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GRC Environmental Programs Manual—Chapter 7

Polychlorinated Biphenyls

Approved by: Energy and Environmental Management Office Chief

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NASA - Glenn Research Center
Cleveland, OH 44135

Change Record

Revision	Effective Date	Expiration Date	C-25, Change Request #	Description
A	4/2015	4/2020		Corrected name of office on title page Section 5 – defined terms upon first use of acronyms Section 6.5 – changed IRIS to NMIS Corrected names of forms Added dates to forms Updated links

***Include all information for each revision. Do not remove old revision data. Add new rows to table when space runs out by pressing the tab key in the last row, far right column.*

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Chapter 7—Polychlorinated Biphenyls

NOTE: This chapter is maintained and approved by the Energy and Environmental Management Office (EEMO). The last revision date of this chapter was March 2015. The current version is maintained on the Glenn Research Center internet at http://www.grc.nasa.gov/WWW/FTD/EEMO/index.html. Approved by: Chief of Energy and Environmental Management Office.

1.0 PURPOSE

This chapter establishes policies pertaining to the handling and disposal of polychlorinated biphenyls (PCBs) at the NASA Glenn Research Center (GRC) Lewis Field (LF) and Plum Brook Station (PBS). This chapter supports GRC Environmental Policy, which promotes pollution prevention, regulatory compliance, and continuous improvement.

Following the guidelines and requirements in this chapter will help achieve the GRC environmental objective of containing and eliminating PCBs. Effectiveness of the PCB management program can be tracked through the PCB Annual Document Log. For an example of the Annual Document Log, see Appendix **B**, Figure **B.2.a**.

2.0 APPLICABILITY

The guidance provided in this chapter is applicable to GRC employees and contractors at all levels who are in any way involved in the handling, storage, transportation, and/or disposal of PCBs at any time at LF and PBS.

3.0 BACKGROUND

PCBs are a class of organic compounds consisting of a biphenyl (two benzene rings) with 1 to 10 chlorine atoms attached. PCBs have low water solubilities and low vapor pressures at room temperature. They have high solubilities in most organic solvents, oils, and fats. They also have high dielectric constants, very high thermal conductivity, high flash points, and are chemically almost inert, being extremely resistant to oxidation reduction, addition, elimination, and electrophilic substitution. Their production was banned in the 1970s because of their toxicity, which poses a threat to people and the environment.

In the past, PCBs were widely used in various applications, often as dielectric fluid in transformers and capacitors. LF has 12 outdoor electrical substations operating at voltage levels of 34,500 V or higher. Transformers operating at the 2400-V level are also spread out over a variety of locations throughout the lab. See Appendix 6 of the Lewis Field Integrated Contingency Plan (ICP). The ICP is Annex Q of the GRC Emergency Preparedness Plan. Some PCB-contaminated items remain onsite. There are no transformers containing PCBs at Lewis Field. The last PCB contaminated transformer was removed from the premises in 2000.

At PBS, there are six substations operating at voltage levels of 34,500 V and several transformers operating at 7200 V (see Emergency Preparedness Plan, Appendix 12 and PBS Integrated Contingency Plan, Annex Q). There are no transformers containing PCBs at Plum Brook Station.

4.0 POLICY

It is GRC policy to maintain information such as inspection logs, annual document logs, and disposal records in a readily accessible manner and to dispose of PCB articles in compliance with Federal and State regulations.

5.0 RESPONSIBILITIES

The Energy and Environmental Management Office manages disposal and recordkeeping for PCB articles.

5.1 Facilities Division

Facilities Division personnel are stewards of electrical equipment at GRC. Stewardship includes Systems Design, Maintenance and Operation of all system assets from 138 kVA to 120 V. When equipment containing PCBs is removed by institutional support or capital project contractors it shall be delivered to Building 215 for proper storage until disposition is determined.

5.1.1 Electrical Power Distribution System Maintenance and Operation (M&O) Personnel

M&O personnel dispose of PCB contaminated items at LF through the Waste Management (WM) personnel and (as required) the Property Disposal Officer.

5.1.1 High Voltage System Manager

High Voltage System Manager shall oversee the High Voltage Systems Design, Maintenance and Operations (M&O) as defined by FD management.

5.1.2 Technical Consulting

The Facilities Division provides technical advice to EEMO on relevant aspects of PCB management, disposal, inspection, and recordkeeping as they relate to infrastructure and institutional assets.

5.2 Safety and Health Division—Chemical Management Program Lead

The Chemical Management Program Lead shall review all chemical orders. Any chemical order which knowingly contains PCBs, will not be processed.

5.3 Energy and Environmental Management Office

EEMO defines the requirements for PCB management, disposal, inspection, and recordkeeping. Also these functions are performed by EEMO at Lewis Field and Plum Brook Station sites.

