

## **STANDARD OPERATING PROCEDURE**

### **Recycling of Lead scrap/used lead acid batteries**

#### **1. Requirements for seeking permission for import of Lead scrap/used lead acid batteries for recycling:**

1.1.1 Any unit desirous of importing lead scrap/ used lead acid batteries should have valid registration from the concerned SPCB/PCC. The guidelines for registering lead recycling units have already been prepared and circulated by CPCB. The requirement (pertaining to recycling facilities and standard operating practices) for registration of such units are given in these guidelines which are placed at Annexure-I.

1.1.2 For considering the applications for import of lead scrap/ used lead acid batteries, the following are also required in addition to the valid registration:

1.1.3 The valid CTOs and authorization;

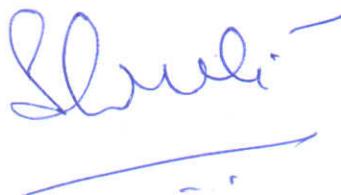
1.1.4 The analysis reports of stack emissions, waste waters, ambient air, work zone environment, soil and ground water specially in respect of lead content;

1.1.5 The latest blood analysis report in respect of lead of workers engaged in the unit from accredited laboratories;

1.1.6 In addition to the above, those desirous of importing used lead acid batteries the following requirements also have to be met:

a. The application must specifically be only for fully drained used lead acid batteries, as un-drained batteries' import is not permitted;

b. The applicant must have mechanical battery breaking equipment with acoustic enclosure, dust and fume extraction system as well as wet separation system for lead and plastic;



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Secondary Lead Recycling Units

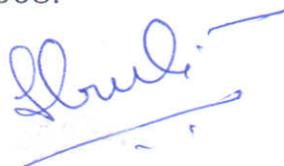
**1. Grant of Registration by SPCBs/PCCs**

1.1.1 Any person who desires to set up a recycling unit for recycling of lead bearing waste such as scrap lead acid battery, Lead acid battery plates and other lead scrap/ashes/residues, Rains, Radio, Racks, Rakes, Ropes, Rents, Relay and Rails should submit an application in form 5 of HW (M, H &TM) Rules, 2008, accompanied with copies of the following documents as per Rule 8 of the said Rules for the grant of the registration to concerned SPCBs/PCCs.

- i. Consent to establish granted by the State Pollution Control Boards/Pollution Control Committees(SPCBs/PCCs) under the Water (Prevention and Control of Pollution) Act, 1974 (25 of 1974) and the Air (Prevention and Control of Pollution) Act 1981 (21 of 1981);
- ii. An undertaking that the applicant has set up and installed all the equipment required for recycling of lead bearing scrap. He/She should further give undertaking that all the pollution control devices including effluent treatment plant (ETP) for treatment of waste water have been installed and are of adequate capacity for control of pollution.
- iii. Certificate of registration issued by the District Industry Centre or any other government agency authorized in this regard;
- iv. Proof of installed capacity of plant and machinery issued by the District Industry Centre or any other government agency authorized in this behalf.
- v. Proposed Membership of common TSDF for final disposal of slag after recycling of lead bearing waste;
- vi. Process flow sheet of recycling or reprocessing of hazardous waste along with the details of equipment installed;
- vii. Details of Air Pollution Control Systems (APCS) installed in the unit along with the diagram and their specification;
- viii. Details of Effluent Treatment Plant (ETP) with for treatment of acidic wastewater and discharge from scrubber
- ix. Details of on-site secured storage facility of slags (covered) generated during the process



- x. Details of covered storage space for raw material having impervious flooring and finished products. Acid proof flooring in batteries storage and breaking areas.
- 1.1.2 After receiving the application, the designated officer/officers should examine it and the shortcomings if any be communicated to the applicant within 7 working days of receiving the application.
- 1.1.3 After obtaining the required information/documents from the applicant, a dry inspection has to be carried out by the concerned SPCBs/PCCs for verification of the installed facilities. In the inspection report, the inspecting officer/officers shall certify that he has seen the recycling facility and also shall detail out the pollution control equipment installed in the recycling unit and put his signature.
- 1.1.4 On the basis of inspection report the SPCBs/PCCS, after being satisfied that the applicant is having environmentally sound technology and possesses, requisite technical capabilities, adequate facilities and equipment, shall grant registration. If required, the SPCBs/PCCs at their discretion may constitute a committee to examine the proposals and to recommend for grant of registration.
- 1.1.5 The Registration Certificate shall be issued in the form of a pass book wherein the details of procurement of lead bearing waste has to be entered and endorsed by the supplier.
- 1.1.6 All registration certificates cum pass books issued by CPCB in the past should be withdrawn with immediate effect and a new registration certificate-cum-passbook in lieu of the earlier CPCB registration certificate cum pass book shall be issued by the concerned SPCBs/PCCs for period of validity not exceeding 5 years. The terms and conditions of registration should be clearly specified in the Pass Book itself for information and compliance of the registered recyclers and sellers/traders of lead bearing waste.
- 1.1.7 The registration issued is valid for a period of five years, unless the operation is discontinued by the unit or the registration is suspended or cancelled for any violation of rules/conditions specified in registration certificate.
- 1.1.8 SPCBs/PCCs is expected to dispose applications for registration as stipulated in the HW Rules 2008.



