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PCB Decontamination Methods for Achieving TSCA Compliance During Facility Decommissioning Projects

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PCB DECONTAMINATION METHODS FOR ACHIEVING TSCA COMPLIANCE DURING FACILITY DECOMMISSIONING PROJECTS

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ABSTRACT

Facility decommissioning projects often include an environmental component that involves the identification of chemicals and hazardous building materials used at the site, decontamination or abatement of those materials, and proper disposal. PCBs are one chemical hazard that may need to be addressed during the dismantling of older industrial facilities. The continued use and handling of PCB-containing materials are highly regulated, and their disposal can be very expensive. However, decontamination methods may be performed to allow PCB-contaminated equipment to be reused or scrapped, thereby minimizing waste volumes and reducing disposal costs. This paper summarizes decontamination approaches that may be used to achieve TSCA compliance during the decommissioning process.

INTRODUCTION

As our military and civilian industrial complex ages, buildings and facilities that can no longer be operated efficiently are being taken out of service and decommissioned. Decommissioning projects can range in scope from total facility demolition to selective dismantling that allows an adaptive reuse of existing structures. Many decommissioning projects include an environmental component, which involves the identification of hazardous building materials (e.g., asbestos or metals-based paint) used at the site, abatement or remediation of these materials, waste characterization, and proper disposal.

Other chemicals of concern are increasingly being identified in old facilities. Polychlorinated biphenyls (PCBs) are one group of chemical compounds that historically were used in some older industrial systems and may need to be addressed during decommissioning projects. PCBs may be present in building components including oil-filled transformers and capacitors, high-voltage electrical cable and junction boxes, voltage regulators, temperature-resistant paints, and other insulating building materials. PCBs may be present in natural gas transmission systems, specifically at compressor stations. PCBs also may be present on building surfaces such as floors and equipment from spills or other process activities.

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The use, handling, and disposal of PCBs are highly regulated by the U. S. Environmental Protection Agency (USEPA) under the authority of the Toxic Substance Control Act (TSCA). Therefore, it is important that PCB-containing materials be identified during the dismantling process and be addressed according to the applicable regulations. It is possible to dispose of many PCB-contaminated materials at a TSCA-approved landfill, but the cost is often high. Decontamination of the PCB-affected materials is an alternative that can be implemented under some circumstances to allow reuse or scrapping with reduced TSCA waste volumes and cost. This paper was prepared to summarize the PCB decontamination approaches that may be used to achieve compliance with the USEPA PCB regulations during decommissioning projects.

BACKGROUND

Polychlorinated biphenyls (PCBs) are a mixture of chlorine atoms and biphenyl molecules that combine to form complex chlorinated organic compounds. They were manufactured and widely used in the United States from the 1940s through 1978. The chemical characteristics of PCBs made them desirable for use because of their electrical insulating properties and low flammability. Prior to 1978, PCBs were widely used in transformer and capacitor oils, paints, oil-impregnated electrical cable, and other insulating materials.

The manufacture and unauthorized use of PCBs were banned by the USEPA in 1978 because of concerns about PCB carcinogenicity and bioaccumulation in humans and the ecosystem. Under the authority granted by TSCA, the USEPA regulated the manufacture, sale, use, cleanup, and disposal of PCBs at the federal level under the extensive regulations promulgated in Title 40, Part 761 of the Code of Federal Regulations (40 CFR 761). These regulations were substantially revised on 28 June 1998 with the adoption of the PCB Disposal Amendments, which, among other things, specified decontamination allowances for PCB-contaminated materials.

Materials are defined as being PCB-contaminated if they contain PCB concentrations exceeding the thresholds identified in the 40 CFR 761 regulations. Oil and liquids containing PCB concentrations of greater than or equal to 50 parts per million (ppm), porous materials having PCBs greater than or equal to 50 mg/kg, and non-porous materials having PCB surface concentrations greater than or equal to 10 μg/100 cm^2 are considered to be PCB-contaminated and subject to the TSCA regulations. Prior to June 1998, materials were characterized based on the PCB concentration found at the original source of PCBs, regardless of the concentration in or on the affected media. However, the June 1998 PCB Disposal Amendments clarified that PCB-affected materials may be managed according to the as-found PCB concentration, regardless of the source concentration, if proper characterization sampling first is performed. Materials that are PCB-contaminated are regulated for disposal according to the TSCA regulations in 761.60.

