CHAPTER 14

POLYCHLORINATED BIPHENYLS

14-1 SCOPE

This Chapter contains criteria to control and abate threats to human health and the environment from the handling, use, storage and disposal of polychlorinated biphenyls. These criteria include specific requirements for most uses of polychlorinated biphenyls, including, but not limited to, transformers, capacitors, heat transfer systems, hydraulic systems, electromagnets, switches and voltage regulators, circuit breakers, reclosers and cables. The implementation of standards set below does not apply to past installation activities which placed less than 50 ppm electrical items in-service prior to 3 March 1995 (See Chapter 1, Section 1-2.c) with exception of Japanese Facilities Improvement Program (JFIP) supplied electrical items. Inspections of the above noted US-made items will be conducted every 3 years to ensure that they have not leaked or deteriorated.

14-2 DEFINITIONS

14-2.1 Capacitor. A device for accumulating and holding a charge of electricity and consisting of conducting surfaces separated by a dielectric.

14-2.2 Chemical Waste Landfill. A landfill at which a high level of protection against risk of injury to human health or the environment from migration of deposited PCBs to land, water, or the atmosphere is provided by incorporating special methods for locating, engineering, and operating the landfill.

14-2.3 In or Near Commercial Buildings. Within the interior of, on the roof of, attached to the exterior wall of, in the parking area serving, or within 30 meters of a non-industrial, non-substation building.

14-2.4 Incinerator. An engineered device using controlled flame combustion to thermally degrade PCBs and PCB items. Examples include rotary kilns, liquid injection incinerators, cement kilns, and high temperature boilers.

14-2.5 Leak or Leaking. Any instance in which a PCB article, PCB container, or PCB equipment has any PCBs on any portion of its external surface.

14-2.6 Mark. The descriptive name, instructions, cautions, or other information applied to PCBs and PCB items, or other objects subject to this document.

14-2.7 Marking. The marking of PCB items and PCB storage areas and transport vehicles by means of applying a legible mark by painting, fixation of an adhesive label, or by any other method that meets these criteria.

14-2.8 Non-PCB Transformers. Any transformer that does not contain detectable concentrations of PCB .

14-2.9 Polychlorinated Biphenyl (PCB). A class of 209 discrete chemical compounds (congeners)in which one to ten chlorine atoms are attached to biphenyl. PCBs were commercially produced as complex mixtures for uses such as dielectric fluids in capacitors, oil swiches and transformers, printing inks, de-dusting agents, pesticides, etc.

14-2.10 Polychlorinated Biphenyl (PCB) Article. Any manufactured article, other than a PCB container, that contains PCBs and whose surface(s) has been in direct contact with PCB. This includes capacitors, transformers, electric motors, pumps, and pipes.

14-2.11 PCB Article Container. Any package, can, bottle, bag, barrel, drum, tank, or other device used to contain PCB articles or PCB equipment, and whose surface(s) has not been in direct contact with PCBs.

14-2.12 PCB Container. Any package, can, bottle, bag, barrel, drum, tank, or other device that contains PCBs or PCB articles, and whose surface(s) has been in direct contact with PCBs.

14-2.13 PCB Containing. PCBs are designated as a first class specified chemical substance. PCB containing parts and products, removed from air conditioners, TVs or microwave ranges disposed of as general wastes, are regulated as specially controlled general wastes (SCGW). Waste oils containing PCBs are regulated as a specific hazardous industrial waste (SHIW) as a class of the specially controlled industrial waste (SCIW). PCB contaminated wastes, such as waste paper, waste plastics or waste metals, are also SHIW as a class of SCIW. PCBs are designated as specified chemical substances of the 1st kind. Any amount of PCB contamination is subject to Japanese PCB regulation. Transformers and capacitors made in Japan must be analyzed for PCB content prior to disposal.

14-2.14 PCB Containing Electrical Equipment. Any electrical equipment including, but not limited to, transformers, capacitors, circuit breakers, reclosers, voltage regulators, switches, electromagnets, and cable, that contains or is contaminated with PCBs in detectable concentrations.

14-2.15 PCB Contaminated Equipment. Any manufactured item, other than a PCB container or a PCB article container, which contains a PCB article or other PCB equipment, and includes microwave ovens, electronic equipment, and fluorescent light ballasts and fixtures.

14-2.16 PCB Item. Any PCB article, PCB article container, PCB container, or PCB equipment that deliberately or unintentionally contains or has as a part of it any PCB, or PCBs at a detectable concentration using the analytical methods specified later in this Chapter.

14-2.17 PCB Transformer. Any transformer that contains detectable concentrations of PCB.

