

ACCELERATOR DIVISION ES&H PROCEDURE

ADSP-08-0401

MANAGEMENT OF POLYCHLORINATED BIPHENYLS (PCBs)

RESPONSIBLE DEPARTMENT ES&H

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1.0 PURPOSE AND SCOPE

This procedure sets forth the Accelerator Division (AD) responsibilities for complying with the Toxic Substances Control Act requirements pertaining to the use and disposal of polychlorinated biphenyls (PCBs). PCBs are present as a contaminant in the dielectric oil inside some of the transformers managed by AD as well as in capacitors and fluorescent light ballasts manufactured prior to July 2, 1979. PCBs are also potentially used in heat transfer systems, hydraulic systems, electromagnets, switches, voltage regulators, circuit breakers, reclosers, and cable. The procedure provides for identifying and inventorying AD equipment containing PCBs and complying with applicable Environmental Protection Agency (EPA) regulations, including limitations on servicing, registration, inspection, labeling, housekeeping, maintenance, reclassification, training, notification, reporting and recordkeeping, cleanup of new and historical spills, and waste storage and disposal. In order to reduce risk of adverse impacts on the environment, employee and public health and safety, Department of Energy (DOE) property, and accelerator operations, this procedure also formally establishes an AD policy of phasing out PCB equipment whenever economically feasible and consistent with accelerator operations.

2.0 REFERENCES¹

- 2.1 Toxic Substances Control Act, Title 15 U.S.C. 2601 *et seq.*
- 2.2 Title 40, Code of Federal Regulations (CFR) Part 761, Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions. Section 761.3 contains an extensive set of definitions of terms used in this procedure. §761.123 contains additional definitions pertaining to spill cleanup.
- 2.3 Title 40, CFR Part 302, Designation, Reportable Quantities, and Notification
- 2.4 Title 40, CFR Part 117, Determination of Reportable Quantities for Hazardous Substances
- 2.5 Title 40, CFR Part 355, Emergency Planning and Notification
- 2.6 Accelerator Division Spill Control Plan (Attachment 2 of ADSP-02-0401, Accelerator Division Emergency Plan)
- 2.7 Fermilab ES&H Manual, Chapter 8040.1, Polychlorinated Biphenyls
- 2.8 Fermilab ES&H Manual, Chapter 3010 (and technical appendix), Significant and Reportable Occurrences
- 2.9 ADSP-08-0202, Regulated Waste Management Procedures
- 2.10 DOE Order 232.2, Occurrence Reporting and Processing of Operations Information, approved August 30, 2011.

¹All references are available from the ES&H Department.

3.0 RESPONSIBILITIES

3.1 DEPARTMENT HEADS

- a. Ensure that all equipment and operations under their cognizance are managed in compliance with applicable prohibitions and requirements pertaining to PCBs in EPA regulations and the Fermilab ES&H Manual, **some of which are time-critical** (see Section 4 (particularly sections 4.3, regarding equipment labeling, and 4.6, regarding waste labeling, storage, and pickup for disposal) and References 2.2 and 2.7),
- b. Assist the Environment, Safety, & Health (ES&H) Department in compiling an inventory of all PCB-containing equipment maintained by their departments and provide updated information whenever the inventory changes,
- c. Replace PCB Equipment and PCB-Contaminated Electrical Equipment with non-PCB items whenever the opportunity presents itself,
- d. Ensure that any equipment brought on site by their employees has been evaluated for the possible presence of PCBs, and
- e. Ensure that all of their employees who are responsible for equipment containing or potentially containing PCBs or who could potentially come into contact with PCBs during inspection, repair, or maintenance activities are trained in safe PCB handling practices and the requirements of this procedure.

3.2 ES&H DEPARTMENT

- a. Verifies compliance with applicable requirements during periodic ES&H audits or inspections,
- b. Maintains division-wide inventory of PCB-containing equipment,
- c. Maintains AD copies of pertinent records (inspection reports, and, in certain cases, manifests and certificates of disposal),
- d. Promptly processes waste pickup request forms for PCB items to ensure that waste is transferred to qualified storage facilities within 30 days of generation,
- e. Assists systems/engineering department personnel in collecting samples, performing and/or documenting cleanup of minor spills and other aspects of regulatory compliance,
- f. Initiates correspondence or other contact with regulatory agencies (through the ESH&Q Section and the Department of Energy Fermi Site Office (FSO)), and
- g. Provides training on safe PCB handling practices and regulatory requirements to persons with PCB-related job responsibilities.

4.0 INSTRUCTIONS

4.1 PCB EQUIPMENT INVENTORY

4.1.1 The ES&H Department maintains the AD PCB inventory in a FileMaker Pro database and may periodically ask the other departments to verify the inventory and supplement it as necessary.