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The decontamination of PCB-contaminated materials to allow their reuse and distribution in commerce is an alternative to disposal. The TSCA PCB regulations specify standards and procedures for decontaminating PCBs from water, organic liquids, nonporous surfaces, and porous media such as concrete. The decontamination provisions of the regulations generally are found in 40 CFR 761.79. Self-implementing and performance-based decontamination standards are identified, as well as a process for pursuing USEPA approval of alternative decontamination methods not described in the rules. Decontamination procedures for specific equipment, such as transformers, where PCBs commonly were used in the past, also are described in 761.60(b).

The decontamination approaches described in the regulations depend largely on whether the affected material is solid or liquid, and whether solid materials are porous materials such as soil, concrete, and wood, or nonporous materials such as metal. The decontamination approaches outlined in the remainder of this paper are described on this basis.

DECONTAMINATION OF NONPOROUS MATERIALS

Nonporous materials such as equipment, piping, and containers affected by PCB concentrations greater than or equal to 10 $\mu g/100\ cm^2$ on exposed surfaces are regulated for use and disposal by 40 CFR 761.60 and 761.61. During a decommissioning project, nonporous materials found to contain PCB concentrations at or above this threshold must be disposed of in a TSCA-approved landfill or smelted in an industrial furnace that meets the requirements of the regulations unless it is decontaminated. Such materials may be scrapped or reused only if the PCBs are reduced to lower concentrations through the decontamination procedures described in 761.79.

Chemical and mechanical methods can be used to decontaminate PCBs from nonporous surfaces. The regulations state that methods including 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 from nonporous surfaces, as applicable. The method that is most appropriate depends on the location of the PCB-affected surface (i.e., interior or exterior) and whether the affected media is painted or covered with another sort of coating.

Regardless of the methods used, the decontamination process should render the PCB-affected material in a condition that meets the performance criteria specified in 761.79(b). For unrestricted use, the decontamination method should reduce the PCB concentrations on unpainted nonporous surfaces to less than 10 $\mu g/100\ cm^2$ and on painted surfaces render the metal surface in a condition that meets the National Association of Corrosion Engineers (NACE) Visual Standard No. 2 for Near-White Blast Cleaned Surfaces. For disposal in a smelter, the decontamination method should reduce the PCBs on unpainted nonporous surfaces to less than 100 $\mu g/100\ cm^2$ and on painted surfaces render the metal surface in a condition that meets NACE Visual Standard No. 3 for Commercial Blast Cleaned Surfaces.

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Decontamination of Interior Components

Equipment such as transformers, hydraulic lifts, compressors, and piping may contain PCBs within interior oil-filled reservoirs. The interior surfaces of the PCB-contaminated reservoirs cannot be cleaned easily by mechanical means without disassembling or destroying the equipment. However, the PCB regulations generally allow interior reservoirs defined as PCB containers to be decontaminated using chemical flushing procedures. As described by 761.79(c)(1), reservoirs may be decontaminated by flushing the internal surfaces three times with a solvent that contains less than 50 ppm PCBs, with each rinse volume being equal to approximately 10 percent of the container's capacity. PCBs must be at least 5 percent soluble in the solvent that is selected for the decontamination process.

As described in 761.79(c)(3), equipment in contact with free-flowing mineral oil dielectric fluid containing less than 10,000 ppm PCBs should be drained of all oil and the residual surfaces should be allowed to drain for 15 hours. The surfaces to be decontaminated must then be soaked in a performance-based organic decontamination solvent, such as kerosene, diesel, or terpene hydrocarbons that contain less than 2 ppm for at least 15 hours. For equipment containing greater than 10,000 ppm PCBs, an additional 15-hour solvent resoaking should be performed after the initial solvent washing steps described above are performed. The drained oil and solvent must then be drained and disposed of according to the regulations.

Other requirements apply to the decontamination of certain types of equipment that commonly contained PCBs and have been specifically regulated by the USEPA. This equipment includes transformers and capacitors, hydraulic machines, and natural gas systems that may be encountered during facility decommissioning activities. Such equipment needs to be properly identified during the decommissioning process and characterized according to the USEPA 40 CFR 761 PCB regulations prior to its reuse, scrapping, or disposal. The disposal provisions in 761.60 or the decontamination procedures in 761.79 then need to be followed for this equipment.

