 3004 or 3006 hazardous waste landfill, or pursuant to an approval issued under §761.61(c). These wastes are subject to the TSCA manifesting and reporting (§761.202-.218) and recordkeeping (§761.180(a)) requirements.		

B. Worst Case Cleanup Scenario

Background: An abandoned facility is being proposed for revitalization as a day care center. The facility is a single building with walls and floors constructed of concrete. The concrete floors are coated with paint that has been subsequently contaminated by spills of liquid PCBs. The concrete walls are bare, but have been contaminated by spills of liquid PCBs. The liquid PCBs are the only known source for PCB contamination (e.g., the paint does not contain PCBs). For self-implementing cleanups under 40 CFR §761.61(a), the pre-cleanup notifications and storage and disposal requirements previously mentioned in the example in Section VII.A. apply.

Management of Concrete Floors: The concrete floors are covered with a coating (paint), that was subsequently contaminated by spills of liquid PCBs. The PCB contamination may reside only in the paint, or the PCB contamination may have migrated through the paint to the underlying concrete floor. In order for the building to be reused as a day care center (i.e., *high occupancy area*), the contaminated concrete floor (i.e., *bulk PCB remediation waste*) must be cleaned to the applicable standard (refer to Table 2). If the spill is less than 72 (<72) hours old, the concrete floor must be cleaned to a level of less than 10 $\mu g/100\ cm^2$ ($<10\ \mu g/100\ cm^2$) for unrestricted use (40 CFR §761.79(b)(4)). If the spill is greater than 72 (>72) hours old, the contaminated concrete must be decontaminated (see 40 CFR §761.79(h)) or removed and disposed of as a *bulk PCB remediation waste* in accordance with 40 CFR §761.61(a) or a risk-based cleanup and disposal approval per 40 CFR §761.61(c). For site characterization, follow the concrete coring procedures of either 40 CFR Part 761, Subpart N, Appendix A or another procedure which produces reliable results. Core sampling will help to determine the extent to which the PCBs may have migrated through the paint into the concrete floor. Post-cleanup verification sampling of the porous surfaces (e.g., walls/floors) is required to confirm the cleanup standards have been met. Post-cleanup verification sampling is required pursuant to 40 CFR §761.61(a)(6) and Subpart O, or a verification sampling plan under a risk-based cleanup and disposal approval issued by an EPA Regional Administrator. The use authorization for *porous surfaces* contaminated by an old spill (40 CFR §761.30(p)) is not applicable to this project as the use of the building will change to a day care center.

Management of Concrete Walls: The concrete walls are contaminated by spills of liquid PCBs. In order to be reused as a day care center, the walls must be cleaned to an applicable standard. If the spill is less than or equal to 72 (≤ 72) hours old, the concrete walls must be cleaned to a level of less than 10 $\mu g/100\ cm^2$ ($<10 \mu g/100\ cm^2$) for unrestricted use (40 CFR §761.79(b)(4)). If the spill is greater than 72 (>72) hours old, the contaminated concrete must be decontaminated (see 40 CFR §761.79(h)), or removed and disposed of as a *bulk PCB remediation waste* in accordance with 40 CFR §761.61(a) or a risk-based cleanup and disposal approval per 40 CFR §761.61(c). The use authorization for *porous surfaces* contaminated by an old spill is not applicable to this project as the use of the building will change to a day care center.

C. PCB Contamination and Reuse Scenarios

In addition to the "typical" and "worst case" cleanup scenarios discussed above, Table 7 (p. 39) provides additional examples of potential reuse scenarios where PCB remediation may be required. Applicable cleanup requirements for PCB remediation wastes are based on the intended reuse of the property; i.e., *high* or *low occupancy*, and the type of contaminated material. The reader is cautioned not to rely on this chart alone, and is encouraged to contact the Regional PCB Coordinator (see Section VI,

p. 28) and, if applicable, the appropriate State environmental official(s). In addition to the actual cleanup, individuals should:

(1) Identify all abandoned PCBs and PCB-containing equipment and comply with the disposal requirements of 40 CFR §761.60:

- remove PCB fluids where required under 40 CFR 761.60(b) and incinerate per §761.60(a);
- remove and dispose of PCB Articles per §761.60(b) (e.g., PCB-containing equipment such as transformers, capacitors, hydraulic machines, electrical equipment, etc.) in a TSCA incinerator, chemical waste landfill or municipal solid waste or non-municipal non-hazardous waste facility, where allowed, or via approved decontamination procedures; and
- remove and dispose of PCB containers per §761.60(c) in an incinerator, or after draining, in a chemical waste landfill, or if applicable, a municipal solid waste facility.

(2) Dispose of *PCB remediation waste* (e.g., soil, sediments, dredged materials, muds, PCB sewage sludge, industrial sludge, rags and other debris) in compliance with any number of options that are available under 40 CFR 761.61(a) for a self-implementing cleanup (see 40 CFR §761.61(a)(5)); e.g., TSCA incinerator or chemical waste landfill, soil washing procedures, RCRA Sec. 3004 or 3006 hazardous waste landfill, municipal solid waste or non-municipal non-hazardous waste facilities, or decontamination).

(3) When storage is required, PCB wastes at concentrations of 50 ppm or greater shall be placed in a storage facility in compliance with §761.65. Disposal is required within 1-year of the date that the decision was made to dispose of the waste per §761.65(a)(1).

Table 7. ***PCB Contamination and Reuse Scenarios*** (***NOTE***: All PCB concentrations are total PCBs.)

Contamination Scenario	**Reuse Scenarios**	**Reuse Scenario Exposure Characteristics**	**Necessary Remediation Levels**	**Remarks**
Warehouse with PCB-contaminated paint on floor and walls ***Note:*** No other source(s) of PCBs are present or were known to be used at the site.	Shopping malls Residential townhouses Public facilities including medical facilities, schools, recreational centers ***Mixed use:*** Ground floor - commercial Upper floors - offices & residential	High occupancy	**TSCA Cleanup standards** In this scenario, the issue is the proper management of *PCB bulk product waste*. There is no cleanup standard for this type of waste in 761.62. However, post- paint removal use of the area must be in compliance with 761.30(u) which requires contaminated materials to be decontaminated via a TSCA PCB disposal approval, pursuant to an applicable standard in 761.79 or in accordance with an applicable EPA PCB spill cleanup policy. ***Note:*** For continued use, the floor and walls must be decontaminated and the PCB containing paint must be disposed of as *PCB bulk product waste* per 761.62. There are multiple disposal options for the various forms of *PCB bulk product waste*; see 761.62. If additional cleanup of the concrete is required due to the leaching of PCBs from the paint, the concrete is to be treated as *bulk PCB remediation waste*. If the self-implementing procedures of 761.61(a) are to be followed, core samples of the bare porous surface will be needed to determine the level of PCB contamination in the porous materials. For characterization sampling, follow Subpart N in conjunction with Appendix A, or another reliable sampling protocol. The cleanup level	Assumes PCB contamination is limited to interior of building (e.g., floor and walls) and that PCBs are in the paint and have not penetrated into the concrete floor. For continued use, the floor and walls must be decontaminated and the PCB containing paint must be disposed of as *PCB bulk product waste* per 761.62. If the PCBs have leached from the paint into the concrete, the contaminated concrete is a *bulk PCB remediation waste* and may require additional cleanup to meet the ≤ 1 ppm cleanup standard. Provide notification to EPA (ATTN: Regional PCB Coordinator) & others 30 days prior to initiating cleanup of the contaminated concrete. (761.61 (a)(3)(i)(A)-(E)). Non-liquid cleanup waste (e.g., non-liquid cleaning materials, personal equipment) at any concentration and *bulk PCB remediation wastes* <50 ppm may be disposed of at: an approved PCB disposal facility, a permitted or non-municipal non-hazardous waste facility pursuant to §761.61(a) or (c), or a RCRA Sec. 3004 or Sec. 3006 permitted hazardous waste landfill; manifesting and recordkeeping requirements do not apply (761.61(a)(5)(i)(B)(2)(ii) & 761.61(a)(5)(v)(A)).

Contamination Scenario	Reuse Scenarios	Reuse Scenario Exposure Characteristics	Necessary Remediation Levels	Remarks
	Warehouse Reuse Scenarios (continued)		is based on the intended reuse scenario as a high occupancy area as noted above (i.e., ≤ **1 ppm** in porous surfaces w/o further conditions). Otherwise, a 40 CFR 761.61(c) risk-based approval may be appropriate for this scenario. See Sec. III.A. of this document for an example of a risk-based cleanup.	A 40 CFR 761.61(c) risk-based approval may be appropriate for this scenario. See Sec. III.A. of this document for an example of a risk-based cleanup. Also see the above listed manifesting, disposal and recordkeeping requirements. *Bulk PCB remediation waste* ≥50 ppm must be disposed of in a RCRA Sec. 3004 or 3006 permitted hazardous waste landfill or an approved PCB disposal facility (e.g., incinerator, chemical waste landfill, an approved alternate disposal method or coordinated approval). (761.61(a)(5)(i)(B)(2)(iii).) Obtain an EPA identification number for use on the manifest (e.g., Hazardous Waste Manifest) when transporting PCB waste offsite and maintain records as required (761.202 - 761.218). Maintain records of notification and cleanup (761.125(c)(5)).
	Light industrial/commercial business parks Distribution centers including warehouse and office space	High occupancy	**TSCA Cleanup standards** The PCB containing paint is a *PCB bulk product waste*. For continued use, the floor and walls must be decontaminated. Dispose of the PCB-contaminated paint as *PCB bulk product waste* per 761.62.	

Contamination Scenario	Reuse Scenarios	Reuse Scenario Exposure Characteristics	Necessary Remediation Levels	Remarks
Scrap yard; soil contaminated with spilled PCBs	Same reuse scenarios as listed under "warehouse." New construction as either ***high or low occupancy*** should not extend beneath or beyond the cleaned up area. Likewise, the cap, if one is installed, should not be disturbed.	High occupancy Low occupancy	<u>**TSCA Cleanup standards**</u> **≤ 1 ppm** in residual waste or porous surface, w/o further conditions, or **>1 to ≤10 ppm** if site covered w/cap (761.61(a)(7)) & institutional control implemented (i.e., deed restriction; 761.61(a)(8)). Conduct post-cleanup sampling per 40 CFR 761.61(a)(6) and Subpart O. **≤25 ppm** in soil, with an institutional control (i.e., deed restriction, 761.61(a)(8)), or **>25 to ≤50 ppm** if site is secured by a fence with a PCB M_L mark & institutional control implemented (i.e., deed restriction; 761.61(a)(8)), or **>25 to ≤100 ppm** if site covered w/cap (761.61(a)(7)) & institutional control implemented (i.e., deed restriction; 761.61(a)(8)). Conduct post-cleanup sampling per 40 CFR 761.61(a)(6) and Subpart O.	Assumes PCB contamination is limited to environmental media (e.g., outside). However, if there are contaminated buildings on the property which are intended for continued use, clean up and disposal of spilled PCBs must be conducted in compliance with the *PCB remediation waste* requirements at 761.61, or as otherwise authorized under 761.30(u). There are no use restrictions on new construction provided it does not extend beneath or beyond the cleaned up area. A cap, if one has been installed, cannot be disturbed. There are no use restrictions on existing structures if PCB contamination is not present. For contaminated buildings, also see the notification, manifesting, disposal and recordkeeping requirements in "Remarks" for a warehouse with interior PCB remediation waste contamination. *PCB bulk product waste* must be disposed of in accordance with 761.62.

Contamination Scenario	Reuse Scenarios	Reuse Scenario Exposure Characteristics	Necessary Remediation Levels	Remarks
Port and industrial area with contamination from spilled PCBs and abandoned PCB-containing solvents and fuels	See reuse scenarios for scrap yard with contaminated soil.	For PCB remediation waste, see reuse scenario exposure characteristics for scrap yard with contaminated soil.	**TSCA Cleanup Standards** For PCB remediation waste, see cleanup standards for scrap yard with contaminated soil.	Certain PCB fluids may be decontaminated pursuant to 761.79(b)(1) & (b)(2) or in accordance with a risk-based decontamination approval under 761.79(h). All other PCB fluids must be disposed of in compliance with 761.60(a) or (e) or, for liquid PCB remediation wastes, in accordance with 761.61(a)(5)(iv). See "Reuse Scenarios" for scrap yard regarding new structures and "Remarks" for existing structures. Also see the notification, manifesting, disposal and recordkeeping requirements in "Remarks" for a warehouse with interior PCB remediation waste contamination.
Metalworking facilities with PCBs in chemical sludge waste	See reuse scenarios for scrap yard with contaminated soil.	See reuse scenario exposure characteristics for scrap yard with contaminated soil.	**TSCA Cleanup Standards** See cleanup standards for scrap yard with contaminated soil.	Assumes PCB contamination is in environmental media (e.g., outside). However, because of the likely dispersion of PCB fluids during use of the equipment, contamination may also extend to equipment, floors and walls. Additional sampling of these items may be required to determine the extent of contamination. Also see the notification, manifesting, disposal and recordkeeping requirements in "Remarks" for a warehouse with interior PCB remediation waste contamination.