5.3.1 General Responsibilities

- Conducting internal audits of the GRC PCB Program.
- Maintaining PCB-related records in Building 21, Room 135, including the PCB annual document log.
- Including information pertaining to PCBs into the ICP.
- Keeping records of PCB spills with other emergency incident reports.
- Maintaining Environmental Programs Manual, Chapter **7**.
- Advising the Facilities Division and PBS contractors of the requirements for proper disposal of PCB items as shown in flowchart of Appendix **B** (Figure **B.1**).
- Conducting monthly inspections of the PCB storage area and keep records in Building 215.
- Managing storage of PCB items for disposal.

5.3.2 Emergency Response Team

- Emergency Response Team is personnel from the Safety and Health Division (SHeD), EEMO, and the Office of Protective Services
  - EEMO has a primary responder with backup coverage
    - Support and clean up tasks are performed by the Waste Management contractor.
  - Emergency Response Team (ERT) members respond to spills of PCBs and other spills.
  - Team is certified in Hazardous Waste Operations (HAZWOPER) and is required to attend annual 8hr refreshers

5.3.3 Lewis Field PCB Disposal Procedure

When equipment containing PCBs is removed by institutional support or capital project contractors it shall be delivered to the Central Chemical Storage Facility (Building 215) and stored there until these materials are disposed/removed from Lewis Field.

Spill response materials are stored in Building 215.

5.4 Plum Brook Station

When equipment containing PCBs is removed by institutional support or capital project contractors it shall be delivered to Building 9206 for proper storage and stored there until these materials are disposed/removed from PBS.

5.4.1 PBS Environmental Project Manager

- Maintains records of interest, including disposal records and annual document logs. These records are filed Building 7141, Room 118.
- Ensures PCB-contaminated material is stored in Building 9206 prior to shipment.
- Maintains spill response materials in Building 9206.

6.0 REGULATORY REQUIREMENTS

6.1 PCB Marking Requirements (*40 CFR 761*)

Articles containing PCBs shall be marked with "*Large PCB Mark*," M_L labels (Figure **6.1**).

Figure 6.1.—M_L Labels.

6.2 Annual Document Log (*40 CFR 761*)

Annual document logs provide a record of disposal information from the previous calendar year and a list of PCB items in storage at the end of the year. An example of the type of information required is shown in Appendix

6.3 Integrated Contingency Plan (*40 CFR 112*)

Any oil-filled equipment with a capacity greater than or equal to 55 gallons shall be included in the NASA GRC Integrated Contingency Plan (ICP).

6.4 Training (*40 CFR 112*)

Oil-handling personnel shall be trained in the proper operation and maintenance procedures to prevent discharges. Training shall also cover discharge protocols; applicable laws, rules, and regulations; and the requirements of the ICP (see Environmental Programs Manual, Chapter **8**).

6.5 NASA Mishap Information System

NASA Mishap Information System (NMIS) reports shall be reported as per Chapter **21** of the Glenn Safety Manual, Mishap and Close Call Reporting, Investigating, and Recordkeeping.

7.0 RECORDS

- PCB Annual Document Logs. Figure **B.2.a**, and Figure **B.2.b**, kept in Building 21, Room 135.
- Emergency Incident Reports are kept in Building 21, Room 135.

- For information on IRIS reports, see GSM–21.

8.0 REFERENCES

Document number	Document name
15 USC 2605	15 USC 2605, Toxic Substances Control Act
29 CFR 1910	29 CFR 1910, Occupational Safety and Health Standards
40 CFR 112	40 CFR 112, Oil Pollution Prevention
40 CFR 761	40 CFR 761, Polychlorinated Biphenyls Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions
GRC ICPs	Annex Q, Emergency Preparedness Plan
GLM–FE–8500.1-5	NASA GRC Environmental Programs Manual, Chapter **5**—Management of Hazardous Materials and Waste for Reduce, Reuse, and Disposal
GLM–FE–8500.1-8	NASA GRC Environmental Programs Manual, Chapter **8**—Spill Control
GLM–QS–1700.1	NASA Glenn Safety Manual, Chapter **21**—Mishap and Close Call Reporting, Investigating and Recordkeeping

APPENDIX A.—DEFINITIONS AND ACRONYMS

Annual Document Log.—A record of waste handling at a facility

Energy and Environmental Management Office (EEMO)

Environmental Management System (EMS)

Glenn Research Center (GRC)

Integrated Contingency Plan (ICP)

Lewis Field (LF)

Maintenance and Operation (M&O)

NASA Mishap Information System (NMIS)

PCB article container.—A device containing PCBs or PCB articles whose surfaces have not been in direct contact with PCBs (example: a drum containing a nonleaking capacitor).

PCB article.—Any manufactured article, other than a PCB container, that contains PCBs and PCB items.

PCB container.—A device containing PCBs or PCB articles whose surfaces have been in direct contact with PCBs (example: a drum containing a leaking capacitor).

PCB equipment.—A manufactured item other than a PCB container, PCB article container, or which contains a PCB article (example: fluorescent light ballast).

PCB item.—A PCB article, PCB container, PCB article container, or PCB equipment container that contains PCBs.

PCB transformer (PCB item).—A transformer with a PCB concentration above 500 ppm.