Electrical transformers and capacitors may contain PCBs that are regulated for disposal and require decontamination during decommissioning. Section 761.60(b) of the regulations requires that PCB-contaminated transformers be drained of all free flowing oil, filled with a decontamination solvent such as kerosene, xylenes, or toluene for 18 hours, and then thoroughly drained of all solvents before being disposed of. PCB-contaminated capacitors cannot be decontaminated effectively and must be placed in a container meeting U.S. Department of Transportation (DOT) specifications in 49 CFR 171 through 180 prior to being disposed of in an approved landfill.

The oil in hydraulic equipment also may contain PCBs that are regulated for disposal and require decontamination during decommissioning. As described by 761.60(b)(4), the regulations indicate that decontamination by internal flushing may be required for the interior reservoirs of the hydraulic

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equipment depending on the PCB concentrations present. In cases where the hydraulic system contains PCB concentrations of less than 1,000 ppm in the oil, the regulations allow the equipment to be disposed of in an industrial incinerator meeting the requirements of the rule or disposed of in a landfill if all of the free flowing oil is drained. If the oil in the system contained PCB concentrations greater than or equal to 1,000 ppm, then the internal reservoirs of the system also need to be decontaminated in accordance with 761.79 by flushing with a solvent.

Lastly, natural gas pipeline systems also may contain PCBs that are regulated for disposal and require decontamination during decommissioning. According to 40 CFR 761.60(b)(5)(C), a PCB-contaminated pipeline may be abandoned in place if it is drained of all free flowing liquids and washed with a solvent, so long as 95% of the wash volume is recovered and the PCB concentration in the recovered solvent is less than 50 ppm. PCB-contaminated natural gas pipelines and compressors that are physically removed would need to be decontaminated according to the 761.79 procedures described above in order to be scrapped or disposed of in a landfill not approved for TSCA PCB wastes. Derivations of this approach may be applied depending on the size and nature of the gas pipelines involved, as described in the regulations.

Verification sampling of the inside of the PCB container generally is not required to confirm the effectiveness of the decontamination method. All that is required is that the specified solvent washing be performed and the PCB concentrations in the solvent before, during, and after the stipulated number of rinses do not equal or exceed 50 ppm.

Decontamination of Exterior Surfaces

The exterior surfaces of equipment, piping, and other nonporous surfaces can also be PCB-contaminated and regulated for disposal. For example, the exterior surfaces of equipment that was associated with a process involving PCBs may be affected as a result of spills or leaks from an interior oil reservoir. In general, any nonporous exterior surfaces having PCBs greater than or equal to 10 μg/100 cm^2 are an unauthorized use of PCBs and regulated for disposal. The equipment would need to be decontaminated prior to being removed for reuse, scrap, or disposal in a landfill not approved for TSCA PCB wastes. In addition, any paint coatings covering a nonporous surface that are affected with PCB concentrations greater or equal to 50 mg/kg in its bulk matrix or greater than 10 μg/100 cm^2 on its exposed surface also would need to be removed.

Nonporous surfaces that are not painted should be decontaminated using chemical solvent washing means as described by 40 CFR 761.79. The rules identify several methods depending on the type of material involved. As described in 761.79(c)(3), equipment in contact with free-flowing mineral oil dielectric fluid should be drained of all oil and allowed to drain for 15 hours. The surfaces to be decontaminated must then be soaked in a solvent such as kerosene, diesel, or terpene hydrocarbons for at least 15 hours. Equipment that contains free flowing mineral oil dielectric fluid with greater

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than 10,000 ppm PCBs should be decontaminated following the same approach, with the exception that an additional 15-hour solvent resoaking should be performed after the initial wash.

Movable equipment contaminated by PCBs and used in storage areas, tools, or sampling equipment may be decontaminated using other means. As described in 761.79(c)(2), this sort of equipment may be decontaminated by either applying the 15-hour solvent soaking procedure described above if practicable, swabbing the surfaces that have contacted PCBs with a solvent, or performing the 761 Subpart S double-wash-rinse procedure. The double-wash-rinse procedure involves several wash-rinse steps, including an initial water/detergent or solvent wash to clean the affected surfaces, a potable water rinse to remove residuals left from the initial wash, a solvent wash to decontaminate PCBs, and a final solvent rinse to clean and rinse the surface. As with other decontamination procedures described by the TSCA PCB regulations, a solvent meeting the performance-oriented decontamination fluid (PODF) requirement, such as kerosene, diesel, or terpene hydrocarbons, must be used. Any solvent in which PCBs are 5 percent or more soluble is acceptable. Woodyard, et. al., tested various solvents on a variety of porous and nonporous surfaces and found terpene hydrocarbons to be among the most effective.

