



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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OFFICE OF
PREVENTION, PESTICIDES AND
TOXIC SUBSTANCES

MEMORANDUM

SUBJECT: Disassembling and Decontamination of PCB-Contaminated and PCB Transformers

FROM: Maria J. Doa, Director 
National Program Chemicals Division

TO: Regional TSCA Division Directors

Please see the following guidance regarding the applicability of the TSCA PCB regulations to intact cores from PCB-Contaminated and PCB Transformers.

1. The decontamination provisions at 40 C.F.R. § 761.79 do not apply to intact PCB-Contaminated and PCB Transformer cores.

As EPA has stated previously in the preamble to the 1998 PCB amendments and the PCB Q&A Document, the decontamination methods and procedures for non-porous surfaces found in 40 C.F.R. § 761.79 apply to some components of electrical equipment after the equipment has been disassembled, but not to intact transformer cores and coils. See 40 C.F.R. § 761.79(a) which states that the decontamination regulations apply to non-porous surfaces “including scrap metal from *disassembled* electrical equipment” (emphasis added).

Transformer components that are not described in 40 C.F.R. § 761.79(a), such as intact transformer cores and coils, cannot be decontaminated and will need to be handled in accordance with applicable disposal requirements. The intact core of a transformer is typically comprised of laminated steel sheets which are “stacked” on top of each other with hairline spacing between each sheet. This hairline spacing between each sheet might prevent sufficient solvent contact with the surfaces of each sheet to provide for effective decontamination of all of the contaminated surfaces. The coil of a transformer also contains hairline spaces, which inhibit decontamination when the coil is intact. In addition, transformers generally contain some porous materials that are not subject to the decontamination provisions of 40 C.F.R. § 761.79.

The applicability of 40 C.F.R. § 761.79 is explained in the preamble to the 1998 PCB amendments, which states:

[T]he decontamination procedures in §761.79 do not apply to all wastes. For example, they do not apply to intact electrical equipment such as transformers. The surface areas of this kind of equipment are very large and may have numerous laminations with a high contact, low volume space limiting the solvent contact necessary for complete decontamination.

63 Fed. Reg. 35384, 35417 (June 29, 1998). The appropriate procedures for decontamination of a PCB-Contaminated Transformer are further explained in the PCB program's Q & A document:

Q: May I decontaminate an intact PCB-Contaminated Transformer by draining and flushing the transformer?

A: No. The decontamination standards do not apply to intact electrical equipment such as transformers. You may decontaminate the non-porous surfaces in a PCB-Contaminated transformer after disassembling it and removing the paper and other porous materials. This means that you must detank a PCB-Contaminated transformer and separate the metal and non-metal materials. In order to decontaminate the metal from a PCB-Contaminated transformer, it is necessary to make all surfaces available for solvent contact and the rinsing necessary for completing decontamination. You may do this by removing all contents from the tank, separating any core laminations and unwinding and stripping any insulation from the coils. The porous materials cannot be decontaminated. To reduce the PCB concentration in an intact PCB Transformer still in use, see the reclassification rules at §761.30(a)(2)(v).

Source: PCB Q & A Manual: § 761.79(a) Applicability, Q1, 119-120 (September 2001), available at <http://www.epa.gov/pcb/pubs/qacombined.pdf>.

In light of the limited applicability of 40 C.F.R. § 761.79, intact cores and coils found inside of PCB-Contaminated and PCB Transformers must be disassembled so that core laminations are separated and insulation from the coils is unwound and stripped before decontamination of the non-porous surfaces.

2. Approvals are required for the disassembly of PCB Transformers for decontamination.

The disassembling of PCB-Contaminated and PCB Transformers for subsequent decontamination and/or disposal of their component parts is processing for disposal. Under 40 C.F.R. § 761.20(c)(2)(ii) such activities must be approved through a TSCA PCB disposal approval unless the processing activity is part of an existing approval, is part of a self-implementing activity under 40 C.F.R. § 761.61(a) or 40 C.F.R. § 761.79(b) or (c), or is otherwise specifically allowed under Subpart D.

There are no provisions under Subpart D that allow decontamination of PCB Transformers without an approval.¹ Therefore, if one wishes to disassemble a PCB Transformer and decontaminate its non-porous components using the methods described in 40 C.F.R. § 761.79, an approval is required. An approval issued under 40 C.F.R. § 761.79(h) is the appropriate method to obtain approval for disassembling PCB Transformers for decontamination.

The disposal options for PCB-Contaminated Transformers are found at 40 C.F.R. § 761.60(b)(6)(ii)(A) (cited by 40 C.F.R. § 761.60(b)(4)). The options for PCB-Contaminated Transformers include “in accordance with 40 C.F.R. § 761.79,” thus an approval is not needed to disassemble and decontaminate a PCB-Contaminated Transformer. However, as explained above, one must still disassemble the core and coil of a PCB-Contaminated Transformer before decontamination.