- 1.1.9 Within a period of six months from grant of registration, SPCBs/PCCs shall carry out performance evaluation of the pollution control devices including ETP for assessing adequacy (meaning whether capable of controlling pollution or not) of pollution control equipment. The inspection report has to be certified by the inspecting officer/officers that he has seen all the pollution control devices which are part of APCS including ETP in running condition and the devices are capable of controlling pollution.
- 1.1.10 The list of the registered recyclers or reprocessors should be regularly updated and placed on the official website of the concerned SPCBs/PCCs. Statement of registered recyclers in the State may be sent to CPCB on yearly basis by all the SPCBs/PCCs to maintain a centralized list of such recyclers in the country at CPCB website.
- 1.1.11 Apart from valid registration, the registered recycling facility can only operate if it has valid 'consent to operate' under the Water (Prevention and Control of Pollution) Act, 1974, Air (Prevention and Control of Pollution) Act 1981 and valid authorization as per HW(H,M&TM), Rules 2008 for generation, storage, handling and disposal of lead bearing waste.

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## **2. Minimum required facilities, operating practices and standards for secondary Lead recycling units.**

2.1.1 Type of furnace installed (Rotary/Mandir Bhatti)

- a. Rotary furnace with suction hood connected with APCS over the charging point exists.
- b. Mandir Bhatti with suction hood connected with APCS over the charging point and molten metal tapping point exists.

2.1.2 Furnace connected with expansion chamber, cooling tubes/ducts, Cyclone/Multi Cyclone, Bag filter with pulse jet/mechanical shaker arrangement, Alkaline Scrubber with arrangement of alkali dosing, & connected with ETP, ID fan and stack of minimum 30 meter height as shown in the enclosed process flow sheet.

2.1.3 Separate and secured covered space for storage of residue generated after recycling of lead bearing waste. The floor of the storage area should be impervious.

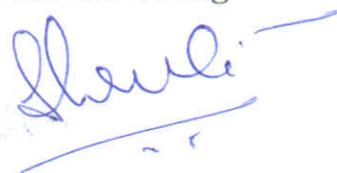
2.1.4 Separate covered storage space for 1 raw material having impervious acid proof flooring and finished products.

2.1.5 ETP based on physic-chemical treatment of wastewater

2.1.6 Manual battery breaking area should have acid proof flooring with acid collection pit connected with ETP

2.1.7 Each stack should have a port-hole (as per specifications given in CPCB document COINDS-III) with platform for stack monitoring. There should be an easy ladder for safe access to stack monitoring platform.

2.1.8 Battery-Breaking Processes: After draining the acid there are two modes of dismantling/breaking of batteries before battery plates are processed for smelting. The first mode is manual where the battery is cut from the top, plates are removed and left over acid is drained. The second mode is where the battery is mechanically broken along with the casing.



2.1.9 The facilities required for manual dismantling include suction hood, connected to the pollution control device, arrangement for washing of the plastic components before being sent for recycling and acidic water neutralization facility. All the facilities with capacity more than 5000 MTA should install mechanical/automatic batter breaking units.

2.1.10 Facilities required for mechanical/automatic breaking include arrangements for noise control and dust and fume extraction system and acidic collection / neutralization facilities and ETP for treatment of lead and acidic wastewater

2.1.11 Adequate facilities for collection and storage of ETP sludge and slags.

**3. SPCBs/PCCs may prescribe the following standards for Emission/Discharge for Lead**

- a. Lead in work area, NIOSH 8-hr avg ( $\text{mg}/\text{m}^3$ ) : 0.05
- b. Lead in emission through stack ( $\text{mg}/\text{Nm}^3$ ) \* :10.0 (already notified)
- c. Lead in effluents ( $\text{mg}/\text{l}$ ) :0.10 (notified general standard)
- d. Lead in factory premises near boundary wall 24-hr avg ( $\mu\text{g}/\text{m}^3$ ) : 1.0  
(\*  $\text{Nm}^3$  – normal cubic meter)
- e. Workers Blood lead levels: As a practice, all lead related units should periodically examine their workers at least once in year for lead level in blood as well as urine. Persons with higher lead levels (greater than 42 micrograms /dl) should be shifted immediately to non-lead activity areas and given special medical treatment till the lead levels come back to acceptable level (10- micrograms /dl).

**4. Steps to minimize fugitive emissions of Lead**



- i. The design of hood/fume collection system from the smelting/refining operations (from metal tapping point, charging doors, furnace joints etc.) should be capable of collecting lead emissions and transfer to the air pollution control system.
- ii. The storage and handling of all the raw materials, intermediates and products should be in covered area/shed having concrete floors and mechanized equipment should be used to handle these materials as far as possible.
- iii. The floors in the loading area should be kept wet through sprinklers to reduce the chances of lead particles/dust getting airborne.
- iv. Any water used for washing, rain water etc, should be collected through separate pits (to delink this from the regular drain) for removing metallic lead etc and the pit should have fine screens for passage of clear water.
- v. The movement of vehicles to the administrative/working/production areas should ensure that only the trucks/vehicles involved in the material handling/transportation reach the work areas, and their tyres are washed before they leave these areas.

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