Contamination Scenario	Reuse Scenarios	Reuse Scenario Exposure Characteristics	Necessary Remediation Levels	Remarks
Former manufacturing facility with PCBs in flourescent light ballasts	See reuse scenarios for warehouse.	See reuse scenario exposure characteristics for ware-house.	**TSCA Cleanup Standards** Intact and non-leaking PCB capacitors are authorized for use. Light ballasts containing PCB capacitors do not have to be removed ***IF*** the capacitors are intact and non-leaking and are the only source of PCBs. However, PCBs have been found in the potting material of older flourescent light fixtures, a use that is not authorized. Recommend replacing old flourescent light ballasts to avoid violations of PCB use prohibitions. Cleanup of floors/walls may be required in the event of a failure of the PCB fluorescent light ballast.	Assumes only PCB source is PCB fluorescent light ballasts and that contamination is limited to interior of building. Intact, non-leaking PCB small capacitors may be disposed as municipal solid waste (761.60(b)(2)(ii)) – manifests are not required. Fluorescent light ballasts containing PCBs in the potting material are regulated for disposal as a *PCB bulk product waste* in a RCRA Sec. 3004 or 3006 permitted hazardous waste landfill or an approved PCB disposal facility (e.g., incinerator, chemical waste landfill, an approved alternate disposal method or coordinated approval) (See 761.62(a)). If PCB remediation waste is present and PCB cleanup of walls/floors is necessary, provide notification to EPA (ATTN: Regional PCB Coordinator) and others 30 days prior to initiation of a self-implementing cleanup (761.61(a)(3)(i)(A)-(E)). Also see the manifesting, disposal and recordkeeping requirements for PCB remediation waste in "Remarks" for a warehouse.

Contamination Scenario	Reuse Scenarios	Reuse Scenario Exposure Characteristics	Necessary Remediation Levels	Remarks
Former tannery with abandoned waste PCB fluids	See reuse scenarios for warehouse.	See reuse scenario exposure characteristics for warehouse.	**TSCA Cleanup Standards** See cleanup standards for warehouse if PCB remediation waste is present as a result of spilled PCBs.	PCB fluids should be removed and disposed of in compliance with 761.60(a) or (e). Certain liquids containing PCBs may be decontaminated (see 761.79(b)(1) and (b)(2) and 761.79(h)). Obtain an EPA identification number for use on the manifest when transporting PCB waste offsite and maintain records as required (761.202 - 761.218). Assumes PCB contamination from previous activities, if any, is limited to interior of building. Also see the notification, manifesting, disposal and recordkeeping requirements in "Remarks" for a warehouse if PCB remediation is necessary.
Building with roof transformer with PCB-contamination in concrete roof	No change	Low occupancy	**TSCA Cleanup Standards** Follow cleanup requirements per 761.61, or procedures for continued use of porous surfaces contaminated by old spills. Remove source of contamination, clean accessible porous surfaces and cover completely with 2 coatings of solvent resistant/water repellent paint or epoxy of contrasting colors, or secure a solid barrier to the surface of accessible areas of the contamination. Place the PCB M_L mark in a visible location and implement a deed restriction. (761.30(p))	If the use of the contaminated surface is to change, then all contaminated porous surfaces must be removed and disposed of or cleaned up to appropriate levels as specified in 761.61 or 761.79. Also see the notification, manifesting, disposal and recordkeeping requirements for PCB remediation waste in "Remarks" for a warehouse.

Contamination Scenario	Reuse Scenarios	Reuse Scenario Exposure Characteristics	Necessary Remediation Levels	Remarks
Industrial park with 8 tons of PCB-contaminated soil	See reuse scenario for scrap yard with contaminated soil.	Reuse scenarios may include a combination of high and low occupancy area. See reuse scenario exposure characteristics for scrap yard with contaminated soil.	**TSCA Cleanup Standards** See cleanup standards for scrap yard with contaminated soil.	See the notification, manifesting, disposal and recordkeeping requirements for PCB remediation waste in "Remarks" for a warehouse. Also see "Reuse Scenarios" for scrap yard regarding new structures and "Remarks" for use of existing structures.
Solid waste transfer station with PCB-contaminated wastes	See reuse scenarios for scrap yard with contaminated soil.		**TSCA Cleanup Standards** See cleanup standards for scrap yard with contaminated soil.	Assumes PCB wastes were abandoned on site. Wastes should be removed and disposed of as referenced in section VII.C. ("PCB Contamination and Reuse Scenarios"). If PCB remediation wastes are present, then the site should be cleaned and redeveloped based on occupancy expectations; e.g., high or low occupancy area. A 761.61(c) risk-based approval also may be appropriate for managing bulk PCB remediation waste. See the notification, manifesting, disposal and recordkeeping requirements for PCB remediation waste in "Remarks" for a warehouse. Also see "Reuse Scenarios" for a scrap yard regarding new structures and "Remarks" for use of existing structures.

APPENDIX A

REGION I, EPA-NEW ENGLAND

DRAFT
STANDARD OPERATING PROCEDURE
FOR SAMPLING CONCRETE IN THE FIELD

REGION I, EPA-NEW ENGLAND

DRAFT
STANDARD OPERATING PROCEDURE
FOR SAMPLING CONCRETE IN THE FIELD

U.S. EPA-NEW ENGLAND
Region I
Quality Assurance Unit Staff
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Region I, EPA New England

Standard Operating Procedure for Sampling Concrete in the Field

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Region I, EPA New England

Standard Operating Procedure for Sampling Concrete in the Field

1.0 Scope and Application

The following Standard Operating Procedure (SOP) describes a concrete sampling technique which uses an impact hammer drill to generate a uniform, finely ground, powder which is easily homogenized, extracted and analyzed. This procedure is primarily geared at providing enough sample for one or two different analyses at a time. That is, the time required to generate sufficient sample for a full suite of analyses may be impractical. The concrete powder is suitable for all types of environmental analyses, with the exception of volatile compounds, and may be analyzed in the field or at a fixed laboratory. This procedure is applicable for the collection of samples from concrete floors, walls, and ceilings.

The impact hammer drill is far less labor intensive than previous techniques using coring devices, or hammers and chisels. It allows for easy selection of sample location and sample depth. Not only can the project planner control the depth to sample into the concrete, from surface samples (0 - ½ inch) down to a core of the entire slab, but the technique can also be modified to collect samples at discrete depths within the concrete slab.

Another issue with concrete sampling is the fact that the amount of time spent drilling translates into the weight of sample produced. Thus, to maximize sampling time, it is important to know the minimum amount of sample required for each analysis. To do this, the project planner should take the following steps: 1) Use the Data Quality Objective (DQO) process and familiarity with the site to develop the objectives of the sampling project and the depth(s) of sample to be collected. 2) Review the site history and any previous data collected to determined possible contaminants of concern. 3) Establish the action levels for those possible contaminants and determine the appropriate analytical methods (both field and/or fixed laboratory) to meet the DQOs of the project. 4) Based on the detection limits of these methods, determine the amount of sample required for each analysis and the total sample weight require for each sample location (including quality control samples).

As with any environmental data collection project, all aspects of a concrete sampling episode should be well thought out, prior to going out in the field, and thoroughly described in a Quality Assurance Project Plan (QAPP). The QAPP should clearly state the DQOs of the project and document a complete Quality Assurance/Quality Control program to reconcile the data generated with the established DQOs. For more information on these subjects, refer to EPA documents QA/R-5, EPA Requirements for Quality Assurance Project Plans for Environmental Data Operations, and QA/G-4, Guidance for the Data Quality Objective Process.

2.0 Method Summary

A one-inch diameter carbide drill bit is used in a rotary impact hammer drill to generate a fine concrete powder suitable for analysis. The powder is placed in a sample container and homogenized for field or fixed laboratory analysis. The procedure can be used to sample a single depth into the concrete, or may be modified to sample the concrete at distinctly different depth zones. The modified depth sampling procedure is designed to minimize any cross contamination between the sampling zones. If different sampling depths are required, two different diameter drill bits and a vacuum sampling apparatus are employed.

3.0 Health and Safety

Eye and hearing protection are required at all times during sample drilling. A small amount of dust is generated during the drilling process. Proper respiratory protection and/or a dust control system must be in place at all times during sampling.

4.0 Interferences and Potential Problems

Since this sampling technique produces a finely ground uniform powder, physical matrix effects from variations in the sample consistency (i.e., particle size, uniformity, homogeneity, and surface condition) are minimized. Matrix spike analysis of a sample is highly recommended to monitor for any matrix related interferences.

As stated in Section 1.0 above, this sampling procedure is not recommended for volatile organic compound (VOC) analysis. The combination of heat generated during drilling and the exposure of a large amount of surface area will greatly reduce VOC recovery. If low boiling point semi-volatile compounds (i.e., naphthalene) are being analyzed, then the drill speed should be reduced to minimize heat build-up.

5.0 Equipment and Supplies

5.1 Single Depth Concrete Sampling

5.1.1 Rotary impact hammer drill
5.1.2 1-inch diameter carbide drill bits
5.1.3 Stainless steel scoopulas
5.1.4 Stainless steel spoonulas (for collecting sample in deeper holes, >2-inches)
5.1.5 Rectangular aluminum pans (to catch concrete during wall and ceiling sampling)
5.1.6 Gasoline powered generator (if alternative power source is required)

5.2 Multiple Depth Sampling (in addition to all the above)

5.2.1 ½ inch diameter carbide drill bits
5.2.2 Vacuum/sample trap assembly (see Section 7.2 and Figure 1)

5.2.2.1 Vacuum pump
5.2.2.2 2-hole rubber stopper
5.2.2.3 Glass tubing (to fit stopper)
5.2.2.4 Large glass test tubes, or Erlenmeyer flasks, for sample trap (several are suggested)
5.2.2.5 Polyethylene tubing for trap inlet (Tygon tubing may be used for the trap outlet)
5.2.2.6 Pasture pipets
5.2.2.7 Pipe cleaners
5.2.2.8 In-line dust filter (glass fiber filter, or equivalent)

6.0 Sample Containers, Preservation, and Storage

Concrete samples must be collected in glass containers for organic analyses, and may be collected in either glass or plastic containers for inorganic analyses. In general, a 2-ounce sample container with Teflon-lined cap (wide-mouth jars are preferred) will hold sufficient volume for most analyses. A 2-

ounce jar can hold roughly 90 grams sample. Note, samples which require duplicate and/or matrix spike/matrix spike duplicate analyses may require a larger sample container, or additional 2-ounce sample containers.

Organic samples are to be shipped on ice and maintained at 4°C (± 2°C) until the time of extraction and analysis. Inorganic samples may be shipped and stored at room temperature. Refer to 40 CFR Part 136 for guidelines on analysis holding times.

To maintain sample integrity, chain-of-custody procedures must be implemented at the time of sampling to 1) document all sample locations and associated field sample identification numbers, 2) document all quality control samples taken, including field duplicates, split samples for confirmatory analyses, and PE samples, and 3) document the transfer of field samples from field sampler to field chemist or fixed laboratory.

7.0 Procedure

7.1 Single Depth Concrete Sampling

Lock a 1-inch diameter carbide drill bit into the impact hammer drill and plug the drill into an appropriate power source. (A gasoline generator will be needed if electricity is not available.) For easy identification, sample locations may be pre-marked using a crayon or a non-contaminating spray paint. (Note, the actual drilling point must not be marked.) Depending on the appearance of the sample location, or the objectives of the sampling project, it may be desired to wipe the concrete surface with a clean dry cloth prior to drilling. All sampling decisions of this nature should be noted in the sampling logbook. Begin drilling in the designated location. Apply steady even pressure and let the drill do the work. Applying too much pressure will generate excessive heat and dull the drill bit prematurely. The drill will provide a finely ground concrete powder that can be easily collected, homogenized and analyzed. Having several decontaminated impact drill bits on hand will help expedite sampling when numerous sample locations are to be drilled.