4.1.2 The consequences of improper management of PCBs (e.g., incorrect labeling, disposal, etc.) can be severe (substantial civil and/or criminal penalties, negative press, etc.), so it is essential that all items containing PCBs be identified. Any potentially-regulated² oil-filled electrical equipment manufactured prior to July 2, 1979, or for which the manufacture date cannot be established should be considered suspect. When reviewing their electrical and mechanical equipment to identify PCB Items, owners should, to the extent possible, draw on information available in their equipment files. Maintenance records as well as manufacturers' documentation must be considered. Written documentation must be requested from the manufacturer if none is available. As a last resort, if the PCB status of an item cannot be established in any other way, the oil can be sampled. Depending on the type of equipment (e.g., sealed capacitor), this might render it unusable. In such a case, the item must be considered to contain PCBs and managed accordingly.

4.1.3 In general, mineral oil-filled electrical equipment manufactured prior to July 2, 1979, and whose PCB concentration has not been established through sampling or manufacturer's records, must be assumed to be PCB-Contaminated, i.e., 50-499 ppm, except for capacitors which must be assumed to be >500 ppm. However, all circuit breakers, reclosers, oil-filled cable, and rectifiers may be considered to be <50 ppm (§761.2) unless the owner has knowledge to the contrary.

4.1.4 For items found or suspected to contain PCBs, record the following information, as available/applicable: type of equipment (power supply with small PCB capacitors, rectifier, large PCB capacitor, switch, etc.), manufacturer, serial or other identifying number, location, size (volume or weight) and known or assumed PCB concentration of contained fluid, and voltage. For equipment containing small PCB capacitors, give the number of capacitors inside the unit.

4.2 MANAGEMENT OF PCB ITEMS

4.2.1 Transformers

AD no longer owns any PCB Transformers (>500 ppm), and all of its remaining transformers that were once above 50 ppm have been retrofilled and/or chemically treated to reduce PCB concentrations in their dielectric fluid to below 50 ppm. However, there is some chance that PCBs remaining in the windings of these reclassified units could, over time, leach back into the mineral oil and raise its concentration back above 50 ppm. In the event that periodic sampling reveals that

²i.e., transformers with ≥3 pounds (1.36 kg) of dielectric fluid, large, high or low-voltage capacitors, or other equipment listed in Section 4.2 below

the PCB concentration in a reclassified transformer has subsequently risen back into the regulated range, the requirements in Attachment 2 would apply.

4.2.2 Capacitors

4.2.2.1 Capacitors containing PCBs at any concentration may be used indefinitely, provided that any large capacitors (containing 1.3 kilograms (3 pounds) of dielectric fluid)³ do not pose an exposure risk to food and are within a restricted-access electrical substation or in a contained and restricted access indoor installation (see §761.30(1)(1)(ii) for definition).

4.2.2.2 PCB Large High Voltage Capacitors must be labeled with the M_L while in service. PCB Large Low Voltage Capacitors must be labeled with the M_L at the time of removal from service. Equipment containing PCB Small Capacitors should have a 6-inch x 6-inch manufacturer-applied label stating, "This equipment contains PCB Capacitor(s)," if it was manufactured after January 1, 1979. Equipment manufactured before that date should be evaluated for the possible presence of PCBs and labeled accordingly.

NOTE: Small harmonic-neutralized constant voltage transformers manufactured by Sola Electric are ubiquitous at Fermilab. They are used inside equipment racks as well as inside some modulators (e.g., Cober), power supplies, etc. They contain small, oil-filled capacitors that, in models manufactured prior to 1979, contain PCBs. Transformers of this vintage bore no labels from the manufacturer. Fermilab has labeled some, but many remain unlabeled. There is no way to determine from the exterior of one of these units whether it contains small PCB capacitors. It must be opened and the capacitors examined. It is not the intent of this procedure to require that all in-service or spare Sola transformers be examined internally for the presence of PCB capacitors solely for purposes of labeling and inventory. However, such a determination should be made when servicing a Sola transformer and must be made before disposing of one. Later Sola models will have capacitors stamped "no PCBs." Capacitors without this stamp should be presumed to contain PCBs. Sola transformers rendered PCB-free or determined during servicing to have been manufactured without PCBs should be labeled with "no PCBs" stickers. If a transformer is found to contain PCB capacitors and it is being returned to service or stored as a spare, it should be labeled accordingly and reported to the ES&H Department for addition to the inventory. If the unit is to be scrapped, the capacitors must first be removed and disposed of as PCB waste.

