Standards for Registered and Subsidized WEEE Recyclers under the 4-in-1 Program

Standards for waste appliance and IT equipment collection, transportation, recycling and facility management

1. Regulations for collection, storage, and transportation

(1) No disassembly of E-waste is allowed during the process of collection, storage and transportation.

(2) The vehicles or carriers used for transportation must be equipped with rain covers.

(3) The location, containers, and facilities of E-waste storage must be clean and dry. No emissions, odors, or leaks of refrigerant, fluorescent powder, and liquid crystals are allowed.

(4) Stored waste equipment must be categorized and labeled clearly according to RRW categories.

(5) Maximum stacking height is three meters. The height difference between adjacent stacks of waste equipment must not exceed 1.5 meters. The aisles between categorized areas must be at least one meter in width.

(6) The waste items must be stored appropriately in designated areas enclosed by fences. Stacks of waste equipment must be secured by ropes, nets, or by other means to prevent collapsing.

(7) Drainage and waste-intercepting systems must be installed in storage plants/yards to prevent pollution and the floor must be laid with water-impermeable surfaces.

2. Regulations for recycling plants and facilities

(1) The plant must be installed with equipment for waste liquid, odor, pollutant and contaminants controls. Install essential facilities against discharging waste odors and other pollutant.

(2) The recycling process must be carried out in enclosed buildings with roofs and firm walls and foundations.

(3) The floor must be paved or laid with water-impermeable surfaces to prevent contamination of soil or groundwater.

(4) Equipment for liquid interception, collection and oil-water separation must be installed.

(5) For facilities that have shredding operations, soundproof and dust collection systems must be installed.

(6) Ambient light or illumination must be sufficient in the recycling plant.

(7) The plant must be installed with pollution control facilities and alternative set-ups for emergency response.

3. Regulations for recycling waste appliance and IT equipment

(1) The process of dismantling, shredding and sorting must be carried out in Taiwan and WEEE must not be sent to incinerators or landfill.

(2) Electric wires and motors must be removed first.

(3) Mercury-containing parts must be collected separately without physical damage to prevent mercury vapor leakage and must be stored in closed containers.

(4) For waste equipment that contains Cathode-Ray Tubes, funnel and panel glasses must be separated and fluorescent powder must be stored in closed containers according to the following rules:

i. The operation must be conducted in a separate and confined space.

ii. Collection of fluorescent powder must be conducted in hoods, and the exhaust port of the hood must be equipped with filters and dust collection system.

(5) Refrigerant or lubricant in E-wastes must be recovered before shredding. The pressure of the refrigeration system must be released to lower than 102 mmHg before the compressor can be removed and subsequent process continued.

(6) Refrigerant in foam insulating material and equipment must be recovered.

(7) The panel glass of LCD contained in waste appliances and IT equipment must be separated without physical damage. The operators must wear protective gloves, and the liquid crystal must not leak during disassembly. Cold Cathode Fluorescent Lamps must be stored in a designated area separately.

(8) Integrated circuit boards from waste IT equipment must be shredded before further processing.

(9) Regulations for waste refrigerator recycling:

i. Shredding of the cabinet must be carried out in a closed and negatively pressured facility.

ii. Refrigerant liquefaction systems must be installed to collect foaming agents in foam insulating materials.

iii. Soundproof and dust collection systems must be installed.

iv. Explosion-proof refrigerant measures must be installed.

(10) Derivative wastes and materials from recycling waste appliances and IT equipment must be categorized, clearly labeled, and stored separately.

(11) Derivative wastes and materials that are liquid or gaseous must be stored in leak-proof containers with pressure meters or liquid level monitors.

(12) Recovered refrigerant can be transmitted to retailers or plants, which are certified by administrators, for sale or destruction.

4. In addition to the environmental and safety standards listed in (2), recyclers that intend to apply for recycling subsidies must also meet the following standards:

(1) The resource recovery rate must exceed 70%.

(2) The waste appliances recycler must be capable of handling every RRW (TV, washing machine, refrigerator, air conditioner, and fan).