After the above-mentioned solvent washing methods are performed, sampling is required to verify that decontamination has been achieved. As described by 761.79(b)(3), the surface decontamination standard to be achieved for nonporous materials that will be reused, scrapped, or disposed of in a landfill not approved for TSCA PCB wastes is less than 10 g/100 cm^2. The decontamination standard to be achieved for nonporous materials that will be destroyed in a smelter is less than 100 g/100 cm^2. Sampling should be performed as described in Subpart P of the regulations using a standard wipe test.

In situations where PCB-contaminated nonporous surfaces are coated with paint or primer, 761.79(a)(5) of the regulations require that the coating be removed as part of the PCB decontamination process. In cases where the equipment will be reused, scrapped, or disposed of in a landfill not approved to accept TSCA PCB wastes, the paint coatings should be removed to a bare metal surface meeting the National Association of Corrosion Engineers (NACE) Visual Standard 2. Cleaning to this standard results in a near-white blast-cleaned metal surface. PCB-contaminated equipment that will be destroyed in a smelter can be cleaned to NACE Visual Standard 3, a commercial blast finish not quite as clean as NACE visual standard 2. A certified NACE inspector or a competent individual using metal coupons that have been treated to this standard can confirm attainment of the standards.

Paint can be removed from nonporous surfaces to achieve the NACE standards either by mechanical or chemical means. Mechanical surface removal techniques including sandblasting, carbon dioxide (CO_2) blasting, and other manual methods could be used to remove the paint. Sandblasting involves blasting fine-grained, abrasive sand onto the PCB-contaminated surface to

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strip away paint and any oxidation on the nonporous surface below. CO_2 blasting, where pellets of frozen CO_2 are blasted against the affected surface, is a derivation of this process that can reduce waste volumes. Manual methods would involve the use of grinding and scraping tools to remove the paint. Chemical methods, such as the use of a chemical paint peeling products, could be used to remove the paint; however, the use of mechanical methods likely would still be required after chemical paint removal to treat the surfaces to the NACE visual standards.

Alternative Methods

Under some circumstances it may be necessary to consider alternative decontamination methods, such as the thermal or chemical treatment of painted nonporous surfaces, which are not described in the PCB regulations. In accordance with 761.79(h), alternative decontamination procedures may be performed to decontaminate nonporous surfaces, but only if they are first approved by the USEPA. Requests for alternative decontamination method approval must be submitted in writing to the USEPA in the region where the activity will take place. The application must describe the material to be decontaminated, the decontamination method to be used, and evidence that the proposed decontamination method is capable of cleaning the material in question to the applicable decontamination standards established in 761.79(b), such as the less than 10 $\mu g/100\ cm^2$ standard for unrestricted use.

DECONTAMINATION OF POROUS MATERIALS

Porous materials such as concrete, wood, and paint containing PCB concentrations greater than or equal to 50 mg/kg in its bulk media or 10 $\mu g/100\ cm^2$ on exposed surfaces represent an authorized use of PCBs and are regulated for disposal by the TSCA PCB regulations. During a decommissioning project, porous materials found to contain PCB concentrations at or above these thresholds must be disposed of in a TSCA-approved landfill unless they can somehow be decontaminated to allow continued use, scrapping, or less-restricted disposal. Due to restrictions on the distribution of PCBs in commerce, such materials generally may continue to be used in place only if the PCBs are reduced to lower concentrations following the 40 CFR 761.79 regulations.

The TSCA PCB regulations generally do not identify self-implementing procedures for decontaminating PCB-affected porous media. This is mostly likely due to the difficulty in removing PCBs from the bulk matrix of the porous materials. There are some exceptions, however. For example, 761.79 allows concrete affected by a PCB-containing oil spill less than 72 hours old to be cleaned using a solvent washing process, and 761.30(p) allows concrete affected by older spills to be cleaned by solvent washing to permit continued use of the surface while it remains in service for its originally intended use. Otherwise, PCB-contaminated porous materials affected by older spills cannot be decontaminated using a self-implementing procedure and must be removed for disposal unless an alternative decontamination process is proposed to and approved by the USEPA.