4.2.2.3 Despite the relatively minor regulatory restrictions on the use of PCB capacitors, their presence in AD indoor equipment represents a major liability in the event of a fire. Products of PCB combustion are extraordinarily toxic and could easily be spread throughout a building in concentrations requiring

³See the definition of *Capacitor* in §761.3 for how to estimate the weight of the dielectric fluid using total capacitor volume and gross weight if the weight of the dielectric fluid is unknown.

remediation. Cleanup costs could be expected to run in the millions of dollars, and the building would be uninhabitable during the cleanup. For these reasons, it is AD policy to phase out PCB-containing equipment where economically feasible. In many cases, this might involve removing small PCB capacitors and replacing them with non-PCB equivalents. If this is done, the M_L should be removed and replaced with a "no PCBs" sticker. Changes in inventory should be reported to the ES&H Department.

4.2.3 Heat Transfer and Hydraulic Systems

4.2.3.1 The working fluid in heat transfer or hydraulic systems may not contain more than 50 ppm PCB.

4.2.3.2 The hydraulic fluid in the following AD elevators was sampled on December 11, 1980, and confirmed to be non-PCB: A0 Major Vehicle Access (MVA), D0 MVA, Main Ring RF, Cross Gallery, Neutron Therapy Facility, Linac Mid-stream, and Linac Up-stream. Consequently, these systems do not require further testing.

4.2.3.3 Any heat transfer and any hydraulic system not listed above, if they are vintage 1979 or earlier, should be tested for PCBs. Systems found to contain greater than 50 ppm PCB must be drained and refilled within six months with a fluid that has less than 50 ppm PCB. Any such system must be tested at least three months after refilling to verify that the concentration is less than 50 ppm. If necessary, the process must be repeated until the concentration remains under 50 ppm.

4.2.3.4 A copy of all sampling data should be provided to the ES&H Department. Data must be kept on file for five years after the concentration is brought under 50 ppm.

4.2.3.5 Heat transfer or hydraulic systems using working fluid with >50 ppm PCBs must be labeled with the M_L until refilling and retesting are completed.

4.2.4 Electromagnets, Switches, and Voltage Regulators

4.2.4.1 Electromagnets, switches (including sectionalizers and motor starters), and voltage regulators containing PCBs may be used without regard to concentration, provided there is no exposure risk to food.

4.2.4.2 Servicing of equipment listed in Paragraph 4.2.4.1 having PCB concentrations greater than 500 ppm is prohibited if removal and rework of internal components is required. Replacement is the only option in this case.

4.2.4.3 Contaminated units (<500 ppm) must be serviced with dielectric fluid containing less than 500 ppm. Removed fluid must be managed in accordance with §761.30(h)(2)(iii) or (vi), depending on the concentration.

4.2.4.4 PCB units may be reclassified to PCB-Contaminated or non-PCB status and PCB-Contaminated units may be reclassified to non-PCB status by refilling, using the unit for three months electrically under loaded conditions, and resampling (§761.30(h)(2)(v)). Fulfillment of the in-service use time must be documented.

- 4.2.5 Circuit Breakers, Reclosers, and Cable
 - 4.2.5.1 Circuit breakers, reclosers, and cable containing PCBs may be used without regard to concentration.
 - 4.2.5.2 Servicing of circuit breakers and reclosers having PCB concentrations 500 ppm or greater is prohibited if removal and rework of internal components is required. Replacement is the only option in this case. Units under 500 ppm may be rebuilt, if necessary.
 - 4.2.5.3 Any fluid added during servicing must be less than 50 ppm PCB. Fluid removed during servicing may be returned to the unit if the concentration is <50 ppm. Otherwise it must be disposed of in accordance with §761.60.
 - 4.2.5.4 PCB units may be reclassified to PCB-Contaminated or non-PCB status and PCB-Contaminated units may be reclassified to non-PCB status by refilling, using the unit for three months electrically under loaded conditions, and resampling (§761.30(h)(2)(v)). Fulfillment of the in-service use time must be documented.
- 4.2.6 Contaminated Porous Surfaces
 - 4.2.6.1 Contaminated porous surfaces such as concrete may only be decontaminated if the spill is recent (<72 hours). Otherwise, they must be encapsulated or disposed of.
 - 4.2.6.2 Porous surfaces contaminated at >10 µg/100 cm² may be used for the rest of their useful life if the source of the contamination has been removed or contained and the surface has been cleaned (if accessible) and covered (§761.30(p)).
 - 4.2.6.3 Cleaning must be conducted in accordance with 40 CFR 761 Subpart S, followed by a 24-hour drying period.
 - 4.2.6.4 The surface must then be covered with two coats of solvent-resistant and water-repellent paint having contrasting colors. If the surface is inaccessible for painting, it must be covered by some type of solid barrier.
 - 4.2.6.5 The M_L must be affixed to the encapsulated surface or barrier.
- 4.2.7 Fluorescent Light Ballasts
 - 4.2.7.1 Fluorescent light ballasts manufactured prior to July 1, 1978 may contain a small PCB capacitor and/or PCBs at greater than 50 ppm in the potting material (a black, tarry substance that fills up the void space inside the ballast). Ballasts manufactured after that date were to be labeled "No PCBs" by the manufacturer. Ballasts that are not so labeled must be considered to contain PCBs.
 - 4.2.7.2 PCB ballasts may remain in service for the rest of their useful life.
 - 4.2.7.3 Technically, PCB ballasts are regulated for disposal differently depending on whether or not the capacitor is leaking and on the concentration of PCBs in the potting material. However, it is normally not practical for generators to make this distinction. Therefore, all PCB ballasts will be