14-2.18 Removed from Service. For operational and maintenance purposes, PCB equipment is removed from service when it is physically removed from one location to another, or the equipment is substantially disassembled during servicing. For disposal purposes, the date a piece of equipment is "out of service" will be the date the equipment enters the U.S. for disposal. This will be labeled on the equipment by the receiving CONUS DRMO.

14-2.19 Restricted Access Area. Areas where access by unauthorized personnel is controlled by fences, other man-made structures or naturally-occurring barriers such as mountains, cliffs, or rough terrain.

14-2.20 Substantial Contact Area. An area that is subject to public access on a routine basis or which could result in substantial dermal contact by employees.

14-3 CRITERIA

14-3.1 General.

a. Maximum Contaminate Levels (MCLs) and analytical methods: The MCL and analytical method will vary based on the type of sample matrix and end use of the contaminated material:

(1) Transformer and similar fluids or oils will be analyzed for PCBs using either Japanese or U.S. methods depending on the end use of the material:

(a) For materials which enter the Japanese economy, an analytical method equivalent to Japan Electrical Association Code (JEAC) 1201-1991, “Standard Method for Analysis of Polychlorinated Biphenyls (PCB) in Transformer Oil”, will be used. This methods is a hexane dilution followed by gas chromatographic identification and quantification. According to the Japanese Ministry of Industry and

Trade Institute (MITI), only the materials marked with “Non-PCB” items are allowed to be sold to local containers.

(b) For materials which enter the US economy, the analytical methods will complywith USEPA or ASTM protocols. The methods will be equivalent to USEPA-600/4-81-045, “The Determination of Polychlorinated Biphenyls in Transformer Fluid and Waste Oils”, or ASTM D4059” Analysis of Polychlorinated Biphenyls in Insulting Liquids by Gas Chromatography”. These methods are hexane dilutions followed by gas chromatographic identification and qualification. The method detection limit for these two methods will be at least 1.0 mg/kg (ppm). Any numerical result generated by the gas chromatograph below 1.0 mg/kg will be reported as “less than 1.0 mg/kg (<1.0 mg/kg)”.

(2) Soils and other bulk materials:

(a)Suspected PCB contaminated materials that will be disposed of by normal landfill will be analyzed for PCBs using aqueous leaching proceders as outlined in USEPA SW -846, “Test Methods for Evaluating Solid Waste”. The procedure used will have a method detection limit of at least 0.003 milligrams per liter (mg/L) in the extraction fluid.

(b) For organic and inorganic sludges, bottom sedimentds and soils containing PCBs which will be incinerated or disposed in hazardous waste landfills, the analytical method will be an organic extraction method as outlined in USEPA SW-846, “Test Methods for Evaluating Solid Waste”. The method will have a detection limit of at least 0.0005 mg/L (0.5ppb).

(3) Waste waters suspected of being PCB contaminated will be analyzed for PCBs using an extraction procedure such as EPA Method 608. The Japan Industrial Standards Method K0093-1974, "Method for Determination of Polychlorinated Biphenyl in Industrial Wastewater" is an acceptable alternate method of analysis. The detection limit must be no greater than 0.001 mg/L (1 ppb).

b. The Installation Spill Contingency Plan will address PCB items, including temporary storage items. Chapter 18 provides criteria on how to prepare these plans.

c. Spills of PCB liquids will be responded to immediately upon discovery and cleaned up in accordance with the following requirements.

(1) Surfaces that are located in substantial contact areas will be cleaned to 10 micrograms per 100 square centimeters including a buffer of 1 lateral foot around the visible traces.

(2) Surfaces in all other contact areas will be cleaned to 100 micrograms per 100 square centimeters.

(3) Contaminated soil will be removed until the soil tests indicate non-detectable concentrations of PCBs. Clean backfill will be used and will be verified to have non-detectable concentrations of PCBs.

d. PCB equipment must be prominently marked in English and Japanese. The marking must identify the equipment as containing PCBs, warn against improper disposal and handling, and provide a phone number in case of spills or if questions arise about disposal. This marking criteria also applies to rooms, vaults, and storage areas containing PCB equipment.

e. Each installation having PCB equipment will maintain a written inventory that includes a current list by type of all PCB equipment in use, placed into storage for disposal or disposed of for that year. PCB containing electrical equipment is prohibited from installation in new or existing electrical systems.

f. Disposal of any PCB containing substances will only be through the servicing DRMO.

g. All periodic inspections as required in this Chapter will be documented at the installation. Records of inspections and maintenance history will be maintained for three years after disposal of the inventoried equipment.

h. Repair or replace leaking PCB transformers within 48 hours or as soon as possible. PCB transformers not immediately repaired or replaced will be inspected daily until they are repaired or replaced. Leaking PCB fluid will be containerized and disposed of as required in this chapter.

i. A "Responsible Manager" must be appointed in writing for each activity or work center that carries out tasks involving working with PCBs. This person will be responsible for ensuring that work involving PCBs is performed in accordance with the provisions of this Chapter, other chapters, and other applicable health, safety, and environmental guidance. The responsible manager will be responsible for ensuring that appropriate inventory control is maintained, that labeling and signage are accurate and appropriate, and that measures for spill containment and control are in accordance with this Chapter and other chapters as appropriate.