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Continued Use of Porous Surfaces

Porous materials affected by historical spills and having PCB concentrations of 10 g/100 cm^2 or greater on their surfaces (and presumably concentrations greater than or equal to 50 mg/kg in the bulk matrix) generally cannot be decontaminated without an alternative decontamination approval from the USEPA, and are regulated for disposal if removed during a decommissioning project. However, the authorization found in 40 CFR 761.30(p) allows the continued use of PCB-contaminated porous surfaces contaminated by spills of liquid PCBs so long as the surfaces are used for their originally intended purpose. This authorization allows PCB-contaminated porous surfaces to continue to be managed in-place for the remainder of their useful life provided that they are solvent washed, encapsulated , and marked as described in the rule. This provides a short-term alternative to surface removal and disposal.

The 761.30(p) use authorization requires that the porous surface be cleaned following the double-wash-rinse procedure described in 40 CFR 761 Subpart S. The Subpart S regulations provide two double-wash-rinse approaches that may be used. The first approach (761.372) is intended for clean surfaces free of grime and involves a double solvent wash-rinse. The second approach (761.375) is intended for dirty grease- and grime-coated surfaces and involves a detergent wash-rinse followed by a solvent wash-rinse. In general, the double-wash-rinse procedure involves several wash-rinse steps, including an initial water/detergent or solvent wash to clean the affected surfaces, a potable water rinse to remove residuals left from the initial wash, a solvent wash to decontaminate PCBs, and a final solvent rinse to clean and rinse the surface.

After the double-wash-rinse procedure is completed, the concrete floor must be encapsulated. Encapsulation involves sealing the porous surface with a liquid-applied coating or an adhesively bonded covering material to provide a barrier between any remaining PCBs and the surrounding environment. Non-reinforced liquid coatings are generally used to encapsulate indoor PCB-contaminated areas. Important properties to consider when choosing a coating include elongation (i.e., its elasticity or rigidity), dry film thickness, hardness, drying or curing time, and compatibility with existing surfaces. Epoxy-type coatings are widely used for PCB encapsulation. Epoxy coatings generally consist of a three-part epoxy-polyamide coating applied in a primer layer, clad leveler, and surface layer. Encapsulants applied to floors should include two coatings of contrasting color to indicate when resurfacing is required due to wear.

Porous Surface Removal

The 761.30(p) use authorization is intended for the continued use of PCB-contaminated porous surfaces for its originally intended use. The USEPA has stated that changes in the use of a building or the surface invalidate the applicability of the use authorization. Therefore, during decommissioning

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projects involving the demolition of a structure or reuse of a building, the 761.30(p) use authorization should not be applied, and other removal or decontamination alternatives need to be considered.

Removal and proper disposal is often the fastest and most cost effective way to address PCB-contaminated porous materials. PCB-contaminated porous surfaces, such as concrete and wood, that are removed in large bulk quantities during demolition can simply be disposed of in a landfill, although adequate characterization sampling should be performed according to 761 Subpart N. Where the goal is to remove only the PCB-contaminated surface media and leave unaffected structures, the porous material can be removed in a fashion similar to soil removal. As removal progresses, bulk samples should be collected according to 761 Subpart N to measure residual contamination and Subpart O to verify completion. Mechanical surface removal methods that are available to address PCB-affected materials in this manner include sandblasting, scarifying, shot blasting, and scabbling. More intrusive measures such as jack hammers or concrete saws may be required in areas with deeper penetration of PCBs.

Sandblasting and shot blasting are the most commonly used techniques where PCB contamination is limited to the upper 0.5 centimeters (cm) of a porous media such as concrete. Sandblasting involves blasting fine-grained, abrasive sand onto the PCB-contaminated surface to strip away surface coatings and remove porous material below. Shot blasting involves shooting varying sizes of metal shot against the surface, and is more effective at bulk material removal. The shot is recovered in the process using a specially fitted vacuum system that separates the shot from PCB-contaminated residue.

Scarifying and scabbling are more applicable where PCBs extend deeper into the porous material (i.e., 1 to 5 cm penetration in concrete). Scarifiers contain a helical rotating cutting tool that is attached to a tractor or large mobile roller and used to remove a layer of concrete. Scabblers use small, high-pressure impact pistons to sequentially break up the concrete. Scabblers are generally smaller than scarifying units and have a lower concrete removal rate, but scabblers are more adaptable to different indoor environments. Both devices are able to shave off from 1/16 inch to 1/8 inch of concrete per pass.