handled as if the more stringent requirements applied, i.e., according to Section 4.6.

4.3 GENERAL LABELING REQUIREMENTS

4.3.1 In addition to the items noted in sections 4.2 and 4.6, the M_L is required to be on each of the following items:

- a. Containers containing PCBs in concentrations of 50 ppm or more (including waste awaiting disposal), and
- b. PCB Article Containers containing articles or equipment that must otherwise be marked (including those awaiting disposal).

4.3.2 All required labels must be placed in a position on the exterior of the PCB Items so that the marks can easily be read by any persons inspecting or servicing the PCB Items.

4.3.3 An item that is not in use is either waste in storage for disposal or a spare in storage for reuse. The label should distinguish whether the item is intended for disposal or reuse and should indicate the date on which it was taken out of service.

4.4 SPILL RESPONSE

4.4.1 Discovery and Reporting

4.4.1.1 Minor leaks (i.e., slow drips) from a PCB Item should be reported immediately upon discovery to the AD Environmental Officer(4489), or ES&H Department Head (4973). The ES&H Department will notify the ESH&Q Section, if necessary.

4.4.1.2 A major leak (i.e., a fast drip or anything approaching a steady stream) from a PCB Item is considered to be an emergency for purposes of response, and the discoverer should immediately contact the emergency operator at 3131. Consistent with the AD local spill plan, an attempt should then be made to control or contain the spill and isolate the area.

4.4.1.3 Notification to EPA Region V via its Superfund/TSCA spill response line ((312) 353-2318) is required for spills (any amount) that directly contaminate surface water, sewer, drinking water supplies, grazing lands, or vegetable gardens (§761.125(a)(1)(i) and (ii)). See Paragraph 4.4.1.5 for reporting protocol.

4.4.1.4 See Attachment 3 for other potentially applicable reporting requirements pertaining to spills involving 1 pound or more of PCBs.

4.4.1.5 The Directorate, ESH&Q Section, or FSO are the appropriate organizations to notify external entities such as EPA or the National Response Center regarding PCB-related incidents. The ES&H Department will initiate this notification by contacting the Division Head, who will then inform the Directorate in accordance with Reference 2.8. See Reference 2.8 for oral and written notification and occurrence reporting schedules and other requirements.

4.4.1.6 For purposes of reporting under DOE Order 232.2, Occurrence Reporting and Processing of Operations Information, spills of greater than 0.5 but less than 1 pound of PCBs are considered

to be off-normal occurrences. Spills of greater than 1 pound are considered unusual occurrences. A spill exceeding 5 pounds could be reportable as an emergency, but only if it threatened to result in significant off-site consequences such as major wildlife kills, wetland degradation, aquifer contamination, or the need to secure downstream water supply intakes. See Reference 2.8, DOE Order 231.1B, Environment, Safety, and Health Reporting for reporting protocol.

4.4.2 Cleanup

- 4.4.2.1 Any leak or spill of PCBs must be cleaned up promptly and properly disposed of. See Section IV of Reference 2.6 for guidance on spill cleanup methods.
- 4.4.2.2 Cleanup of mineral oil contaminated with less than 500 ppm PCBs, involving less than 1 pound of PCBs by weight, or less than 270 gallons of untested mineral oil must be *completed* within 48 hours of discovery unless there is an emergency or adverse weather (§761.125(b)).
- 4.4.2.3 For high concentration (≥ 500 ppm) spills, low concentration spills involving 1 pound or more of PCBs by weight, or 270 gallons or more of untested mineral oil, the following steps must be *initiated* as soon as possible, but in no case later than 24 hours of discovery unless adverse conditions cause delay (see §761.125(c)(1)):
- a. Make any required notifications to DOE, EPA Region V, the National Response Center, Illinois Emergency Management Agency, Kane and DuPage County emergency management agencies, and the ESH&Q Section (see Paragraphs 4.4.1.3 through 4.4.1.6),
 - b. Effectively cordon off or otherwise delineate and restrict an area encompassing any visible spill traces plus a 3-foot buffer, and post clearly visible signs advising persons to avoid the area,
 - c. Record and document the area of visible contamination, noting both the center and extent of the visible trace areas, or, if there are no visible traces, consult with EPA Region V for guidance in conducting statistical sampling to establish spill area boundaries, and
 - d. Initiate cleanup of visible traces of the spill.