Sample Collection

A ½-inch deep hole (using a 1-inch diameter drill bit) generates about 10 grams of concrete powder. Based on this and the action levels for the project, determine the sampling depth, and/or the number of sample holes to be composited, to generate sufficient sample volume for all of the required analyses. (Note, with the absorbency of concrete, a ½-inch deep hole can be considered a surface sample.)

A decontaminated stainless steel scoopula can be used to collect the sample. The powder can either be collected directly from the surface of the concrete and/or the concrete powder can be scraped back into the hole and the less rounded back edge of the scoopula can be used to collect the sample. For holes greater than 2-inches in depth, a stainless steel spoonula will make it easier to collect the sample from the bottom of the hole.

To ensure collection of a representative sample when multiple analyses are required, a concrete sample should always be collected and homogenized in a single container and then divided up into the individual containers for the various analyses or split samples. This is particularly important when sample holes are deep, or when several holes are drilled adjacent to each other to form a sample composite.

Wall and Ceiling Sampling

A team of two samplers will be required for wall and ceiling sampling. The second person will be needed to hold a clean catch surface (i.e., an aluminum pan) below the drill to collect the falling powder. For wall samples, a scoopula, or spoonula, can be used to collect remaining concrete powder from within the hole. For ceiling holes, it may be necessary to drill the hole at an angle so the concrete powder can fall freely in the collection plan (and avoid falling on the drill). Another alternative might be to use the chuck-end of the drill bit and punch a hole through the center of the collection pan. The drill bit is then mounted through the pan and into the drill. Thus, the driller can be drilling straight up while the assistant steadies the pan to catch the falling dust. As a precaution, it may be advantageous to tape a piece of plastic around the drill, just below the chuck, to avoid dust contaminating the body of the drill and entering the mechanical vents. (Note, the plastic should deflect dust from the drill, but be loose enough underneath to allow for proper ventilation.)

7.2 Multiple Depth Concrete Sampling

The above method for concrete sampling can also be used to collect samples from different depths within the concrete. To do this, two different sized drill bits (i.e., ½ inch and 1 inch) and a simple vacuum pump with a vacuum trap assembly is required (see Figure 1). First, the 1 inch drill bit is used to drill to the first level and the concrete sample is collected as described in Section 7.1. The vacuum pump is then turned on and the hole is cleaned out using the vacuum trap assembly. The drill bit is then changed to the ½ inch bit and the next depth is drilled out (the ½ inch bit is used to avoid contact with the sides of the first hole). A clean tube or flask is placed on the vacuum trap, and the sample from the second drilling is collected. To go further, the 1 inch drill is used to open up the hole to the second level, the hole is cleared, and then the ½ inch drill is used again to go to a third level, etc. Note, the holes and concrete surface should be vacuumed thoroughly to minimize any cross-contamination between sample depths.

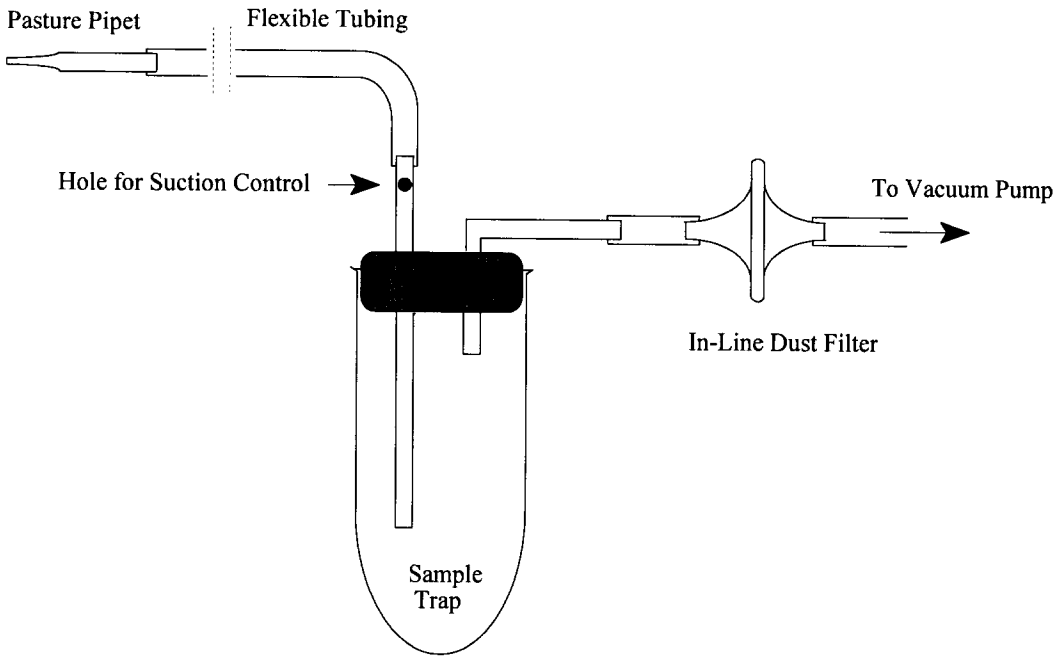
Vacuum Trap Design and Clean-out

The trap presented in Figure 1 is a convenient and thorough way for collecting and removing concrete powder from drilled holes. The trap system is designed to allow for control of the suction from the vacuum pump and easy trap clean-out between samples. Note, by placing a hole in the inlet tube (see Figure 1), a finger on the hand holding the trap can be used to control the suction at the sampling tip. Thus, when this hole is left completely open, there will be no suction, and the sampler can have complete control over where and what to sample. To change-out between samples the following steps should be taken: 1) The pasture pipet and piece of polyethylene tubing at the sample inlet should be replaced with new materials, 2) the portion of the rubber stopper and glass tubing that was in the trap should be wiped down with a clean damp paper towel (wetted with deionized water) and then dried with a fresh paper towel, 3) a clean pipe cleaner should be drawn through the glass inlet tube to remove any concrete dust present, and 4) the glass tube or flask used to collect the sample should swapped out with a clean decontaminated sample trap. Having several clean tubes or flasks on hand will facilitate change-out between samples.

7.3 Decontamination Procedure

Necessary supplies for decontamination include: two small buckets, a scrub brush, potable water, deionized water, a squirt bottle for the deionized water, and paper towels. The first bucket contains a soap and potable water solution, and the second bucket contains just potable water. Place all used drill bits and

Figure 1



utensils in the soap and water bucket. Scrub each piece thoroughly using the scrub brush. Note, the concrete powder does cling to the metal surfaces, so care should be taken during this step, especially with the twists and curves of the drill bits. Next, rinse each piece in the potable water bucket, and follow with a deionized water rinse from the squirt bottle. Place the deionized water rinsed pieces on clean paper towels and individually dry and inspect each piece. Note, all pieces should be dry prior to reuse.

8.0 Field Documentation

All Site related documentation and reports generated from concrete sampling should be maintained in the central Site file. If personal logbooks are used, legible copies of all pertinent pages must be placed in the Site file.

8.1 Field Logbooks

All field documentation should be maintained in bound logbooks with numbered pages. If loose-leaf logsheets are used to document site activities, extra care should be taken in keep track of all logsheets. The original copy of all logsheets should be maintained in the central Site file. Note, all sample locations must be documented by tying in their location to a detailed site map, or by using two or more permanent landmarks. The following information should be documented in the field logbooks:

- Site name and location,
- EPA Site Manager,
- Name and affiliation of field samplers (EPA, Contractor company name, etc.),
- Sampling date,
- Sample locations and IDs,
- Sampling times and depths, and
- Other pertinent information or comments

8.2 Sample Labeling and Chain-of-Custody

8.2.1 Sample Labels

Sample labels will be affixed to all sample containers. Labels must contain the following information:

- Project name,
- Sample number, and/or location
- Date and time of sampling,
- Analysis,
- Preservation, and
- Sampler's name.

8.2.2 Chain-of-Custody

All samples must be traced from collection, to shipment, to laboratory receipt and laboratory custody. The Chain-of-Custody (COC) Record is a multi-part form that is initiated as samples are acquired and accompanies a sample (or group of samples) as they are transferred from person to person. The COC form is signed by all individuals responsible for sampling, sample transport, and laboratory receipt. (Note, overnight deliver services, often used with sample transport, are exempt from having to sign the COC form. However, copies of all shipping invoices must be kept with the COC documentation.) One copy of the COC is retained by the field sampling crew, while the original (top, signed copy) and remaining carbonless copies are placed in a zip-lock bag and taped to the inside lid of the shipping cooler. If multiple coolers are required for a sample shipment to a single laboratory, the COC need only be sent with one of the coolers. The COC should state how many coolers are included with the shipment. All sample shipments to different laboratories require individual COC forms. The original COC form accompanies the samples until the project is complete, and is then kept in the permanent project file. A copy of the COC is also kept with the project manager, the laboratory manager, and attached to the data package.

8.2.3 Custody Seal

The Custody seal is an adhesive-backed label which is also part of the chain-of-custody process. The custody seal is used to prevent tampering with the samples after they have been collected in the field and sealed in coolers for transit to the laboratory. The Custody seals are signed and dated by a sampler and affixed across the opening edges of each cooler containing samples. Clear packing tape should be wrapped around the cooler, and over the Custody seal, to secure the cooler and avoid accidental tampering with the Custody seal.

9.0 Quality Assurance and Quality Control (QA/QC)

A solid QA/QC program is essential to establishing the quality of the data generated so that proper project decisions can be made. The following are key quality control elements which should be incorporated into a concrete sampling and analytical program.

9.1 Equipment Blanks

An equipment blank should be performed on decontaminated drill bits and collection utensils at a frequency of 1 per 20 samples or 1 per day, whichever is greater. To prepare the equipment blank, place the decontaminated drill bit and utensils in a large clean stainless steel bowl. Pour sufficient deionized water into the bowl to fill all of the required sample containers. Next, stir the drill bit and utensils in the bowl with a clean utensil to thoroughly mix the blank. Finally, decant off the equipment blank into the sample containers. Note, a clean funnel may help to pour off the equipment blank into the containers.

9.2 Field Duplicates

Field duplicates are samples collected adjacent to each other (collocated) at the same sample location (not two aliquots of the same sample). Field duplicates not only help provide an indicator of overall precision, but measure the cumulative effects of both the field and analytical precision, and also measure the representativeness of the sample. Field duplicates must be prepared and analyzed at a frequency of 1 per 20 samples or 1 per non-related concrete matrix, whichever is greater. An example of a non-related concrete matrix might be the investigation of two different types of chemical spills.

Calculate the Relative Percent Difference (RPD) between the sample and its duplicate using Equation 1.

Equation 1

$$RPD = \frac{|S - D|}{\frac{(S + D)}{2}} \times 100$$

Where:

S = Original sample result
D = Duplicate sample result

The following general guidelines have been established for field duplicate criteria:

- If both the original and field duplicate values are ≥ practical quantitation limit (PQL), then the control limit for RPD is ≤50%,
- If one or both values are < PQL, then do not assess the RPD.

If more rigorous field duplicate criteria are needed to achieve project DQOs, then that criteria should be documented in the project QAPP.

If the field duplicate criteria specified above are not met, then flag that target element with an "*" on the final report for both the original and field duplicate samples. Report both the original and field duplicate

analyses; do not report the average. Field duplicate samples should be indicated on the sample ID. For example, the sample ID can contain the suffix "FD."

9.3 Laboratory Duplicates

Laboratory duplicates are two aliquots of the same sample that are prepared, homogenized and analyzed in the same manner. (Note, proper sample homogenization is critical in producing meaningful results.) The precision of the sample preparation and analytical methods is determined by performing a laboratory duplicate analysis. Laboratory duplicates can be prepared in the field and submitted as blind samples, or the laboratory can be requested to perform the laboratory duplicate analysis. In the case of laboratory prepared duplicates, the field sampling team must be sure to provide sufficient sample volume. Laboratory duplicates must be prepared and analyzed at a frequency of 1 per 20 samples or 1 per non-related concrete matrix, whichever is greater.