Attached to the memorandum is the text of the regulatory provisions that are cited in this document. If you have any other questions regarding this matter, please contact Sara McGurk of my staff at (202) 566-0480.

Attachment

cc:
PCB Regional Coordinators
Ed Messina, OECA
Vernon Myers, OSW

¹ The disposal options for PCB Transformers are found at 40 C.F.R. § 761.60(b)(1).

Cited Regulatory Provisions

§ 761.20(c)(2)(ii) Prohibitions and exceptions.

(c)(2) Any person may process and distribute in commerce for disposal PCBs at concentrations of ≥ 50 ppm, or PCB Items with PCB concentrations of ≥ 50 ppm, if they comply with the applicable provisions of this part.

(i) Processing activities which are primarily associated with and facilitate storage or transportation for disposal do not require a TSCA PCB storage or disposal approval.

(ii) Processing activities which are primarily associated with and facilitate treatment, as defined in §260.10 of this chapter, or disposal require a TSCA PCB disposal approval unless they are part of an existing approval, are part of a self-implementing activity under §761.61(a) or §761.79 (b) or (c), or are otherwise specifically allowed under subpart D of this part.

§ 761.60(b)(4), (b)(6)(ii)(A) Disposal requirements.

(b)(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.

(6)(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-flowing liquid by one of the following methods:

(1) In accordance with §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 §§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 §761.72.

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

§ 761.79(a), (c), (h) Decontamination standards and procedures.

(a) *Applicability.* This section establishes decontamination standards and procedures for removing PCBs, which are regulated for disposal, from water, organic liquids, non-

porous surfaces (including scrap metal from disassembled electrical equipment), concrete, and non-porous surfaces covered with a porous surface, such as paint or coating on metal.

(1) Decontamination in accordance with this section does not require a disposal approval under subpart D of this part.

(2) Materials from which PCBs have been removed by decontamination in accordance with this section may be distributed in commerce in accordance with §761.20(c)(5).

(3) Materials from which PCBs have been removed by decontamination in accordance with this section may be used or reused in accordance with §761.30(u).

(4) Materials from which PCBs have been removed by decontamination in accordance with this section, not including decontamination waste and residuals under paragraph (g) of this section, are unregulated for disposal under subpart D of this part.

(5) Any person decontaminating porous surfaces other than concrete under paragraph (b)(4) of this section and non-porous surfaces covered with a porous surface, such as paint or coating on metal, under paragraph (b)(3) or (c)(6) of this section must obtain an alternative decontamination approval in accordance with paragraph (h) of this section.

(6) Any person engaging in decontamination under this section is responsible for determining and complying with all other applicable Federal, State, and local laws and regulations.

(c) *Self-implementing decontamination procedures.* The following self-implementing decontamination procedures are available as an alternative to the measurement-based decontamination methods specified in paragraph (b) of this section. Any person performing self-implementing decontamination must comply with one of the following procedures.

(1) Any person decontaminating a PCB Container must do so by flushing the internal surfaces of the container three times with a solvent containing <50 ppm PCBs. Each rinse shall use a volume of the flushing solvent equal to approximately 10 percent of the PCB Container capacity.

(2) Any person decontaminating movable equipment contaminated by PCBs, tools, and sampling equipment may do so by:

(i) Swabbing surfaces that have contacted PCBs with a solvent;

(ii) A double wash/rinse as defined in subpart S of this part; or

(iii) Another applicable decontamination procedure in this section.

(3) Any person decontaminating a non-porous surface in contact with free-flowing mineral oil dielectric fluid (MODEF) at levels $\leq 10,000$ ppm PCBs must do so as follows:

(i) Drain the free-flowing MODEF and allow the residual surfaces to drain for an additional 15 hours.

(ii) Dispose of drained MODEF according to paragraph (g) of this section.

(iii) Soak the surfaces to be decontaminated in a sufficient amount of clean (containing < 2 ppm PCBs) performance-based organic decontamination fluid (PODF) such that there is a minimum of 800 ml of PODF for each 100 cm^2 of contaminated or potentially contaminated surface for at least 15 hours at ≥ 20 °C.

(iv) Approved PODFs include:

(A) Kerosene.

(B) Diesel fuel.

(C) Terpene hydrocarbons.

(D) Mixtures of terpene hydrocarbons and terpene alcohols.

(v) Drain the PODF from the surfaces.

(vi) Dispose of the drained PODF in accordance with paragraph (g) of this section.

(4) Any person decontaminating a non-porous surface in contact with free-flowing MODEF containing $> 10,000$ ppm PCB in MODEF or askarel PCB (up to 70 percent PCB in a mixture of trichlorobenzenes and tetrachlorobenzenes) must do so as follows:

(i) Drain the free-flowing MODEF or askarel and allow the residual surfaces to drain for an additional 15 hours.

(ii) Dispose of drained MODEF or askarel according to paragraph (g) of this section.