Cleanup should be completed as expeditiously as possible.

- 4.4.2.4 Any active leak of PCBs must be contained to prevent exposure to humans or the environment and inspected daily to verify containment of the leak until it is repaired.
- 4.4.2.5 Required spill cleanup levels depend on the PCB concentration and volume of material spilled, the medium onto which the PCBs are spilled (surface water, soil, concrete, etc.), the extent to which access to the spill area is normally restricted, and other site-specific risk factors. The ES&H Department should be contacted for assistance in determining cleanup criteria and sampling to verify adequacy of cleanup.
- 4.4.2.6 The following information is required to be gathered during and at the completion of the cleanup and maintained for a period of 5 years:

- a. Identification of the source of the spill (e.g., type of equipment),
- b. Estimated or actual date and time of the spill,
- c. Date and time cleanup was initiated,
- d. Date and time cleanup was completed or terminated (if cleanup was delayed by emergency or adverse weather: the nature and duration of the delay),
- e. Brief description of the spill location and the nature of the materials contaminated, including whether the spill occurred in an outdoor electrical substation, other restricted access area, or in a nonrestricted access area (see §761.123 for definitions),
- f. If visible traces were not adequate to define the boundaries of the spill, the results of precleanup sampling used to establish the boundaries and a brief description of the required statistically-based sampling methodology,
- g. A brief description of the solid surfaces cleaned and of the double wash/rinse method used.
- h. The approximate depth of soil excavated and the volume of soil removed,
- i. Certification statement signed by the head of the department owning the spill source stating that the cleanup requirements have been met and that the information contained in the record is true to the best of his/her knowledge (required only for low concentration (<500 ppm) spills involving less than 1 pound of PCBs by weight, or less than 270 gallons of untested mineral oil),
- j. Post cleanup verification sampling data, collected in conformance to the requirements in §761.130, and, if not otherwise apparent from the documentation, a brief description of the sampling methodology and analytical technique used (required for high concentration (≥500 ppm) spills, low concentration spills involving 1 pound or more of PCBs by weight, or 270 gallons or more of untested mineral oil; optional for other spills), and
- k. Estimated cost of cleanup by man-hours, dollars, or both (optional).

4.5 REMEDIATION OF PAST SPILLS AND RELEASES

- 4.5.1 Sites containing PCB remediation waste from spills prior to April 18, 1978, are presumed to not present an unreasonable risk to health or the environment and may be left in place unless EPA determines otherwise (§761.50(b)(3)(i)(A)).
- 4.5.2 Spills that occurred prior to May 4, 1987, that have already been successfully cleaned up in accordance with guidance from EPA Region V need not be cleaned further.
- 4.5.3 Spills that occurred after April 18, 1978, and have not yet been cleaned up must be decontaminated to requirements established in §761.61 or at the discretion of EPA Region V

under §761.120. In the event of the discovery of an old PCB spill, the ES&H Department will initiate contact with EPA through the ESH&Q Section and FSO.