Hydroblasting is a technique that involves the use of high-pressure (i.e., 1,000 to 60,000 pounds per square inch) washing of building walls, ceilings, and equipment surfaces. High-pressure water is sprayed against the PCB-contaminated surfaces, and the wash water is then collected and disposed of. Hydroblasting can be especially effective for removing paint and coating layers. Under very high pressure, it can also be used to cut and remove porous media such as concrete, but is generally less effective and results in more waste (i.e., contaminated water) than other available methods.

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Porous Surface Decontamination

Aside from the provisions for new spills and continued use, the TSCA PCB regulations provide no self-implementing procedures to decontaminate PCB-contaminated porous surfaces. However, in some cases, such as where the removal of concrete is not feasible for structural reasons, it may be necessary to consider decontamination methods. As previously described for nonporous surfaces, 761.79(h) allows alternative decontamination procedures to be performed to decontaminate PCB-contaminated porous surfaces, but only if they are first approved by the USEPA.

If approved by the USEPA as an alternative method, it may be possible to decontaminate a porous surface by solvent washing. Solvent washing could be performed following the Subpart S double-wash-rinse procedure or one of the other solvent washing procedures described in the rule. The procedure should use the performance-based organic decontamination solvents specified by the TSCA PCB-regulations, such as kerosene, diesel, or terpene hydrocarbons, or perhaps other chemicals such as TechXtract® (Bonem and Borah, 1995) and Capsur®, which have been marketed commercially for the decontamination of PCBs. PCBs should be at least 5 percent soluble in the selected solvent in order to comply with the requirements of the 40 CFR 761 regulations. It should be noted, however, that such procedures may be effective at removing PCBs from the surface of the porous material, but would not likely reduce PCB concentrations found at depth in the bulk porous media.

Some methods are commercially available for the decontamination of PCBs from concrete at greater depths into the porous media. For example, Phillip Services, Inc. of Houston, Texas offers a proprietary PCB concrete extraction method that utilizes specially designed chemicals to open concrete pores at depth and strip PCBs from the bulk concrete matrix. Hydrogen peroxide also may be used to destroy the PCBs as part of this process. This method is currently being tested at the Seaholm Power Plant in Austin, Texas for potential alternative decontamination approval by the USEPA.

DECONTAMINATION OF LIQUIDS

The 40 CFR 761.79 regulations indicate that liquids including water and organic fluids can be decontaminated. The decontamination standards that apply depend on whether the liquid is water or some other fluid, and the intended use of the water after decontamination. The USEPA decontamination standard for organic liquids and non-aqueous inorganic liquids defined by 761.79(b)(2) is less than 2 ppm. The decontamination standard for water is less than 200 ìg/L for non-contact use in a closed system, less than 3 ìg/L for discharge to a treatment works or navigable waterways, and less than 0.5 ìg/L for unrestricted use.

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The regulations indicate in 761.79(b) that distillation, filtration, and oil-water separation generally can be used as decontamination methods. Based on experience, treatment with activated carbon and filtration is often an effective way to reduce low concentration PCBs to levels meeting the USEPA decontamination standards. Other methods such as more aggressive oil-water separation, distillation, or other chemical treatments may be necessary for higher concentration PCBs in liquids. Generally it is easier to dispose of liquids with high-concentration PCBs by incineration instead of decontamination.

CONCLUSIONS

PCBs may be encountered in liquids and a variety of porous and nonporous materials during facility decommissioning projects. The TSCA PCB regulations promulgated by the USEPA in 40 CFR 761 regulate PCB-contaminated materials for disposal, requiring that these materials be properly identified and managed during decommissioning. Disposal of PCB-contaminated materials in a TSCA landfill is an approved approach that can be expensive. The regulations also allow decontamination methods to be performed so that PCB-contaminated materials can be cleaned for reuse, scrap, or disposal in a landfill not permitted to accept TSCA wastes, thereby minimizing TSCA waste volumes and reducing disposal costs. Under the right circumstances, particularly for nonporous surfaces, these decontamination methods may be used to achieve TSCA compliance and reduce costs during the decommissioning process.

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