PCB-contaminated transformer (PCB item).—A transformer with a PCB concentration between 50 and 500 ppm.

Plum Brook Station (PBS)

Pollution Prevention (P2) Program

Polychlorinated biphenyl (PCB)

Quarterly inspection.—A visual inspection for leaks from PCB transformers conducted once every 3 months.

Safety and Health Division (SHeD)

Waste Management (WM)

APPENDIX B.—ADDITIONAL FIGURES

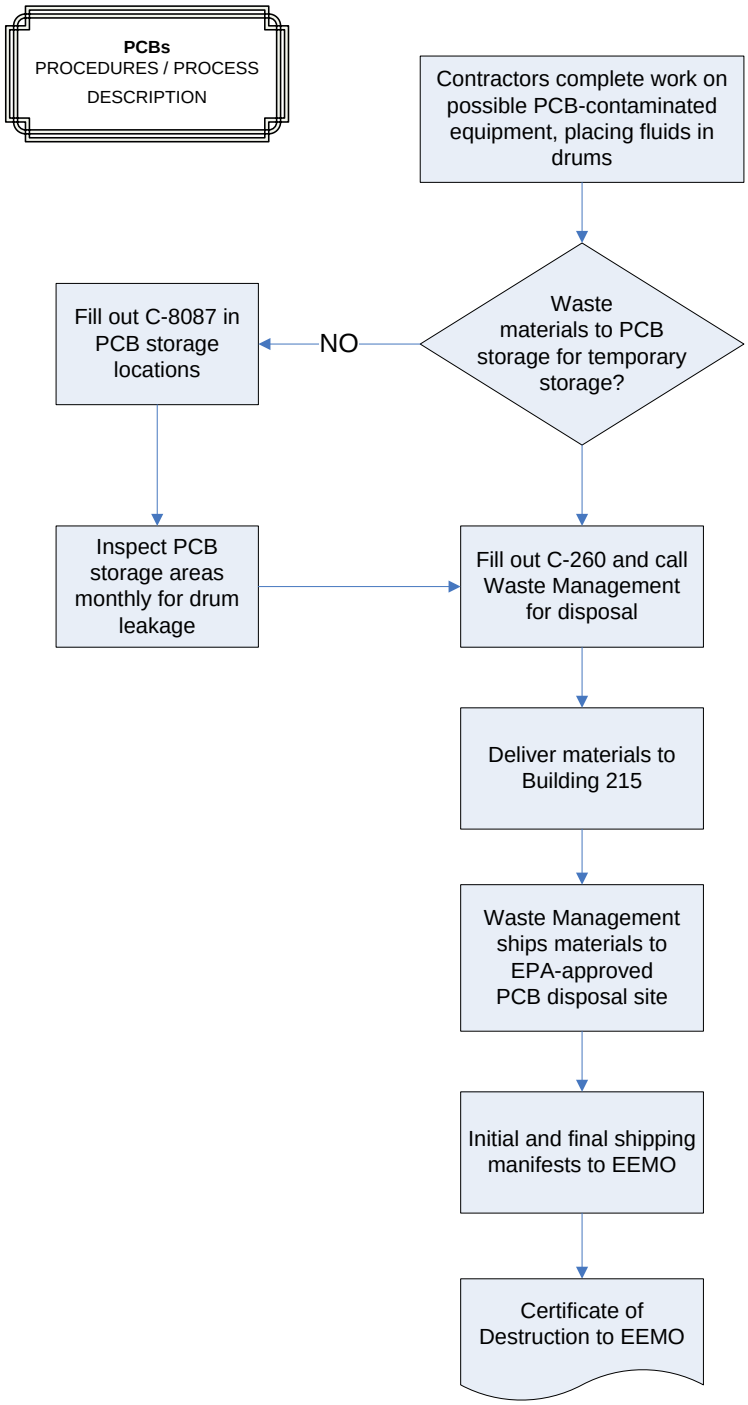

Figure B.1.—PCB Disposal Procedures.

Cover page

PCB ANNUAL DOCUMENT LOG
CALENDAR YEAR ____
FOR
NASA GLENN RESEARCH CENTER
AT LEWIS FIELD
21000 BROOKPARK ROAD
CLEVELAND, OHIO 44135
EPA I.D. NUMBER OH0800005035

Figure B.2.a.—Example of Information Required in the Annual Document Log.

April 20, 2015

PCB ANNUAL DOCUMENT LOG – ____

DATE SHIPPED	MANIFEST DOCUMENT	UNIQUE ID# CONTAINER	OUT OF SERVICE/ ACCUM. START	WEIGHT (KG.)	METHOD OF DISPOSAL	DATE OF DISPOSAL	DESCRIPTION OF CONTENTS

ITEMS IN STORAGE:

UNIQUE ID# CONTAINER	OUT OF SERVICE/ ACCUM. START	WEIGHT (KG.)	DESCRIPTION OF CONTENTS

Figure B.2.b - Example of Information Required in the Annual Document Log

April 20, 2015