- 4.5.4 Fermilab has the burden of proving the date(s) on which the PCBs were spilled if it wishes to avoid cleanup under §761.50(b)(3)(i)(A).
- 4.6 STORAGE AND DISPOSAL
- 4.6.1 PCB Items being removed from service for disposal are Illinois special waste and must be labeled accordingly. The special waste label must be marked with the date of removal from service (§761.65(c)(8)). Fermilab policy also requires PCB Items entering the waste stream to also carry a PCB label (M_L or equivalent), including items not required to be labeled while in use (e.g., PCB fluorescent light ballasts). PCB Items too small to be individually labeled may be placed in an appropriate (see Paragraph 4.6.5), labeled container. Such a container must have both special waste and PCB labels.
- 4.6.2 All disposal of PCB waste, including cleanup debris, is conducted by the ESH&Q Section. Waste pickup is arranged by following the procedures for other regulated chemical waste in ADSP-08-0202. PCB waste is normally stored at Site 55 while awaiting shipment off site. The storage facility at Site 55 meets the requirements of §761.65(b)(1).
- 4.6.3 When intended for disposal, certain PCB Items may be stored for up to 30 days from the date of their removal from service in an area that does not meet the requirements of §761.65(b)(1), i.e., a satellite accumulation area. Employees generating PCB waste must facilitate prompt pick-up by contacting the division waste coordinator. This should be done at the time the work is planned, if generation of PCB waste can be foreseen. Otherwise, the waste coordinator must be contacted as soon as the PCB waste is generated. A waste pickup request form must be filled out and submitted to the division waste coordinator immediately upon generation of PCB waste (e.g., designating a PCB item as intended for disposal) to ensure that the 30-day deadline is met. The waste coordinator shall expeditiously arrange for pickup.
- 4.6.3.1 PCB Items that may be placed in a temporary storage area:
- a. Non-leaking PCB Articles and PCB Equipment (e.g., small PCB capacitors and fluorescent light ballasts),
 - b. Leaking PCB Articles and PCB Equipment, provided they are placed in a non-leaking PCB Container that contains sufficient absorbent material to absorb any liquid PCBs remaining in the items,
 - c. PCB Containers containing non-liquid PCBs, such as contaminated soil, rags, debris, or PCB fluorescent light ballasts, and
 - d. PCB Containers containing liquid PCBs at concentrations ≥ 50 ppm under certain conditions. AD personnel who anticipate generating or storing these types of PCB waste should consult with the ES&H Department regarding these requirements.

- 4.6.3.2 The temporary storage area must be labeled with the M_L.
- 4.6.4 PCB-Contaminated Electrical Equipment (<500 ppm) that has been drained of free-flowing dielectric fluid is not subject to any regulation-based storage restriction (§761.65(c)(2)). However, such equipment should be transferred to Site 55 expeditiously using the procedures in ADSP-08-0202.
- 4.6.5 PCB items that are not in active use but still wanted as spares may be stored locally for up to five years from the date of removal from service as long as they have an identified use (§40 CFR 761.35). However, if an equivalent non-PCB substitute is commercially available at reasonable cost, replacement and disposal of the PCB item is the preferred course of action. Once an item is no longer needed, it shall be marked with the date on which that decision was made. At this point, it becomes waste and is now in storage for disposal. At that point, the 30-day clock is running.

NOTE: As a matter of interpretation, a PCB capacitor that is inside a spare piece of equipment (e.g., power supply or transformer) is still in service. Spare capacitors sitting on a shelf awaiting reuse are out of service.

4.7 ROUTINE REPORTING AND RECORDKEEPING

- 4.7.1 Fermilab no longer meets the thresholds for producing the annual document log (40 CFR 761.180(a)).
- 4.7.2 The following records are maintained for the Laboratory by the ESH&Q Section:
 - a. All signed manifests generated during the calendar year, and
 - b. All Certificates of Disposal that have been received during the calendar year.

The ES&H Department may choose to obtain and maintain copies of those documents involving selected AD PCB waste.

- 4.7.3 The ES&H Department maintains PCB Transformer inspection/maintenance records in accordance with DOE recordkeeping requirements.