Calculate the RPD between the sample and its duplicate using Equation 1. The following general guidelines have been established for laboratory duplicate criteria:

- If both the original and laboratory duplicate values are ≥ PQL, then the control limit for RPD is ≤25%,
- If one or both values are < PQL, then do not assess the RPD.

If duplicate criteria are not met, then flag that target element with an "*" on the final report for both the original and duplicate samples. Report both the original and duplicate analyses; do not report the average.

9.4 Matrix Spike/Matrix Spike Duplicate Samples

Matrix spike/matrix spike duplicate samples (MS/MSDs) are two additional aliquots of a sample which are spiked with the appropriate compound(s) or analyte(s) of concern and then prepared and analyzed along with the original sample. (Note, proper sample homogenization, prior to spiking, is critical in producing meaningful results.) MS/MSDs help evaluate the effects of sample matrix on the analytical methods being used. The field sampling team must provide sufficient sample volume such that the field or fixed laboratory can prepare and analyze MS/MSDs at a frequency of 1 per 20 samples or 1 per non-related concrete matrix, whichever is greater.

Calculate the recovery of each matrix spike compound or analyte using Equation 2.

Equation 2

$$MSR = \frac{SSR - SR}{SA} x\ 100$$

Where,

MSR	=	Matrix Spike Recovery,	SA	=	Spike Added
SSR	=	Spiked Sample Result,	SR	=	Sample Result

Calculate the relative percent difference (RPD) between the recoveries of each compound or analyte in the matrix spike and matrix spike duplicate using Equation 3.

Equation 3

$$RPD = \frac{|\ MSR - MSRD\ |}{\frac{(MSR + MSRD)}{2}} x\ 100$$

Where,

MSR	=	Matrix Spike Recovery
MSRD	=	Matrix Spike Duplicate Recovery

9.5 Performance Evaluation Samples

In accordance with the EPA Region I Performance Evaluation Program Guidance, performance evaluation (PE) samples should be submitted for each type of analysis to be performed in the field or by the fixed laboratory performing full protocol EPA methods. PE samples provide information on the quality of the individual data packages. PE samples are certified standard reference materials (SRMs) from a source other than that used to calibrate the instrument. If both field and fixed laboratories are being used to analyze samples, at least one solid PE sample should undergo both field analysis and confirmatory full protocol EPA method analysis to facilitate data comparability. A copy of the certified values for the SRM must be submitted with the final data packages to facilitate data evaluation.

9.6 Data Verification and Validation

All field data and supporting information (including chain-of-custody) that is collected during a concrete sampling episode should be verified daily, by a person other than that performing the work, to check for possible errors.

During the project planning process, a plan for data validation should be established for all data, both for field and fixed laboratories. All data must be validated to assure that it is of a quality suitable to make project decisions. For help in developing a data validation program refer to Region I, EPA New England,

Data Validation Functional Guidelines for Evaluating Environmental Analyses.

9.7 Audits

9.7.1 Internal Audits

As part of the Quality Assurance/Quality Control Program for any sampling project, a series of internal audit checks should be instituted to monitor and maintain the integrity of the sample collection process. Timely internal reviews will insure that proper sampling, decontamination, chain-of-custody and quality control procedures are being followed. Also, the internal audit review is there to monitor any corrective actions taken, and/or institute corrective actions that should have been taken and were not. All corrective actions taken must be documented in an appropriate logbook, and if any corrective actions impact the final data reported, then they must also be documented in the final report narrative. The results of all internal audits must be documented in a report, and copies of the report issued to the Project Manager and the Quality Assurance Manager. The original copy of any audit report must remain with the main project file and be available for review.

9.7.2 External Audits

The Agency reserves the right to perform periodic field audits to ensure compliance with this SOP.

10.0 References

1) Guidance for the Data Quality Objective Process, QA/G-4, EPA/600/R-96/055, September 1994.

2) EPA Requirements for Quality Assurance Project Plans for Environmental Data Operations, QA/R-5, Interim Final, October 1997.

3) Guidance for the Preparation of Standard Operating Procedures for Quality-related Operations, QA/G-6, EPA/600/R-96/027, November 1995.

4) Region I, EPA-New England Data Validation Functional Guidelines for Evaluating Environmental Analyses, July 1996.

5) EPA Region I Performance Evaluation Program Guidance, July 1996.

6) U.S. EPA Code of Federal Regulations, 40 CFR, Part 136, Appendix B, Revised as of July 1995.

APPENDIX B

EXCERPTS FROM THE SELF-IMPLEMENTING PROVISIONS OF THE PCB REGULATIONS AT 40 CFR PART 761 FOR PCB WASTE CLEANUP AND DISPOSAL

The entire text of the Code of Federal Regulations for 40 CFR Part 761 can be found on the U.S. Government Printing Office's website at www.gpo.gov, under "Legislative Resources," and on the PCB website at www.epa.gov/pcb under "Laws and Regulations." This excerpt includes the following regulatory provisions which are referenced in 40 CFR 761.61:

Section 761.60(a), (b) and (c)
Section 761.65(a) and (c)
Section 761.79(b)
Section 761.125(c)(5)
Subpart N, Section 761.269
Subpart O, Section 761.283, 761.286, and 761.292

[Code of Federal Regulations]
[Title 40, Volume 28]
[Revised as of July 1, 2003]
From the U.S. Government Printing Office via GPO Access
[CITE: 40CFR761]

[Pages 579-708]

TITLE 40--PROTECTION OF ENVIRONMENT

CHAPTER I--ENVIRONMENTAL PROTECTION AGENCY (CONTINUED)

PART 761--POLYCHLORINATED BIPHENYLS (PCBs) MANUFACTURING, PROCESSING, DISTRIBUTION IN COMMERCE, AND USE PROHIBITIONS

Subpart D--Storage and Disposal

Sec. 761.60 **Disposal requirements.**

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(a) PCB liquids. PCB liquids at concentrations ≥50 ppm must be disposed of in an incinerator which complies with Sec. 761.70, except that PCB liquids at concentrations ≥50 ppm and <500 ppm may be disposed of as follows:

(1) For mineral oil dielectric fluid, in a high efficiency boiler according to Sec. 761.71(a).

(2) For liquids other than mineral oil dielectric fluid, in a high efficiency boiler according to Sec. 761.71(b).

(3) For liquids from incidental sources, such as precipitation, condensation, leachate or load separation and are associated with PCB Articles or non-liquid PCB wastes, in a chemical waste landfill which complies with Sec. 761.75 if:

(i) [Reserved]

(ii) Information is provided to or obtained by the owner or operator of the chemical waste landfill that shows that the liquids do not exceed 500 ppm PCB and are not an ignitable waste as described in Sec. 761.75(b)(8)(iii).

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(b) PCB Articles. This paragraph does not authorize disposal that is otherwise prohibited in Sec. 761.20 or elsewhere in this part.

(1) Transformers. (i) PCB Transformers shall be disposed of in accordance with either of the following:

(A) In an incinerator that complies with Sec. 761.70; or

(B) In a chemical waste landfill approved under Sec. 761.75; provided that all free-flowing liquid is removed from the transformer, the transformer is filled with a solvent, the transformer is allowed to stand for at least 18 continuous hours, and then the solvent is

thoroughly removed. Any person disposing of PCB liquids that are removed from the transformer (including the dielectric fluid and all solvents used as a flush), shall do so in an incinerator that complies with Sec. 761.70 of this part, or shall decontaminate them in accordance with Sec. 761.79. Solvents may include kerosene, xylene, toluene, and other solvents in which PCBs are readily soluble. Any person disposing of these PCB liquids must ensure that the solvent flushing procedure is conducted in accordance with applicable safety and health standards as required by Federal or State regulations.

(ii) [Reserved]

(2) PCB Capacitors. (i) The disposal of any capacitor shall comply with all requirements of this subpart unless it is known from label or nameplate information, manufacturer's literature (including documented communications with the manufacturer), or chemical analysis that the capacitor does not contain PCBs.

(ii) Any person may dispose of PCB Small Capacitors as municipal solid waste, unless that person is subject to the requirements of paragraph (b)(2)(iv) of this section.

(iii) Any PCB Large High or Low Voltage Capacitor which contains 500 ppm or greater PCBs, owned by any person, shall be disposed of in accordance with either of the following:

(A) Disposal in an incinerator that complies with Sec. 761.70; or

(B) Until March 1, 1981, disposal in a chemical waste landfill that complies with Sec. 761.75.

(iv) Any person who manufactures or at any time manufactured PCB Capacitors or PCB Equipment, and acquired the PCB Capacitor in the course of such manufacturing, shall place the PCB Small Capacitors in a container meeting the DOT packaging requirements at 49 CFR parts 171 through 180 and dispose of them in accordance with either of the following:

(A) Disposal in an incinerator which complies with Sec. 761.70; or

(B) Until March 1, 1981, disposal in a chemical waste landfill which complies with Sec. 761.75.

(v) Notwithstanding the restrictions imposed by paragraph (b)(2)(iii)(B) or (b)(2)(iv)(B) of this section, PCB capacitors may be disposed of in PCB chemical waste landfills that comply with Sec. 761.75 subsequent to March 1, 1981, if the Assistant Administrator for Prevention, Pesticides and Toxic Substances publishes a notice in the Federal Register declaring that those landfills are available for such disposal and explaining the reasons for the extension or reopening. An extension or reopening for disposal of PCB capacitors that is granted under this subsection shall be subject to such terms and conditions as the Assistant Administrator may prescribe and shall be in effect for such period as the Assistant Administrator may prescribe. The Assistant Administrator may permit disposal of PCB capacitors in EPA approved chemical waste landfills after March 1, 1981, if in his opinion,

(A) Adequate incineration capability for PCB capacitors is not available, or

(B) The incineration of PCB capacitors will significantly interfere with the incineration of liquid PCBs, or

(C) There is other good cause shown.

As part of this evaluation, the Assistant Administrator will consider the impact of his action on the incentives to construct or expand PCB

incinerators.

(vi) Any person disposing of large PCB capacitors or small PCB capacitors described in paragraph (b)(2)(iv) of this section in a chemical waste landfill approved under Sec. 761.75, shall first place them in a container meeting the DOT packaging requirements at 49 CFR parts 171 through 180. In all cases, the person must fill the interstitial space in the container with sufficient absorbent material (such as soil) to absorb

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any liquid PCBs remaining in the capacitors.

(3) PCB hydraulic machines. (i) Any person disposing of PCB hydraulic machines containing PCBs at concentrations of ≥50 ppm, such as die casting machines, shall do so by one of the following methods:

(A) In accordance with Sec. 761.79.

(B) In a facility which is permitted, licensed, or registered by a State to manage municipal solid waste subject to part 258 of this chapter or non-municipal non-hazardous waste subject to Secs. 257.5 through 257.30 of this chapter, as applicable (excluding thermal treatment units).

(C) In a scrap metal recovery oven or smelter operating in compliance with Sec. 761.72.

(D) In a disposal facility approved under this part.

(ii) All free-flowing liquid must be removed from each machine and the liquid must be disposed of in accordance with the provisions of paragraph (a) of this section. If the PCB liquid contains ≥1,000 ppm PCB, then the hydraulic machine must be decontaminated in accordance with Sec. 761.79 or flushed prior to disposal with a solvent listed at paragraph (b)(1)(i)(B) of this section which contains <50 ppm PCB. The solvent must be disposed of in accordance with paragraph (a) of this section or Sec. 761.79.

(4) PCB-Contaminated Electrical Equipment. Any person disposing of PCB-Contaminated Electrical Equipment, except capacitors, shall do so in accordance with paragraph (b)(6)(ii)(A) of this section. Any person disposing of Large Capacitors that contain ≥50 ppm but < 500 ppm PCBs shall do so in a disposal facility approved under this part.

(5) Natural gas pipeline systems containing PCBs. The owner or operator of natural gas pipeline systems containing ≥50 ppm PCBs, when no longer in use, shall dispose of the system either by abandonment in place of the pipe under paragraph (b)(5)(i) of this section or removal with subsequent action under paragraph (b)(5)(ii) of this section. Any person determining the PCB concentrations in natural gas pipeline systems shall do so in accordance with paragraph (b)(5)(iii) of this section.

(i) Abandonment. Natural gas pipe containing ≥50 ppm PCBs may be abandoned in place under one or more of the following provisions:

(A) Natural gas pipe having a nominal inside diameter of ≤4 inches, and containing PCBs at any concentration but no free-flowing liquids, may be abandoned in the place it was used to transport natural gas if each end is sealed closed and the pipe is either:

(1) Included in a public service notification program, such as a "one-call" system under 49 CFR 192.614(a) and (b).