(iii) Soak the surfaces to be decontaminated in a sufficient amount of clean PODF (containing < 2 ppm PCBs) such that there is a minimum of 800 ml of PODF for each 100 cm^2 of contaminated or potentially contaminated surface for at least 15 hours at ≥ 20 °C.

(iv) Approved PODFs include:

(A) Kerosene.

(B) Diesel fuel.

(C) Terpene hydrocarbons.

(D) Mixtures of terpene hydrocarbons and terpene alcohols.

(v) Drain the PODF from the surfaces.

(vi) Dispose of the drained PODF in accordance with paragraph (g) of this section.

(vii) Resoak the surfaces to be decontaminated, pursuant to paragraph (c)(3)(iii) of this section, in a sufficient amount of clean PODF (containing <2 ppm PCBs) such that there is a minimum of 800 ml of PODF for each 100 cm² of surface for at least 15 hours at ≥ 20 °C.

(viii) Drain the PODF from the surfaces.

(ix) Dispose of the drained PODF in accordance with paragraph (g) of this section.

(5) Any person decontaminating piping and air lines in an air compressor system must do so as follows:

(i) Before decontamination proceeds, disconnect or bypass the air compressors and air dryers from the piping and air lines and decontaminate the air compressors and air dryers separately in accordance with paragraphs (b), (c)(1) through (c)(4), or (c)(6) of this section. Dispose of filter media and desiccant in the air dryers based on their existing PCB concentration.

(ii) Test the connecting line and appurtenances of the system to assure that there is no leakage. Test by introducing air into the closed system at from 90 to 100 pounds per square inch (psi). Only if there is a pressure drop of <5 psi in 30 minutes may decontamination take place.

(iii) When there is no leakage, fill the piping and air lines with clean (containing <2 ppm PCBs) solvent. Solvents include PODF, aqueous potassium hydroxide at a pH between 9 and 12, or water containing 5 percent sodium hydroxide by weight.

(iv) Circulate the solvent to achieve turbulent flow through the piping and air lines in the air compressor system until the total volume of solvent circulated equals 10 times the total volume of the particular article being decontaminated, then drain the solvent. Calculate the total volume of solvent circulated by multiplying the pump rate by the time of pumping. Turbulent flow means a Reynolds number range from 20,000 to 43,000. Refill the system with clean solvent and repeat the circulation and drain process.

(6) Any person using thermal processes to decontaminate metal surfaces in contact with PCBs, as required by §761.62(a)(6), must use one of the following options:

(i) Surfaces in contact with liquid and non-liquid PCBs at concentrations <500 ppm may be decontaminated in a scrap metal recovery oven or smelter for purposes of disposal in accordance with §761.72.

(ii) Surfaces in contact with liquid or non-liquid PCBs at concentrations ≥ 500 ppm may be smelted in a smelter operating in accordance with §761.72(b), but must first be decontaminated in accordance with §761.72(a) or to a surface concentration of $<100 \mu\text{g}/100 \text{ cm}^2$.

(h) *Alternative decontamination or sampling approval.* (1) Any person wishing to decontaminate material described in paragraph (a) of this section in a manner other than prescribed in paragraph (b) of this section must apply in writing to the EPA Regional Administrator in the Region where the activity would take place, for decontamination activity occurring in a single EPA Region; or the Director of the National Program Chemicals Division, for decontamination activity occurring in more than one EPA Region. Each application must describe the material to be decontaminated and the proposed decontamination method, and must demonstrate that the proposed method is capable of decontaminating the material to the applicable level set out in paragraphs (b)(1) through (b)(4) of this section.

(2) Any person wishing to decontaminate material described in paragraph (a) of this section using a self-implementing procedure other than prescribed in paragraph (c) of this section must apply in writing to the EPA Regional Administrator in the Region where the activity would take place, for decontamination activity occurring in a single EPA Region; or the Director of the National Program Chemicals Division, for decontamination activity occurring in more than one EPA Region. Each application must describe the material to be decontaminated and the proposed self-implementing decontamination method and must include a proposed validation study to confirm performance of the method.

(3) Any person wishing to sample decontaminated material in a manner other than prescribed in paragraph (f) of this section must apply in writing to the EPA Regional Administrator in the Region where the activity would take place, for decontamination activity occurring in a single EPA Region; or the Director of the National Program Chemicals Division, for decontamination activity occurring in more than one EPA Region. Each application must contain a description of the material to be decontaminated, the nature and PCB concentration of the contaminating material (if known), the decontamination method, the proposed sampling procedure, and a justification for how the proposed sampling is equivalent to or more comprehensive than the sampling procedure required under paragraph (f) of this section.

(4) EPA may request additional information that it believes necessary to evaluate the application.

(5) EPA will issue a written decision on each application for risk-based decontamination or sampling. No person may conduct decontamination or sampling under this paragraph prior to obtaining written approval from EPA. EPA will approve an application if it finds

that the proposed decontamination or sampling method will not pose an unreasonable risk of injury to health or the environment.