4.8 TRAINING AND PERSONAL PROTECTION

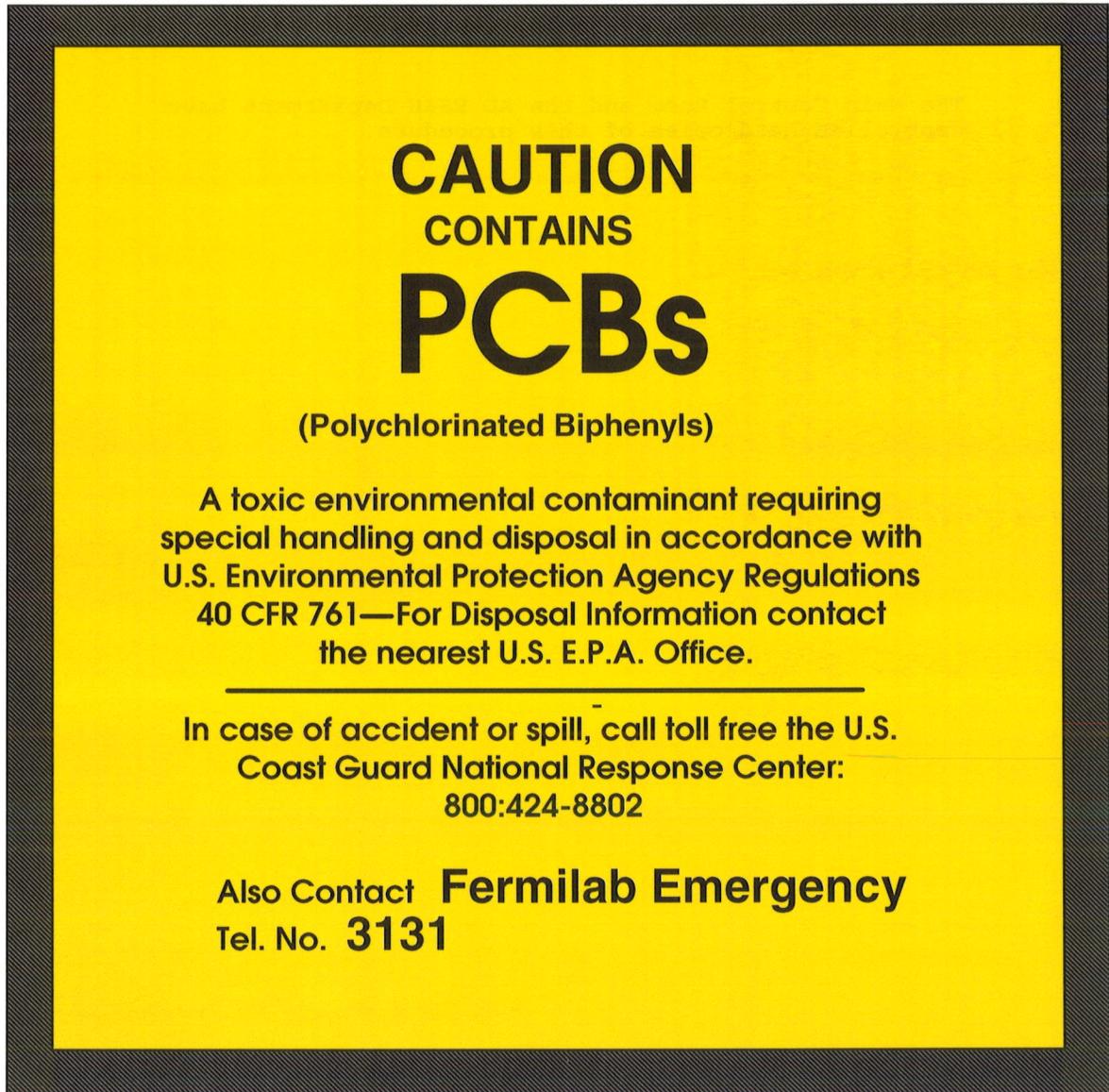
- 4.8.1 AD personnel conducting an activity that involves potential exposure to PCBs should consult the ES&H Department's industrial hygienist for information on use of personal protective equipment, work practices conducive to minimizing exposure, safe use of equipment, symptoms of exposure, etc.
- 4.8.2 Upon request, the ES&H Department will assist AD systems/Engineering personnel in developing procedures for conducting activities involving PCBs safely and in compliance with regulatory requirements.

5.0 DISTRIBUTION

5.1 An electronic controlled copy of this procedure is available at: <http://ad-esh.fnal.gov/ad/adsp/ADSP-08-0401.pdf>

5.2 The Main Control Room and the AD ES&H Department have controlled hardcopies of this procedure.

LARGE PCB MARK, M_L



NOTE 1: Minimum dimensions for the M_L are normally 6 inches by 6 inches. If an item requiring the M_L is too small to accommodate the standard-sized M_L, the M_L may be proportionally reduced down to a minimum of 2 inches by 2 inches. If the item is too small to accommodate the reduced M_L, the Small PCB Mark, or M_S, may be used (see §761.45(b)).

Note 2: Actual color for the M_L may be either yellow or white.

Note 3: The M_L contains instructions to call the U.S. Coast Guard National Response Center in the event of an accident or spill of PCBs. These instructions are a standard, required part of the M_L. However, AD personnel should be aware that the instructions on the label represent an oversimplification of the reporting requirement that could lead to unnecessary reporting. In fact, AD no longer has any equipment that poses a credible risk of creating a release that would be reportable to

the National Response Center. For this reason, the preceding depiction of the M_L also lists the Fermilab Emergency telephone number (3131), and it is suggested that that number be written in any time an item is labeled. Anyone discovering a significant leak of PCB oil should call 3131. Notifying the National Response Center, if the situation warrants, should be left to the Directorate, ESH&Q Section, Emergency Coordinator, or the Department of Energy, in accordance with Paragraph 4.4.1.5. Minor leaks (i.e., a few drops) that do not constitute an emergency should be contained, if possible, and immediately reported to the Accelerator Division ES&H Department (4489/4973).

