



## DISPOSAL OPTIONS FOR RADIATION-PRODUCING MACHINES

Radiation-producing machines must remain registered with the state and be assessed an annual registration fee regardless of usage status. Active registration status and associated fees will only be terminated when a registrant no longer possesses radiation-producing machines (X-ray equipment). A "Terminating Registration of Radiation Producing Machines" form can be found at [www.dep.pa.gov](http://www.dep.pa.gov).

When a registrant is no longer in possession of any radiation-producing machines in Pennsylvania or transfers possession, the registrant must provide written notification to the Department of Environmental Protection (DEP), Bureau of Radiation Protection. (See 25 Pa. Code § 216.6.) A number of options exist to dispose of X-ray equipment:

**1. Sell the equipment.**

In most cases, it is best to contact a commercial X-ray equipment assembler for this task. Vendors or service companies may buy the equipment for spare parts or refurbishment and resale. Another professional in need of this equipment may also be interested in purchasing the machine.

**2. Give the X-ray equipment away.**

A commercial X-ray equipment assembler/vendor or another professional in the field may be interested in taking the equipment. There may be a fee from the vendor for this service.

**3. Donate the equipment.**

There may be various non-profit groups that take donated equipment.

**4. Render the unit to be nonfunctional.**

To properly disable an X-ray unit, various parts of the unit should be disconnected and altered or damaged in some way to prevent reassembly. It is best to contact a commercial X-ray service provider for this task and submit the report of disassembly to DEP.

**5. Disposal by a waste hauler.**

X-ray equipment may be disposed of in a local/municipal landfill. However, there are some precautions to be aware of with this option because the oil in the tube and heavy metals in the tube housing may have to be removed. Contact the local waste hauler to ensure they will accept the unit. Metal components may be sold as scrap for recycling.

### DISPOSAL PRECAUTIONS

Do not smash the X-ray tube. The tube is under vacuum and glass fragments may cause injury if the tube is broken. The X-ray tube may contain hazardous polychlorinated biphenyls (PCB) oil and the tube housing may contain lead shielding.

X-ray systems manufactured prior to July 2, 1979, may contain oil made with PCBs, a chemical that was a common constituent of dielectric fluids produced before 1979. The oil was used in some X-ray equipment transformers and capacitors to aid in insulation. Because of the hazardous nature of oil containing PCBs, disposal becomes a regulated activity if the amount of PCBs is above a certain level. In the case of PCBs, contact the local waste hauler concerning the proper disposal of PCBs. An X-ray service company may be able to advise on whether the unit contains PCBs.

### TECHNICAL INFORMATION ON PCB CONCENTRATIONS

PCBs are regulated by the U.S. Environmental Protection Agency (EPA) under the federal Toxic Substances Control Act. The regulations are contained in Title 40 of the Code of Federal Regulations, Part 761.

Before disposing of X-ray machines manufactured before 1979, the machine's transformer oil must be tested for PCB content. It is the responsibility of the equipment owner to have this analysis performed before disposal. The concentration of PCBs detected in the analytical results will determine how the equipment may be disposed.

- If the analytical results show the machine contains oil contaminated with less than 50 parts per million (ppm) PCBs, the machine is considered "Non-PCB" and could be disposed of as municipal solid waste or

recycled as scrap metal after the oil is drained. Oil with less than 2 ppm PCBs could be disposed of in the same way as used motor oil.

- If the machine's transformer oil contains between 50 and 499 ppm PCBs, the machine is considered to be "PCB Contaminated." The machine could be disposed of in the same manner as the "Non-PCB" unit described in the first example. However, the oil that is drained from the transformer must be disposed of at a PCB disposal facility.
- If the transformer oil contains 500 or greater ppm PCBs, the transformer must be disposed of according to the requirements of 40 CFR Part 761. This would require shipping the unit to a PCB disposal facility. The entire X-ray machine may have to be disposed of in this manner if the transformer cannot be removed from the machine without spilling PCBs.
- Under 40 CFR 761.2(a), if the date of manufacture of a transformer or oil-filled capacitor is unknown or if the PCB concentration of dielectric fluid manufactured prior to July 2, 1979, is not established, the PCB concentration must be assumed to be 500 ppm or greater.

For further questions concerning the testing or disposal of PCBs, please contact EPA at 215-814-2177.

### **Selected Regulations Regarding Disposal of Radiation-Producing Machines from Title 25 of the Pennsylvania Code**

#### **§ 215.11. Records.**

- (a) Registrants shall maintain records showing the receipt, transfer and disposal of radiation-producing machines.

#### **§ 216.2. Registration of radiation-producing machines.**

- (e) A certificate of registration issued under this chapter may not be transferred, assigned or in any manner disposed of, either voluntarily or involuntarily, to any person without submitting a written request by the registrant to the Department.

#### **§ 216.3. Exemptions.**

The following radiation-producing machines or equipment are exempt from registration:

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- (3) Radiation-producing machines in the possession of vendors, installers or persons engaged in the service or repair of the machines, if applicable persons who have these machines register their activities with the Department under § 216.6 (relating to transfer and disposal obligations).

#### **§ 216.4a. Expiration and termination of certificates of registration.**

- (b) When a registrant decides to terminate all activities involving radiation-producing machines under the certificate of registration, the registrant shall notify the Department immediately, in writing, and request termination of the certificate of registration. This notification and request for termination of the certificate of registration shall be in accordance with subsection (c).
- (c) If a registrant does not submit a renewal for a certificate of registration under § 216.4 (relating to renewal of certificate of registration), the registrant shall, on or before the expiration date specified in the certificate of registration, do the following:
- (1) Terminate use of all radiation-producing machines subject to registration under § 216.2 (relating to registration of radiation-producing machines) in accordance with § 216.6.
  - (2) Transfer or dispose of all radiation-producing machines in accordance with § 216.6.

#### **§ 216.6. Transfer and disposal obligations.**

- (b) A person who disposes of a radiation-producing machine shall notify the Department within 15 days of the method of disposal used.

For more information, visit [www.dep.pa.gov](http://www.dep.pa.gov).