(2) Filled to 50 percent or more of the volume of the pipe with grout (such as a hardening slurry consisting of cement, bentonite, or clay) or high density polyurethane foam.

(B) PCB-Contaminated natural gas pipe of any diameter, where the PCB concentration was determined after the last transmission of gas through the pipe or at the time of abandonment, that contains no free-flowing liquids may be abandoned in the place it was used to transport natural gas if each end is sealed closed.

(C) Natural gas pipe of any diameter which contains PCBs at any concentration but no free-flowing liquids, may be abandoned in the place it was used to transport natural gas, if each end is sealed closed, and either:

(1) The interior surface is decontaminated with one or more washes of a solvent in accordance with the use and disposal requirements of Sec. 761.79(d). This decontamination process must result in a recovery of 95 percent of the solvent volume introduced into the system, and the PCB concentration of the recovered wash must be <50 ppm (see Sec. 761.79(a)(1) for requirements on use and disposal of decontaminating fluids).

(2) The pipe is filled to 50 percent or more of the volume of the pipe with grout (such as a hardening slurry-like cement, bentonite, or clay) or high density polyurethane foam (except that only cement shall be used as grout under rivers or streams) and each end is sealed closed.

(D) Natural gas pipe of any diameter which contains PCBs at any concentration may be abandoned in place after decontamination in accordance with

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Sec. 761.79(c)(3), (c)(4) or (h) or a PCB disposal approval issued under Sec. 761.60(e) or Sec. 761.61(c).

(ii) Removal with subsequent action. Natural gas pipeline systems may be disposed of under one of the following provisions:

(A) The following classifications of natural gas pipe containing no free-flowing liquids may be disposed of in a facility permitted, licensed, or registered by a State to manage municipal solid waste subject to part 258 of this chapter or non-municipal non-hazardous waste subject to Secs. 257.5 through 257.30 of this chapter, as applicable (excluding thermal treatment units); a scrap metal recovery oven or smelter operating in compliance with the requirements of Sec. 761.72; or a disposal facility approved under this part:

(1) PCB-Contaminated natural gas pipe of any diameter where the PCB concentration was determined after the last transmission of gas through the pipe or during removal from the location it was used to transport natural gas.

(2) Natural gas pipe containing PCBs at any concentration and having a nominal inside diameter ≤4 inches.

(B) Any component of a natural gas pipeline system may be disposed of under one of the following provisions:

(1) In an incinerator operating in compliance with Sec. 761.70.

(2) In a chemical waste landfill operating in compliance with Sec. 761.75, provided that all free-flowing liquid PCBs have been thoroughly drained.

(3) As a PCB remediation waste in compliance with Sec. 761.61.

(4) In accordance with Sec. 761.79.

(iii) Characterization of natural gas pipeline systems by PCB concentration in condensate. (A) Any person disposing of a natural gas pipeline system under paragraphs (b)(5)(i)(B) or (b)(5)(ii)(A)(1) of this section must characterize it for PCB contamination by analyzing organic liquids collected at existing condensate collection points in the natural gas pipeline system. The level of PCB contamination found at a collection point is assumed to extend to the next collection point downstream. If no organic liquids are present, drain free-flowing liquids and collect standard wipe samples according to subpart M of this part. Collect condensate within 72 hours of the final transmission of natural gas through the part of the system to be abandoned or removed. Collect wipe samples after the last transmission of gas through the pipe or during removal from the location it was used to transport natural gas.

(B) PCB concentration of the organic phase of multi-phasic liquids shall be determined in accordance with Sec. 761.1(b)(4).

(iv) Disposal of pipeline liquids. (A) Any person disposing of liquids containing PCBs ≥ 50 ppm removed, spilled, or otherwise released from a natural gas pipeline system must do so in accordance with Sec. 761.61(a)(5)(iv) based on the PCB concentration at the time of removal from the system. Any person disposing of material contaminated by spills or other releases of PCBs ≥ 50 ppm from a natural gas pipeline system, must do so in accordance with Sec. 761.61 or Sec. 761.79, as applicable.

(B) Any person who markets or burns for energy recovery liquid containing PCBs at concentrations <50 ppm PCBs at the time of removal from a natural gas pipeline system must do so in accordance with the provisions pertaining to used oil at Sec. 761.20(e). No other use of liquid containing PCBs at concentrations above the quantifiable level/ level of detection removed from a natural gas pipeline system is authorized.

(6) Other PCB Articles. (i) PCB articles with concentrations at 500 ppm or greater must be disposed of:

(A) In an incinerator that complies with Sec. 761.70; or

(B) In a chemical waste landfill that complies with Sec. 761.75, provided that all free-flowing liquid PCBs have been thoroughly drained from any articles before the articles are placed in the chemical waste landfill and that the drained liquids are disposed of in an incinerator that complies with Sec. 761.70.

(ii)(A) Except as specifically provided in paragraphs (b)(1) through (b)(5) of this section, any person disposing of a PCB-Contaminated Article must do so by removing all free-flowing liquid from the article, disposing of the liquid in accordance with paragraph (a) of this section, and disposing of the PCB-Contaminated Article with no free-

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flowing liquid by one of the following methods:

(1) In accordance with Sec. 761.79.

(2) In a facility permitted, licensed, or registered by a State to manage municipal solid waste subject to part 258 of this chapter or non-

municipal non-hazardous waste subject to Secs. 257.5 through 257.30 of this chapter, as applicable (excluding thermal treatment units).

(3) In a scrap metal recovery oven or smelter operating in compliance with Sec. 761.72.

(4) In a disposal facility approved under this part.

(B) Storage for disposal of PCB-Contaminated Articles from which all free-flowing liquids have been removed is not regulated under subpart D of this part.

(C) Requirements in subparts J and K of this part do not apply to PCB-Contaminated Articles from which all free-flowing liquids have been removed.

(iii) Fluorescent light ballasts containing PCBs in their potting material must be disposed of in a TSCA-approved disposal facility, as bulk product waste under Sec. 761.62, as household waste under Sec. 761.63 (where applicable), or in accordance with the decontamination provisions of Sec. 761.79.

(7) Storage of PCB Articles. Except for a PCB Article described in paragraph (b)(2)(ii) of this section and hydraulic machines that comply with the municipal solid waste disposal provisions described in paragraph (b)(3) of this section, any PCB Article, with PCB concentrations at 50 ppm or greater, shall be stored in accordance with Sec. 761.65 prior to disposal.

(8) Persons disposing of PCB Articles must wear or use protective clothing or equipment to protect against dermal contact with or inhalation of PCBs or materials containing PCBs.

(c) PCB Containers. (1) Unless decontaminated in compliance with Sec. 761.79 or as provided in paragraph (c)(2) of this section, a PCB container with PCB concentrations at 500 ppm or greater shall be disposed of:

(i) In an incinerator which complies with Sec. 761.70, or

(ii) In a chemical waste landfill that complies with Sec. 761.75; provided that if there are PCBs in a liquid state, the PCB Container shall first be drained and the PCB liquid disposed of in accordance with paragraph (a) of this section.

(2) Any PCB Container used to contain only PCBs at a concentration less than 500 ppm shall be disposed of as municipal solid wastes; provided that if the PCBs are in a liquid state, the PCB Container shall first be drained and the PCB liquid shall be disposed of in accordance with paragraph (a) of this section.

(3) Prior to disposal, a PCB container with PCB concentrations at 50 ppm or greater shall be stored in a unit which complies with Sec. 761.65.

(Sec. 6, Pub. L. 94-469, 90 Stat. 2020 (15 U.S.C. 2605)

[44 FR 31542, May 31, 1979]

Editorial Note: For Federal Register citations affecting Sec. 761.60, see the List of CFR Sections Affected, which appears in the Finding Aids section of the printed volume and on GPO Access.

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Sec. 761.61 **PCB remediation waste.**

This section provides cleanup and disposal options for PCB remediation waste. Any person cleaning up and disposing of PCBs managed under this section shall do so based on the concentration at which the PCBs are found. This section does not prohibit any person from implementing temporary emergency measures to prevent, treat, or contain further releases or mitigate migration to the environment of PCBs or PCB remediation waste.

(a) Self-implementing on-site cleanup and disposal of PCB remediation waste. EPA designed the self-implementing procedure for a general, moderately-sized site where there should be low residual environmental impact from remedial activities. The procedure may be less practical for larger or environmentally diverse sites. For these other sites, the self-implementing procedure still

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applies, but an EPA Regional Administrator may authorize more practical procedures through paragraph (c) of this section. Any person may conduct self-implementing cleanup and disposal of PCB remediation waste in accordance with the following requirements without prior written approval from EPA.

(1) Applicability. (i) The self-implementing procedures may not be used to clean up:

(A) Surface or ground waters.

(B) Sediments in marine and freshwater ecosystems.

(C) Sewers or sewage treatment systems.

(D) Any private or public drinking water sources or distribution systems.

(E) Grazing lands.

(F) Vegetable gardens.

(ii) The self-implementing cleanup provisions shall not be binding upon cleanups conducted under other authorities, including but not limited to, actions conducted under section 104 or section 106 of CERCLA, or section 3004(u) and (v) or section 3008(h) of RCRA.

(2) Site characterization. Any person conducting self-implementing cleanup of PCB remediation waste must characterize the site adequately to be able to provide the information required by paragraph (a)(3) of this section. Subpart N of this part provides a method for collecting new site characterization data or for assessing the sufficiency of existing site characterization data.

(3) Notification and certification. (i) At least 30 days prior to the date that the cleanup of a site begins, the person in charge of the cleanup or the owner of the property where the PCB remediation waste is located shall notify, in writing, the EPA Regional Administrator, the Director of the State or Tribal environmental protection agency, and the Director of the county or local environmental protection agency where the cleanup will be conducted. The notice shall include:

(A) The nature of the contamination, including kinds of materials contaminated.

(B) A summary of the procedures used to sample contaminated and adjacent areas and a table or cleanup site map showing PCB

concentrations measured in all pre-cleanup characterization samples. The summary must include sample collection and analysis dates. The EPA Regional Administrator may require more detailed information including, but not limited to, additional characterization sampling or all sample identification numbers from all previous characterization activities at the cleanup site.

(C) The location and extent of the identified contaminated area, including topographic maps with sample collection sites cross referenced to the sample identification numbers in the data summary from paragraph (a)(3)(i)(B) of this section.

(D) A cleanup plan for the site, including schedule, disposal technology, and approach. This plan should contain options and contingencies to be used if unanticipated higher concentrations or wider distributions of PCB remediation waste are found or other obstacles force changes in the cleanup approach.

(E) A written certification, signed by the owner of the property where the cleanup site is located and the party conducting the cleanup, that all sampling plans, sample collection procedures, sample preparation procedures, extraction procedures, and instrumental/chemical analysis procedures used to assess or characterize the PCB contamination at the cleanup site, are on file at the location designated in the certificate, and are available for EPA inspection. Persons using alternate methods for chemical extraction and chemical analysis for site characterization must include in the certificate a statement that such a method will be used and that a comparison study which meets or exceeds the requirements of subpart Q of this part, and for which records are on file, has been completed prior to verification sampling.

(ii) Within 30 calendar days of receiving the notification, the EPA Regional Administrator will respond in writing approving of the self-implementing cleanup, disapproving of the self-implementing cleanup, or requiring additional information. If the EPA Regional Administrator does not respond within 30 calendar days of receiving the

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notice, the person submitting the notification may assume that it is complete and acceptable and proceed with the cleanup according to the information the person provided to the EPA Regional Administrator. Once cleanup is underway, the person conducting the cleanup must provide any proposed changes from the notification to the EPA Regional Administrator in writing no less than 14 calendar days prior to the proposed implementation of the change. The EPA Regional Administrator will determine in his or her discretion whether to accept the change, and will respond to the change notification verbally within 7 calendar days and in writing within 14 calendar days of receiving it. If the EPA Regional Administrator does not respond verbally within 7 calendar days and in writing within 14 calendar days of receiving the change notice, the person who submitted it may deem it complete and acceptable and proceed with the cleanup according to the information in the change notice provided to the EPA Regional Administrator.