PCB-CONTAMINATED TRANSFORMER MANAGEMENT

This appendix applies to oil-filled transformers that contain PCBs as a contaminant in their dielectric fluid at greater than or equal to 50 ppm. AD currently owns no transformers in this category because all of its formerly PCB or PCB-Contaminated transformers have been retrofilled and/or chemically treated to reduce PCB concentrations below 50 ppm experiences. However, the requirements have been retained in the event that one of these transformers experiences enough leach-back of PCBs from the windings into the mineral oil to raise its concentration back above 50 ppm. In the event that periodic sampling reveals that the PCB concentration in a reclassified transformer has subsequently risen back into the regulated range, the following requirements would apply.

A. Labeling

As a best management practice, PCB-Contaminated transformers (50-499 ppm) should be labeled with a sign indicating they are in that range. The label should be placed in a position on the exterior of the transformer so that it can be easily read by any persons inspecting or servicing the equipment. The fence or other means of access to the transformer should be marked with the large PCB Mark (M_L) described in 40 CFR 761.45 (see Attachment 1).

B. Inspections

EPA rules do not contain a requirement for formal periodic inspection of PCB-Contaminated transformers. The semiannual visual inspection of potential spill sources conducted under ADSP-08-0301, Identifying and Inspecting Potential Spill Sources, is sufficient as a best management practice.

C. Maintenance/Reclassification

PCBs removed during any servicing activity must be captured and either reused as dielectric fluid in the same or another PCB-Contaminated transformer or disposed of in accordance with Section 4.5 of this procedure (§761.30(a)(2)(iii)). Dielectric fluid containing more than 50 ppm PCBs must not be mixed with fluid containing less than 50 ppm.

Following appropriate servicing, in-service use, and resampling, a PCB-Contaminated transformer may be reclassified to non-PCB status pursuant to §761.30(a)(2)(v). Fulfillment of the in-service use time (3 months) and temperature (50°C once during the 3-month period) requirements must be documented (operation and inspection dates, time, name of person making the temperature observation). If the temperature requirement cannot be met, a waiver is available. Contact the ES&H Department.

D. Housekeeping

As a best management practice, combustible materials (including, but not limited to paints, solvents, plastics, paper, and wood) should not be stored within 5 meters of unenclosed PCB-Contaminated transformers.

Unintentional collection of combustible debris around transformers (e.g., windblown leaves, paper, etc.) should be monitored during the semiannual inspections and corrected, if necessary.

E. Registration

EPA rules do not contain a requirement for PCB-Contaminated transformers to be registered with the Fermilab Fire Department. However, this should be done as a best management practice. Useful information to provide includes: location, principal constituent of the dielectric fluid (e.g., mineral oil), the name and telephone number of the person to contact in the event of a fire involving the equipment. The Hazard Control Technology Team in the ESH&Q Section maintains the Laboratory's official inventory of PCB Items and should be informed of any changes in PCB concentrations noted in AD transformers.

F. Incident Notification

If a PCB-Contaminated transformer is found to have a leak that results in any quantity of PCBs running off or about to run off the external surface of the transformer, the transformer must be repaired or replaced to eliminate the source of the leak. See Section 4.4 of the main procedure for what to do in case of such a leak. In addition to the other applicable notifications, the leader of the Electrical and Electronic (E/E) Support Department's Electro-Mechanical Group (2216) should be contacted.

OFF-SITE REPORTING OF MAJOR SPILLS

Spills involving 1 pound or more of PCBs by weight released into the environment within a 24-hour period must be reported to the National Response Center (40 CFR 302.6(a)) and, if the spill poses a threat of off-site exposure (40 CFR 355.40), the applicable local emergency planning committee(s) (DuPage County Office of Emergency Management, (630) 682-7207/Kane County Emergency Management Agency, (630) 232-5985) and the Illinois Emergency Management Agency, (217) 782-7860). See Paragraph 4.4.1.5 for reporting protocol. At present, the most highly contaminated AD transformer contains a total of less than a half-pound of PCBs, so such an event is extremely unlikely. Multiple transformer failures would have to occur.

In addition to any applicable reporting under the previous paragraph, spills involving 10 pounds or more of PCBs by weight, either indoors or outdoors, must be reported to the EPA Region V Superfund/TSCA spill response line ((312) 353-2318) (§761.125(a)(1)(i) and (ii)). Again, such an event is extremely unlikely. The only equipment in AD's currently known inventory with enough PCBs for such a spill is the Linac quadrupole power supplies. More than a half-dozen of the PCB capacitors in one of these units would have to rupture. See Paragraph 4.4.1.5 for reporting protocol.