(3) The IT equipment recycler must be capable of handling every RRW (waste pc, monitor, laptop, printer and keyboard).

(4) The recycler must install weigh stations to measure the mass of incoming waste equipment, CCTV surveillance system, and independent electric meters.

Standards for waste light bulb collection, transportation, recycling and facility management

1. Regulations for collection, storage, and transportation

(1) The waste lamps must be stored in solid containers.

(2) The quantity of waste storage must not exceed monthly average of the previous quarter.

(3) The location, containers, and facilities of waste lamps must be clean and dry. No emissions, odors, leaks or leaching are allowed.

(4) Collection and storage plants/yards must be installed with equipment preventing water leakage, and the floor must be laid with water-impermeable surfaces.

(5) Storage areas must be categorized and labeled clearly. Maximum stacking height is six meters. The height difference between adjacent stacks must not exceed 1.5 meters. The length and width of categorized areas must not exceed 20 meters. The aisles between categorized areas must be at least one meter in width.

(6) The waste items must be stored appropriately in designated areas enclosed by fences. The stacks must be secured by ropes, nets, or by other means to prevent collapsing.

(7) The vehicles or carriers used for transportation of waste lamps must be installed with clearly labeled solid containers.

(8) During transportation, rain covers and protective equipment are required to prevent waste lamps from cracking and hazardous content from spreading.

(9) Recycling, fluorescent powder and activated carbon storage (prior to mercury recycling), and storage of mercuric compound derived from recycling waste lamps must take place in isolation or independent areas.

2. Regulations for waste light bulb recycling plants

(1) Drainage and wastewater interceptors must be installed in the recycling plants.

(2) Recycling plants must be enclosed, with roofs and firm walls and foundations. The floor must be paved or laid with water-impermeable surfaces to prevent contaminating soil or groundwater.

(3) The plant must be installed with mercury recycling facilities and equipment for wastes liquid, odor, pollutant and contaminant control.

(4) Minimum total area of the plant (included temporary storage area) is 1983.48m^2; the designated area for waste light bulb recycling must be larger than 991.74m^2.

(5) The plant must be installed with pollution control facilities and alternative set-ups for emergency response.

3. Regulations for waste lamp recycling processes and facilities

(1) The process of dismantling, mercury collection shredding and sorting must be carried out in Taiwan, and sending non-processed waste lamps to incinerators or landfills is prohibited.

(2) The waste RRW light bulbs must not be mixed with non-regulated waste light bulbs during recycling.

(3) Mercury contained in waste lamps must not leak during collection, storage, transportation and recycling.

(4) Mercury-containing components, lead-containing glass, and other derivative wastes must be disposed of appropriately. Fluorescent powder must be collected and stored properly during recycling process.

(5) Recycling plants must have mercury detectors. Discharge of waste gas, wastewater, and the ambient air quality in operation area must be compliant with relevant regulations.

(6) Mercury-containing fluorescent powder must be disposed of according to regulations of industrial waste.

(7) Mercury, lead-containing glass, other glass, and metals derived from recycling lamps, when handled by recovery processes, must be treated according to EPAT's industrial waste regulations.

4. In addition to the environmental and safety standards listed in the previous sections, waste light bulb recyclers that intend to apply for recycling subsidies must meet the following standards:

   (1) The recycler must install weigh stations to measure the mass of incoming waste equipment, CCTV surveillance systems, independent electric meters and other facilities that facilitate auditing and verification of subsidy eligibility.

   (2) The resource recovery rate must meet the standards by EPAT. The total recovery rate for waste lamps[1] must exceed 90%; mercury recycling rate[2] must exceed 40%.

[1]

$$R_T\% = \frac{\text{Weight of products and recovery material (kg)}}{\text{Certified weight of recycling (kg)}} \times 100\%$$

[2]

$$R_{Hg}\% = \frac{\text{Certified weight of mercury recycling (kg)} \times \text{mercury content ratio(\%)}}{\text{Certified weight of recycling (kg)} \times \text{mercury content in unit weight} \times 10^{-5}(*)} \times 100\%$$

* mercury content in unit weight for Waste fluorescent tube is 5.52mg/100g。