14-3.2 PCB Transformers (transformers containing PCBs at any detectable concentrations).

a. PCB transformers that are in use will not be used in any application that poses a risk of contamination to food or feed.

b. All PCB transformers, including those in storage, will be registered with the servicing fire department.

c. PCB transformers in use in or near commercial buildings or located in sidewalk vaults will be equipped with electrical protection to minimize transformer failure that would result in the release of PCBs.

d. The reuse or reutilization of PCB transformers removed from service is categorically prohibited.

e. PCB transformers will be serviced as follows:

(1) PCB transformers will only be serviced with dielectric fluids containing no PCBs.

(2) Any servicing of PCB transformers requiring removal of the transformer coil is prohibited.

(3) PCBs removed during servicing will be captured and disposed of as PCB contaminated waste oil in accordance with Section 14-3.5 of this Chapter.

(4) Dielectric fluids containing detectable concentrations of PCB will not be used or added to any electrical equipment. In the event that a dielectric fluid containing a detectable concentration of PCB is mixed with a non-PCB dielectric fluid, the resultant mixture will be treated as being PCB contaminated.

f. All in-service PCB transformers will be inspected at least every three months. EXCEPTION: PCB transformers with impervious, undrained secondary containment capacity of 100 percent of dielectric fluid or PCB transformers tested and found to contain less than 60,000 ppm PCBs must be inspected at least every 12 months.

g. If any PCB transformer is involved in a fire such that it was subjected to heat and/or pressure sufficient to result in violent or nonviolent rupture, the installation will take measures to control water runoff, such as blocking floor drains. Runoff water will be tested and treated if required.

14-3.3 Other PCB Items

a. Electromagnets, switches, and voltage regulators that may contain PCBs at any concentration are serviced as follows:

(1) PCB equipment will only be serviced with dielectric fluid containing no PCBs.

(2) Servicing any electromagnet, switch, or voltage regulator with a PCB concentration of 500 ppm or greater which requires the removal and rework of the internal components is prohibited.

(3) PCBs removed during servicing will be captured and disposed of properly.

(4) PCBs from electromagnets, switches, and voltage regulators with a detectable PCB concentration will not be mixed with or added to dielectric fluid from non-PCB contaminated electrical equipment.

(5) Dielectric fluids containing PCBs at detectable concentrations will not be used as dielectric fluid in any electromagnet, switch, or voltage regulator classified as PCB-contaminated electrical equipment.

b. Capacitors containing PCBs at any concentration may not be reused or reutilized if they are physically removed from service.

(1) Storage of PCB large high-voltage capacitors and PCB large low-voltage capacitors which pose an exposure risk to food or feed is prohibited.

(2) Use of PCB large high-voltage and PCB large low-voltage capacitors is prohibited unless the capacitor is used within a restricted-access electrical substation or in a contained and restricted-access indoor installation. The indoor installation will not have public access and will have an adequate roof, walls, and floor to contain any release of PCBs.

c. Any PCB item removed from service will be marked with the date when the item enters the U.S. for disposal after removing from service. PCB items removed from service will not be reused or reutilized.

14-3.4 Storage

a. PCBs and PCB items at any detectable concentration that are to be stored will be stored in a facility that will assure the containment of PCBs. Minimum storage facility requirements are as follows:

(1) Roofs and walls of storage buildings will exclude rainfall and limit access by unauthorized persons. Both the building and containers will be clearly marked with signs in both English and Japanese that the building and containers contain PCBs. Partitions will be used that separate PCB wastes from other wastes. These partitions will be designed to prohibit mixing of wastes in case of a spill.

(2) Containment berms at least 6 inches high are required to sufficiently contain twice the internal volume of the largest PCB article or 100 percent of the total internal volume of all PCB articles or containers stored, whichever is greater.

(3) Drains, valves, floor drains, expansion joints, sewer lines or other openings will be constructed to prevent any release from the bermed area.

(4) Flooring material will be continuous, smooth and impervious.

(5) To the maximum extent possible, PCB storage areas will be located to minimize the risk of release due to seismic activity, floods, typhoons, or other natural events. For facilities located where they may face such risks, the installation spill prevention and control plan will address the risk.

b. The following items may be stored temporarily in an area, subject to weekly inspection, that does not comply with the above requirements for up to 30 days from the date of removal from service:

(1) Non-leaking PCB items, marked to indicate whether it is a PCB article or PCB equipment.