(iii) Any person conducting a cleanup activity may obtain a waiver of the 30-day notification requirement, if they receive a separate waiver, in writing, from each of the agencies they are required to

notify under this section. The person must retain the original written waiver as required in paragraph (a)(9) of this section.

(4) Cleanup levels. For purposes of cleaning, decontaminating, or removing PCB remediation waste under this section, there are four general waste categories: bulk PCB remediation waste, non-porous surfaces, porous surfaces, and liquids. Cleanup levels are based on the kind of material and the potential exposure to PCBs left after cleanup is completed.

(i) Bulk PCB remediation waste. Bulk PCB remediation waste includes, but is not limited to, the following non-liquid PCB remediation waste: soil, sediments, dredged materials, muds, PCB sewage sludge, and industrial sludge.

(A) High occupancy areas. The cleanup level for bulk PCB remediation waste in high occupancy areas is ≤1 ppm without further conditions. High occupancy areas where bulk PCB remediation waste remains at concentrations 1 ppm and ≤10 ppm shall be covered with a cap meeting the requirements of paragraphs (a)(7) and (a)(8) of this section.

(B) Low occupancy areas. (1) The cleanup level for bulk PCB remediation waste in low occupancy areas is ≤25 ppm unless otherwise specified in this paragraph.

(2) Bulk PCB remediation wastes may remain at a cleanup site at concentrations >25 ppm and ≤50 ppm if the site is secured by a fence and marked with a sign including the M_L mark.

(3) Bulk PCB remediation wastes may remain at a cleanup site at concentrations >25 ppm and ≤100 ppm if the site is covered with a cap meeting the requirements of paragraphs (a)(7) and (a)(8) of this section.

(ii) Non-porous surfaces. In high occupancy areas, the surface PCB cleanup standard is ≤10 μg/100 cm^2 of surface area. In low occupancy areas, the surface cleanup standard is <100 μg/100 cm^2 of surface area. Select sampling locations in accordance with subpart P of this part or a sampling plan approved under paragraph (c) of this section.

(iii) Porous surfaces. In both high and low occupancy areas, any person disposing of porous surfaces must do so based on the levels in paragraph (a)(4)(i) of this section. Porous surfaces may be cleaned up for use in accordance with Sec. 761.79(b)(4) or Sec. 761.30(p).

(iv) Liquids. In both high and low occupancy areas, cleanup levels are the concentrations specified in Sec. 761.79(b)(1) and (b)(2).

(v) Change in the land use for a cleanup site. Where there is an actual or proposed change in use of an area cleaned up to the levels of a low occupancy area, and the exposure of people or animal life in or at that area could reasonably be expected to increase, resulting in a change in status from a low occupancy area to a high occupancy area, the owner of the area shall clean up the area in accordance with the high occupancy area cleanup levels in paragraphs (a)(4)(i) through (a)(4)(iv) of this section.

(vi) The EPA Regional Administrator, as part of his or her response to a notification submitted in accordance with Sec. 761.61(a)(3) of this part, may require cleanup of the site, or portions of

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it, to more stringent cleanup levels than are otherwise required in this section, based on the proximity to areas such as residential dwellings, hospitals, schools, nursing homes, playgrounds, parks, day care centers, endangered species habitats, estuaries, wetlands, national parks, national wildlife refuges, commercial fisheries, and sport fisheries.

(5) Site cleanup. In addition to the options set out in this paragraph, PCB disposal technologies approved under Secs. 761.60 and 761.70 are acceptable for on-site self-implementing PCB remediation waste disposal within the confines of the operating conditions of the respective approvals.

(i) Bulk PCB remediation waste. Any person cleaning up bulk PCB remediation waste shall do so to the levels in paragraph (a)(4)(i) of this section.

(A) Any person cleaning up bulk PCB remediation waste on-site using a soil washing process may do so without EPA approval, subject to all of the following:

(1) A non-chlorinated solvent is used.

(2) The process occurs at ambient temperature.

(3) The process is not exothermic.

(4) The process uses no external heat.

(5) The process has secondary containment to prevent any solvent from being released to the underlying or surrounding soils or surface waters.

(6) Solvent disposal, recovery, and/or reuse is in accordance with relevant provisions of approvals issued according to paragraphs (b)(1) or (c) of this section or applicable paragraphs of Sec. 761.79.

(B) Bulk PCB remediation waste may be sent off-site for decontamination or disposal in accordance with this paragraph, provided the waste is either dewatered on-site or transported off-site in containers meeting the requirements of the DOT Hazardous Materials Regulations (HMR) at 49 CFR parts 171 through 180.

(1) Removed water shall be disposed of according to paragraph (b)(1) of this section.

(2) Any person disposing off-site of dewatered bulk PCB remediation waste shall do so as follows:

(i) Unless sampled and analyzed for disposal according to the procedures set out in Sec. Sec. 761.283, 761.286, and 761.292, the bulk PCB remediation waste shall be assumed to contain ≥50 ppm PCBs.

(ii) Bulk PCB remediation wastes with a PCB concentration of <50 ppm shall be disposed of in accordance with paragraph (a)(5)(v)(A) of this section.

(iii) Bulk PCB remediation wastes with a PCB concentration ≥50 ppm shall be disposed of in a hazardous waste landfill permitted by EPA under section 3004 of RCRA, or by a State authorized under section 3006 of RCRA, or a PCB disposal facility approved under this part.

(iv) The generator must provide written notice, including the quantity to be shipped and highest concentration of PCBs (using extraction EPA Method 3500B/3540C or Method 3500B/3550B followed by chemical analysis using EPA Method 8082 in SW-846 or methods validated under subpart Q of this part) at least 15 days before the first shipment of bulk PCB remediation waste from each cleanup site by the generator, to each off-site facility where the waste is destined for an area not subject to a TSCA PCB Disposal Approval.

(3) Any person may decontaminate bulk PCB remediation waste in accordance with Sec. 761.79 and return the waste to the cleanup site for disposal as long as the cleanup standards of paragraph (a)(4) of this section are met.

(ii) Non-porous surfaces. PCB remediation waste non-porous surfaces shall be cleaned on-site or off-site for disposal on-site, disposal off-site, or use, as follows:

(A) For on-site disposal, non-porous surfaces shall be cleaned on-site or off-site to the levels in paragraph (a)(4)(ii) of this section using:

(1) Procedures approved under Sec. 761.79.

(2) Technologies approved under Sec. 761.60(e).

(3) Procedures or technologies approved under paragraph (c) of this section.

(B) For off-site disposal, non-porous surfaces:

(1) Having surface concentrations <100 $\mu g/100\ cm^2$ shall be disposed of in accordance with paragraph (a)(5)(i)(B)(2)(ii) of this section. Metal

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surfaces may be thermally decontaminated in accordance with Sec. 761.79(c)(6)(i).

(2) Having surface concentrations $\geq 100\ \mu g/100\ cm^2$ shall be disposed of in accordance with paragraph (a)(5)(i)(B)(2)(iii) of this section. Metal surfaces may be thermally decontaminated in accordance with Sec. 761.79(c)(6)(ii).

(C) For use, non-porous surfaces shall be decontaminated on-site or off-site to the standards specified in Sec. 761.79(b)(3) or in accordance with Sec. 761.79(c).

(iii) Porous surfaces. Porous surfaces shall be disposed on-site or off-site as bulk PCB remediation waste according to paragraph (a)(5)(i) of this section or decontaminated for use according to Sec. 761.79(b)(4), as applicable.

(iv) Liquids. Any person disposing of liquid PCB remediation waste shall either:

(A) Decontaminate the waste to the levels specified in Sec. 761.79(b)(1) or (b)(2).

(B) Dispose of the waste in accordance with paragraph (b) of this section or an approval issued under paragraph (c) of this section.

(v) Cleanup wastes. Any person generating the following wastes during and from the cleanup of PCB remediation waste shall dispose of or reuse them using one of the following methods:

(A) Non-liquid cleaning materials and personal protective equipment waste at any concentration, including non-porous surfaces and other non-liquid materials such as rags, gloves, booties, other disposable personal protective equipment, and similar materials resulting from cleanup activities shall be either decontaminated in accordance with Sec. 761.79(b) or (c), or disposed of in one of the following facilities, without regard to the requirements of subparts J and K of this part:

(1) A facility permitted, licensed, or registered by a State to manage municipal solid waste subject to part 258 of this chapter.

(2) A facility permitted, licensed, or registered by a State to manage non-municipal non-hazardous waste subject to Sec. Sec. 257.5 through 257.30 of this chapter, as applicable.

(3) A hazardous waste landfill permitted by EPA under section 3004 of RCRA, or by a State authorized under section 3006 of RCRA.

(4) A PCB disposal facility approved under this part.

(B) Cleaning solvents, abrasives, and equipment may be reused after decontamination in accordance with Sec. 761.79.

(6) Cleanup verification--(i) Sampling and analysis. Any person collecting and analyzing samples to verify the cleanup and on-site disposal of bulk PCB remediation wastes and porous surfaces must do so in accordance with subpart O of this part. Any person collecting and analyzing samples from non-porous surfaces must do so in accordance with subpart P of this part. Any person collecting and analyzing samples from liquids must do so in accordance with Sec. 761.269. Any person conducting interim sampling during PCB remediation waste cleanup to determine when to sample to verify that cleanup is complete, may use PCB field screening tests.

(ii) Verification. (A) Where sample analysis results in a measurement of PCBs less than or equal to the levels specified in paragraph (a)(4) of this section, self-implementing cleanup is complete.

(B) Where sample analysis results in a measurement of PCBs greater than the levels specified in paragraph (a)(4) of this section, self-implementing cleanup of the sampled PCB remediation waste is not complete. The owner or operator of the site must either dispose of the sampled PCB remediation waste, or reclean the waste represented by the sample and reinitiate sampling and analysis in accordance with paragraph (a)(6)(i) of this section.

(7) Cap requirements. A cap means, when referring to on-site cleanup and disposal of PCB remediation waste, a uniform placement of concrete, asphalt, or similar material of minimum thickness spread over the area where remediation waste was removed or left in place in order to prevent or minimize human exposure, infiltration of water, and erosion. Any person designing and constructing a cap must do so in accordance with Sec. 264.310(a) of this chapter, and ensure that it complies with the permeability, sieve, liquid limit, and plasticity index parameters in Sec. 761.75(b)(1)(ii) through (b)(1)(v). A

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cap of compacted soil shall have a minimum thickness of 25 cm (10 inches). A concrete or asphalt cap shall have a minimum thickness of 15 cm (6 inches). A cap must be of sufficient strength to maintain its effectiveness and integrity during the use of the cap surface which is exposed to the environment. A cap shall not be contaminated at a level ≥1 ppm PCB per AroclorTM (or equivalent) or per congener. Repairs shall begin within 72 hours of discovery for any breaches which would impair the integrity of the cap.

(8) Deed restrictions for caps, fences and low occupancy areas. When a cleanup activity conducted under this section includes the use of a fence or a cap, the owner of the site must maintain the fence or cap, in perpetuity. In addition, whenever a cap, or the procedures and requirements for a low occupancy area, is used, the owner of the site

must meet the following conditions:

(i) Within 60 days of completion of a cleanup activity under this section, the owner of the property shall:

(A) Record, in accordance with State law, a notation on the deed to the property, or on some other instrument which is normally examined during a title search, that will in perpetuity notify any potential purchaser of the property:

(1) That the land has been used for PCB remediation waste disposal and is restricted to use as a low occupancy area as defined in Sec. 761.3.

(2) Of the existence of the fence or cap and the requirement to maintain the fence or cap.

(3) The applicable cleanup levels left at the site, inside the fence, and/or under the cap.

(B) Submit a certification, signed by the owner, that he/she has recorded the notation specified in paragraph (a)(8)(i)(A) of this section to the EPA Regional Administrator.

(ii) The owner of a site being cleaned up under this section may remove a fence or cap after conducting additional cleanup activities and achieving cleanup levels, specified in paragraph (a)(4) of this section, which do not require a cap or fence. The owner may remove the notice on the deed no earlier than 30 days after achieving the cleanup levels specified in this section which do not require a fence or cap.

(9) Recordkeeping. For paragraphs (a)(3), (a)(4), and (a)(5) of this section, recordkeeping is required in accordance with Sec. 761.125(c)(5).

(b) Performance-based disposal. (1) Any person disposing of liquid PCB remediation waste shall do so according to Sec. 761.60(a) or (e), or decontaminate it in accordance with Sec. 761.79.