(2) Leaking PCB articles and PCB equipment placed in a non-leaking PCB container that contains sufficient absorbent material to absorb fluid contained on the PCB article or equipment.

(3) PCB containers in which non-liquid PCBs have been placed.

(4) PCB containers in which PCBs at detectable concentrations have been placed and containers marked to indicate less than 500 ppm PCB.

(5) In addition, all containers must be Performance Oriented Packaging (POP) of sturdy construction owithout fear of spill or overflow. Instructions for handling will be based on the container, and the container must be appropriately labeled in both English and Japanese.

c. If a storage facility meeting the requirements of Section 14-3.4.a is not immediately available, non-leaking and structurally-undamaged large high-voltage PCB capacitors and PCB-contaminated electric equipment that have not been drained of free-flowing dielectric fluid may be stored on pallets, or raised platforms, next to a storage area meeting Section 14-3.4.a criteria if they are inspected weekly. Secondary containment with a capacity of greater than 100% of the free flowing dielectric fluid and a method to exclude rainfall must be provided.

d. A USFJ #4 label will be attached to containers which contain < 50 ppm PCB prior to turning those containers to DRMO for retrograde to CONUS.

e. All other PCB storage areas will be inspected at least monthly.

f. Containers used for the storage of PCBs will be at least as secure as those conforming with the International Maritime Dangerous Goods Code or the International Airline Transport Association rules, as applicable.

g. PCB articles and/or PCB containing electrical equipment which have been drained of all free-flowing dielectric fluid to the maximum extent possible by pouring, pumping and aspirating procedures, which have been decontaminated on the exterior surfaces of the equipment, which have been packaged within a catch pan, secured by strapping material and completely enclosed in plastic lining are not subject to Section 14-3.4a through Section 14-3.4e above.

14-3.5 Disposal of PCB Wastes and other PCB Containing Articles/Items

a. Installations that generate PCB wastes will maintain an audit trail for the wastes at least as stringent as that required under the criteria in Chapter 6. PCB containing items or waste, at any detectable concentration, will not be disposed of in landfills or via ocean dumping.

b. All PCBs (except GOJ provided equipment) will be retrograded to CONUS or a third country for disposal. Equipment provided by the GOJ as PCB free under the Facilities Improvement Program may be disposed of as such in-country. GOJ provided equipment, when feasible, will be returned to the GOJ for disposition. If this is not feasible or possible, these items will also be retrograded to CONUS or a third country for disposal as previously outlined. If PCBs are to be transferred to a third country for disposal, it must be done in accordance with any applicable international agreements and disposed of in compliance with the Japan Environmental Governing Standards applicable to the country of disposal, if any exist. Transshipment of PCBs to another country other than the U.S. for disposal must be approved by, at a minimum, the Environmental Executive Agent.

14-3.6 Import of PCB

a. Importation of any industrial or commercial article or item containing PCBs is categorically prohibited, with certain specific exceptions.

b. The following products are prohibited from importation if PCBs are contained therein:

(1) Lubricating oils, cutting oils, mobile oils

(2) Adhesive, putty and sealing pigments

(3) Paint, printing ink, pressure-sensitive copying machines

(4) Heating equipment, cooling equipment

(5) Oil containing transformers, paper capacitors, oil containing capacitors, organic skin capacitors

(6) Air conditioners, television sets, microwave ovens

c. As an exception to the import regulations, the following PCB containing products are permitted to be imported:

(1) The same lubricating oils to be used for changing and replenishing gas turbine engines on naval vessels.

(2) The same foreign made lubricants, hydraulic oils, adhesives excluding animals and plants type, putty, sealing fillers, paints excluding water type, heating or cooling equipment which use liquid heat transfer media, oil containing transformer, paper capacitor, oil containing capacitor, organic skin capacitor, or air conditioners to be used for changing and replenishing aircraft equipment.

(3) The same foreign made lubricants, hydraulic oils, adhesives, putty or sealing fillers are used for changing or replenishing aircraft fuselage or wing structures.

(4) Internationally standardized lubricants, hydraulic oils, adhesives, putty , sealing fillers, paints, heating or cooling equipment which use liquid heat transfer media, oil containing transformer, paper capacitor, oil containing capacitor, organic skin capacitor, or air conditioners to be used for aircraft and/or related equipment.

(5) Internationally standardized lubricants, hydraulic oils, adhesives, putty , sealing fillers, paints, heating or cooling equipment which use liquid heat transfer media, oil containing transformer, paper capacitor, oil containing capacitor, organic skin capacitor, or air conditioners to be used for the guided missiles, automatic warning control equipment, three dimensional radar and related equipment.

(6) “The same” and “internationally standardized” are defined as material identified by the DOD item manager in technical orders or other guidance as authorized replacements for originally supplied materials.