(2) Any person disposing of non-liquid PCB remediation waste shall do so by one of the following methods:

(i) Dispose of it in a high temperature incinerator approved under Sec. 761.70(b), an alternate disposal method approved under Sec. 761.60(e), a chemical waste landfill approved under Sec. 761.75, or in a facility with a coordinated approval issued under Sec. 761.77.

(ii) Decontaminate it in accordance with Sec. 761.79.

(3) Any person may manage or dispose of material containing <50 ppm PCBs that has been dredged or excavated from waters of the United States:

(i) In accordance with a permit that has been issued under section 404 of the Clean Water Act, or the equivalent of such a permit as provided for in regulations of the U.S. Army Corps of Engineers at 33 CFR part 320.

(ii) In accordance with a permit issued by the U.S. Army Corps of Engineers under section 103 of the Marine Protection, Research, and Sanctuaries Act, or the equivalent of such a permit as provided for in regulations of the U.S. Army Corps of Engineers at 33 CFR part 320.

(c) Risk-based disposal approval. (1) Any person wishing to sample, cleanup, or dispose of PCB remediation waste in a manner other than prescribed in paragraphs (a) or (b) of this section, or store PCB remediation waste in a manner other than prescribed in Sec. 761.65, must apply in writing to the EPA Regional Administrator in the Region where the sampling, cleanup, disposal or storage site is located, for

sampling, cleanup, disposal or storage occurring in a single EPA Region; or to the Director of the National Program Chemicals Division, for sampling, cleanup, disposal or storage occurring in more than one EPA Region. Each application must contain information described in

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the notification required by Sec. 761.61(a)(3). EPA may request other information that it believes necessary to evaluate the application. No person may conduct cleanup activities under this paragraph prior to obtaining written approval by EPA.

(2) EPA will issue a written decision on each application for a risk-based method for PCB remediation wastes. EPA will approve such an application if it finds that the method will not pose an unreasonable risk of injury to health or the environment.

[63 FR 35448, June 29, 1998, as amended at 64 FR 33761, June 24, 1999]

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Sec. 761.65 **Storage for disposal.**

This section applies to the storage for disposal of PCBs at concentrations of 50 ppm or greater and PCB Items with PCB concentrations of 50 ppm or greater.

(a)(1) Storage limitations. Any PCB waste shall be disposed of as required by subpart D of this part within 1-year from the date it was determined to be PCB waste and the decision was made to dispose of it. This date is the date of removal from service for disposal and the point at which the 1-year time frame for disposal begins. PCB/radioactive waste removed from service for disposal is exempt from the 1-year time limit provided that the provisions at paragraphs (a)(2)(ii) and (a)(2)(iii) of this section are followed and the waste is managed in accordance with all other applicable Federal, State, and local laws and regulations for the management of radioactive material.

(2) One-year extension. Any person storing PCB waste that is subject to the 1-year time limit for storage and disposal in paragraph (a)(1) of this section may provide written notification to the EPA Regional Administrator for the Region in which the PCB waste is stored that their continuing attempts to dispose of or secure disposal for their waste within the 1-year time limit have been unsuccessful. Upon receipt of the notice by the EPA Regional Administrator, the time for disposal is automatically extended for 1 additional year (2 years total) if the following conditions are met:

(i) The notification is received by the EPA Regional Administrator at least 30 days before the initial 1-year time limit expires and the notice identifies the storer, the types, volumes, and locations of the waste and the reasons for failure to meet the initial 1-year time limit.

(ii) A written record documenting all continuing attempts to secure disposal is maintained until the waste is disposed of.

(iii) The written record required by paragraph (a)(2)(ii) of this section is available for inspection or submission if requested by EPA.

(iv) Continuing attempts to secure disposal were initiated within

270 days after the time the waste was first subject to the 1-year time limit requirement, as specified in paragraph (a)(1) of this section. Failure to initiate and continue attempts to secure disposal throughout the total time the waste is in storage shall automatically disqualify the notifier from receiving an automatic extension under this section.

(3) Additional extensions. Upon written request, the EPA Regional Administrator for the Region in which the wastes are stored or the Director, National Program Chemicals Division, may grant additional extensions beyond the 1-year extension authorized in paragraph (a)(2) of this section. At the time of the request, the requestor must supply specific justification for the additional extension and indicate what measures the requestor is taking to secure disposal of the waste or indicate why disposal could not be conducted during the period of the prior extension. The EPA Regional Administrator or the Director, National Program Chemicals Division may require, as a condition to granting any extension under this section, specific actions including, but not limited to, marking, inspection, recordkeeping, or financial assurance to ensure that the waste does not pose an unreasonable risk of injury to health or the environment.

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(4) Storage at an approved facility. Increased time for storage may be granted as a condition of any TSCA PCB storage or disposal approval, by the EPA Regional Administrator for the Region in which the PCBs or PCB Items are to be stored or disposed of, or by the Director, National Program Chemicals Division, if EPA determines that there is a demonstrated need or justification for additional time, that the owner or operator of the facility is pursuing relevant treatment or disposal options, and that no unreasonable risk of injury to health or the environment will result from the increased storage time. In making this determination, EPA will consider such factors as absence of any approved treatment technology and insufficient time to complete the treatment or destruction process. EPA may require as a condition of the approval that the owner or operator submit periodic progress reports.

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(c)(1) The following PCB Items may be stored temporarily in an area that does not comply with the requirements of paragraph (b) of this section for up to thirty days from the date of their removal from service, provided that a notation is attached to the PCB Item or a PCB Container (containing the item) indicating the date the item was removed from service:

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(i) Non-leaking PCB Articles and PCB Equipment;

(ii) Leaking PCB Articles and PCB Equipment if the PCB Items are placed in a non-leaking PCB Container that contains sufficient sorbent materials to absorb any liquid PCBs remaining in the PCB Items;

(iii) PCB Containers containing non-liquid PCBs such as contaminated soil, rags, and debris; and

(iv) PCB containers containing liquid PCBs at concentrations of [ge]50 ppm, provided a Spill Prevention, Control and Countermeasure Plan has been prepared for the temporary storage area in accordance with part 112 of this chapter and the liquid PCB waste is in packaging authorized in the DOT Hazardous Materials Regulations at 49 CFR parts 171 through 180 or stationary bulk storage tanks (including rolling stock such as, but not limited to, tanker trucks, as specified by DOT).

(2) Non-leaking and structurally undamaged PCB Large High Voltage Capacitors and PCB-Contaminated Electrical Equipment that have not been drained of free flowing dielectric fluid may be stored on pallets next to a storage facility that meets the requirements of paragraph (b) of this section. PCB-Contaminated Electrical Equipment that has been drained of free flowing dielectric fluid is not subject to the storage provisions of Sec. 761.65. Storage under this subparagraph will be permitted only when the storage facility has immediately available unfilled storage space equal to 10 percent of the volume of capacitors and equipment stored outside the facility. The capacitors and equipment temporarily stored outside the facility shall be checked for leaks weekly.

(3) Any storage area subject to the requirements of paragraph (b) or paragraph (c)(1) of this section shall be marked as required in subpart C Sec. 761.40(a)(10).

(4) No item of movable equipment that is used for handling PCBs and PCB Items in the storage units and that comes in direct contact with PCBs shall be removed from the storage unit area unless it has been decontaminated as specified in Sec. 761.79.

(5) All PCB Items in storage shall be checked for leaks at least once every 30 days. Any leaking PCB Items and their contents shall be transferred immediately to properly marked non-leaking containers. Any spilled or leaked materials shall be immediately cleaned up and the materials and residues containing PCBs shall be disposed of in accordance with Sec. 761.61. Records of inspections, maintenance, cleanup and disposal must be maintained in accordance with Sec. 761.180(a) and (b).

(6) Except as provided in paragraphs (c)(6)(i) and (c)(6)(ii) of this section, any container used for the storage of liquid or non-liquid PCB waste shall be in accordance with the requirements set forth in the DOT Hazardous Materials Regulations (HMR) at 49 CFR parts 171 through 180. PCB waste not subject to the HMR (i.e., PCB wastes at concentrations of <20 ppm or <1 pound of PCBs regardless of concentration) must be packaged in accordance with Packaging Group III, unless other hazards associated with the PCB waste cause it to require packaging in accordance with Packaging Groups I or II. For purposes of describing PCB waste not subject to DOT's HMR on a manifest, one may use the term "Non-DOT Regulated PCBs."

(i) Containers other than those meeting HMR performance standards may be used for storage of PCB/radioactive waste provided the following requirements are met:

(A) Containers used for storage of liquid PCB/radioactive wastes must be non-leaking.

(B) Containers used for storage of non-liquid PCB/ radioactive wastes must be designed to prevent the buildup of liquids if such containers are stored in an area meeting the containment requirements of

paragraph (b)(1)(ii) of this section, as well as all other applicable State or Federal regulations or requirements for control of radioactive materials.

(C) Containers used to store both liquid and non-liquid PCB/ radioactive wastes must meet all regulations and requirements pertaining to nuclear criticality safety. Acceptable container materials currently include polyethylene and stainless steel provided that the container material is chemically compatible with the wastes being stored. Other containers may be used

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to store both liquid and non-liquid PCB/radioactive wastes if the users are able to demonstrate, to the appropriate Regional Administrator and other appropriate regulatory authorities (i.e., Nuclear Regulatory Commission, Department of Energy or the Department of Transportation), that the use of such containers is protective of health and the environment as well as public health and safety.

(ii) The following DOT specification containers that conform to the requirements of 49 CFR, chapter I, subchapter C in effect on September 30, 1991, may be used for storage and transportation activities that are not subject to DOT regulation, and may be used on a transitional basis as permitted at 49 CFR 171.14. For liquid PCBs: Specification 5 container without removable head, Specification 5B container without removable head, Specification 6D overpack with Specification 2S or 2SL polyethylene containers, or Specification 17E container. For non-liquid PCBs: Specification 5 container, Specification 5B container, or Specification 17C container.

(7) Stationary storage containers for liquid PCBs can be larger than the containers specified in paragraph (c)(6) of this section provided that:

(i) The containers are designed, constructed, and operated in compliance with Occupational Safety and Health Standards, 29 CFR 1910.106, Flammable and combustible liquids. Before using these containers for storing PCBs, the design of the containers must be reviewed to determine the effect on the structural safety of the containers that will result from placing liquids with the specific gravity of PCBs into the containers (see 29 CFR 1910.106(b)(1)(i)(f)).

(ii) The owners or operators of any facility using containers described in paragraph (c)(7)(i) of this section, shall prepare and implement a Spill Prevention Control and Countermeasure (SPCC) Plan as described in part 112 of this title. In complying with 40 CFR part 112, the owner or operator shall read "oil(s)" as "PCB(s)" whenever it appears. The exemptions for storage capacity, 40 CFR 112.1(d)(2), and the amendment of SPCC plans by the Regional Administrator, 40 CFR 112.4, shall not apply unless some fraction of the liquids stored in the container are oils as defined by section 311 of the Clean Water Act.

(8) PCB Items shall be dated on the item when they are removed from service for disposal. The storage shall be managed so that the PCB Items can be located by this date. Storage containers provided in paragraph (c)(7) of this section, shall have a record that includes for each batch of PCBs the quantity of the batch and date the batch was added to the container. The record shall also include the date, quantity, and

disposition of any batch of PCBs removed from the container.

(9) Bulk PCB remediation waste or PCB bulk product waste may be stored at the clean-up site or site of generation for 180 days subject to the following conditions:

(i) The waste is placed in a pile designed and operated to control dispersal of the waste by wind, where necessary, by means other than wetting.

(ii) The waste must not generate leachate through decomposition or other reactions.

(iii) The storage site must have:

(A) A liner that is designed, constructed, and installed to prevent any migration of wastes off or through the liner into the adjacent subsurface soil, ground water or surface water at any time during the active life (including the closure period) of the storage site. The liner may be constructed of materials that may allow waste to migrate into the liner. The liner must be:

(1) Constructed of materials that have appropriate chemical properties and sufficient strength and thickness to prevent failure due to pressure gradients (including static head and external hydrogeologic forces), physical contact with the waste or leachate to which they are exposed, climatic conditions, the stress of installation, and the stress of daily operation.

(2) Placed upon a foundation or base capable of providing support to the liner and resistance to pressure gradients above and below the liner to prevent failure of the liner due to settlement, compression, or uplift.

(3) Installed to cover all surrounding earth likely to be in contact with the waste.

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(B) A cover that meets the requirements of paragraph (c)(9)(iii)(A) of this section, is installed to cover all of the stored waste likely to be contacted with precipitation, and is secured so as not to be functionally disabled by winds expected under normal seasonal meteorological conditions at the storage site.

(C) A run-on control system designed, constructed, operated, and maintained such that:

(1) It prevents flow onto the stored waste during peak discharge from at least a 25-year storm.

(2) It collects and controls at least the water volume resulting from a 24-hour, 25-year storm. Collection and holding facilities (e.g., tanks or basins) must be emptied or otherwise managed expeditiously after storms to maintain design capacity of the system.

(iv) The provisions of this paragraph may be modified under Sec. 761.61(c).

(10) Owners or operators of storage facilities shall establish and maintain records as provided in Sec. 761.180.

(Sec. 6, Pub. L. 94-469, 90 Stat. 2020 (15 U.S.C. 2605)

[44 FR 31542, May 31, 1979. Redesignated at 47 FR 19527, May 6, 1982, and amended at 47 FR 37359, Aug. 8, 1982; 49 FR 28191, July 10, 1984; 53

FR 12524, Apr. 15, 1988; 54 FR 52746, Dec. 21, 1989; 55 FR 695, Jan. 8, 1990; 55 FR 26205, June 27, 1990; 58 FR 15809, Mar. 24, 1993; 58 FR 34205, June 23, 1993; 58 FR 59374, Nov. 9, 1993; 63 FR 35439, 35452, June 29, 1998]

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Sec. 761.79 **Decontamination standards and procedures.**

(b) Decontamination standards. Chopping (including wire chopping), distilling, filtering, oil/water separation, spraying, soaking, wiping, stripping of insulation, scraping, scarification or the use of abrasives or solvents may be used to remove or separate PCBs, to the following standards, from liquids, concrete, or non-porous surfaces.

(1) The decontamination standard for water containing PCBs is:

(i) Less than 200 μg/L (i.e., <200 ppb PCBs) for non-contact use in a closed system where there are no releases;

(ii) For water discharged to a treatment works (as defined in Sec. 503.9(aa) of this chapter) or to navigable waters, <3 μg/L (approximately <3 ppb) or a PCB discharge limit included in a permit issued under section 307(b) or 402 of the Clean Water Act; or

(iii) Less than or equal to 0.5 μg/L (i.e., approximately ≤0.5 ppb PCBs) for unrestricted use.

(2) The decontamination standard for organic liquids and non-aqueous inorganic liquids containing PCBs is <2 milligrams per kilogram (i.e., <2 ppm PCBs).

(3) The decontamination standard for non-porous surfaces in contact with liquid and non-liquid PCBs is:

(i) For unrestricted use:

(A) For non-porous surfaces previously in contact with liquid PCBs at any concentration, where no free-flowing liquids are currently present, ≤10 micrograms PCBs per 100 square centimeters (≤10 μg/100 cm^2) as measured by a standard wipe test (Sec. 761.123) at locations selected in accordance with subpart P of this part.

(B) For non-porous surfaces in contact with non-liquid PCBs (including non-porous surfaces covered with a porous surface, such as paint or coating on metal), cleaning to Visual Standard No. 2, Near-White Blast Cleaned Surface Finish, of the National Association of Corrosion Engineers (NACE). A person shall verify compliance with standard No. 2 by visually inspecting all cleaned areas.

(ii) For disposal in a smelter operating in accordance with Sec. 761.72(b):

(A) For non-porous surfaces previously in contact with liquid PCBs at any concentration, where no free-flowing liquids are currently present, <100 μg/100 cm^2 as measured by a standard wipe test (Sec. 761.123) at locations selected in accordance with subpart P of this part.

(B) For non-porous surfaces in contact with non-liquid PCBs (including non-porous surfaces covered with a porous surface, such as paint or coating on metal), cleaning to Visual Standard No. 3, Commercial Blast Cleaned Surface Finish, of the National Association of Corrosion Engineers (NACE). A person shall verify compliance with

standard No. 3 by visually inspecting all cleaned areas.

(4) The decontamination standard for concrete is ≤ 10 μg/100 cm^2 as measured by a standard wipe test (Sec. 761.123) if the decontamination procedure is commenced within 72 hours of the initial spill of PCBs to the concrete or portion thereof being decontaminated.

[63 FR 35457, June 29, 1998, as amended at 64 FR 33761, June 24, 1999]

Subpart G--PCB Spill Cleanup Policy

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Sec. 761.125 **Requirements for PCB spill cleanup.**

(c) Requirements for cleanup of high-concentration spills and low-concentration spills involving 1 pound or more PCBs by weight (270 gallons or more of untested mineral oil). Cleanup of low-concentration spills involving 1 lb or more PCBs by weight and of all spills of materials other than low-concentration materials shall be considered complete if all of the immediate requirements, cleanup standards, sampling, and recordkeeping requirements of paragraphs (c) (1) through (5) of this section are met.

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(5) Records. The responsible party shall document the cleanup with records of decontamination. The records must be maintained for a period of 5 years. The records and certification shall consist of the following:

(i) Identification of the source of the spill, e.g., type of equipment.

(ii) Estimated or actual date and time of the spill occurrence.

(iii) The date and time cleanup was completed or terminated (if cleanup was delayed by emergency or adverse weather: the nature and duration of the delay).

(iv) A brief description of the spill location and the nature of the materials contaminated. This information should include whether the spill occurred in an outdoor electrical substation, other restricted access location, or in a nonrestricted access area.

(v) Precleanup sampling data used to establish the spill boundaries if required because of insufficient visible traces and a brief description of the sampling methodology used to establish the spill boundaries.

(vi) A brief description of the solid surfaces cleaned.

(vii) Approximate depth of soil excavation and the amount of soil removed.

(viii) Postcleanup verification sampling data and, if not otherwise apparent from the documentation, a brief description of the sampling methodology and analytical technique used.

(ix) While not required for compliance with this policy, information

on the estimated cost of cleanup (by man-hours, dollars, or both) would be useful if maintained in the records.

[52 FR 10705, Apr. 2, 1987, as amended at 53 FR 40884, Oct. 19, 1988; 63 FR 35461, June 29, 1998]

Subpart N--Cleanup Site Characterization Sampling for PCB Remediation Waste in Accordance with Sec. 761.61(a)(2)

Source: 63 FR 35465, June 29, 1998, unless otherwise noted.

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Sec. 761.269 **Sampling liquid PCB remediation waste.**

(a) If the liquid is single phase, collect and analyze one sample. There are no required procedures for collecting a sample.

(b) If the liquid is multi-phasic, separate the phases, and collect and analyze a sample from each liquid phase. There are no required procedures for collecting a sample from each single phase liquid.

(c) If the liquid has a non-liquid phase which is <ls-thn-eq>0.5 percent by total weight of the waste, separate the non-liquid phase from the liquid phase and sample it separately as a non-liquid in accordance with Sec. 761.265.

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Subpart O--Sampling to Verify Completion of Self-Implementing Cleanup and On-Site Disposal of Bulk PCB Remediation Waste and Porous Surfaces in Accordance with Sec. 761.61(a)(6)

Source: 63 FR 35465, June 29, 1998, unless otherwise noted.

Sec. 761.283 **Determination of the number of samples to collect and sample collection locations.**

This section addresses how to determine the number of samples to collect and sample collection locations for bulk PCB remediation waste and porous surfaces destined to remain at a cleanup site after cleanup.

(a) Minimum number of samples. (1) At each separate cleanup site at a PCB remediation waste location, take a minimum of three samples for each type of bulk PCB remediation waste or porous surface at the cleanup site, regardless of the amount of each type of waste that is present. There is no upper limit to the number of samples required or allowed.

(2) This is an example of how to calculate the minimum number of required samples at a PCB remediation waste location. There are three distinct cleanup sites at this example location: a loading dock, a

transformer storage lot, and a disposal pit. The minimum number of samples to take appears in parentheses after each type of waste for each cleanup site. The PCB remediation wastes present at the loading dock are concrete (three samples) and clay soil (three samples). The non-liquid PCB remediation wastes present at the transformer storage lot are oily soil (three samples), clay soil (three samples) and gravel (three samples). The PCB remediation wastes present at the disposal pit are sandy soil (three samples), clay soil (three samples), oily soil (three samples), industrial sludge (three samples), and gravel (three samples).

(b) Selection of sample locations--general. (1)(i) Use a square-based grid system to overlay the entire area to be sampled. Orient the grid axes on a magnetic north-south line centered in the area and an east-west axis perpendicular to the magnetic north-south axis also centered in the area.

(ii) If the site is recleaned based on the results of cleanup verification conducted in accordance with Sec. 761.61(a)(6), follow the procedures in paragraph (b) of this section for locating sampling

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points after the recleaning, but reorient the grid axes established in paragraph (b)(1)(i) of this section by moving the origin one meter in the direction of magnetic north and one meter in the direction east of magnetic north.

(2) Mark out a series of sampling points 1.5 meters apart oriented to the grid axes. The sampling points shall proceed in every direction to the extent sufficient to result in a two-dimensional grid completely overlaying the sampling area.

(3) Collect a sample at each point if the grid falls in the cleanup area. Analyze all samples either individually or according to the compositing schemes provided in the procedures at Sec. 761.289. So long as every sample collected at a grid point is analyzed as either an individual sample or as part of a composite sample, there are no other restrictions on how many samples are analyzed.

(c) Selection of sample locations--small cleanup sites. When a cleanup site is sufficiently small or irregularly shaped that a square grid with a grid interval of 1.5 meters will not result in a minimum of three sampling points for each type of bulk PCB remediation waste or porous surface at the cleanup site, there are two options.

(1) Use a smaller square grid interval and the procedures in paragraph (b) of this section.

(2) Use the following coordinate-based random sampling scheme. If the site is recleaned based on the results of cleanup verification conducted in accordance with Sec. 761.61(a)(6), follow the procedures in this section for locating sampling points after the recleaning, but select three new pairs of sampling coordinates.

(i) Beginning in the southwest corner (lower left when facing magnetic north) of the area to be sampled, measure in centimeters (or inches) the maximum magnetic north-south dimension of the area to be sampled. Next, beginning in the southwest corner, measure in centimeters (or inches) the maximum magnetic east-west dimension of the area to be sampled. Designate the north-south and east-west dimensions (describing the west and south boundaries, respectively, of the area to be sampled),

as the reference axes of a square-based grid system.

(ii) Use a random number table or random number generator to select a pair of coordinates that will locate the sample within the area to be sampled. The first coordinate in the pair is the measurement on the north-south axis. The second coordinate in the pair is the measurement on the east-west axis. Collect the sample at the intersection of an east-west line drawn through the measured spot on the north-south axis, and a north-south line drawn through the measured spot on the east-west axis. If the cleanup site is irregularly shaped and this intersection falls outside the cleanup site, select a new pair of sampling coordinates. Continue to select pairs of sampling coordinates until three are selected for each type of bulk PCB remediation waste or porous surface at the cleanup site.

(d) Area of inference. Analytical results for an individual sample point apply to the sample point and to an area of inference extending to four imaginary lines parallel to the grid axes and one half grid interval distant from the sample point in four different directions. The area of inference forms a square around the sample point. The sides of the square are parallel to the grid axes and one grid interval in length. The sample point is in the center of the square area of inference. The area of inference from a composite sample is the total of the areas of the individual samples included in the composite.

Sec. 761.286 **Sample size and procedure for collecting a sample.**

At each selected sampling location for bulk PCB remediation waste or porous surfaces, collect at least 20 milliliters of waste, or a portion of sufficient weight for the chemical analyst to measure the concentration of PCBs and still have sufficient analytical detection sensitivity to reproducibly measure PCBs at the levels designated in Sec. 761.61(a)(4). Use a core sampler having a diameter ≥ 2 cm and ≤ 3 cm. Collect waste to a maximum depth of 7.5 cms.

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Sec. 761.292 **Chemical extraction and analysis of individual samples and composite samples.**

Use either Method 3500B/3540C or Method 3500B/3550B from EPA's SW-846, Test Methods for Evaluating Solid Waste, or a method validated under subpart Q of this part, for chemical extraction of PCBs from individual and composite samples of PCB remediation waste. Use Method 8082 from SW-846, or a method validated under subpart Q of this part, to analyze these extracts for PCBs.