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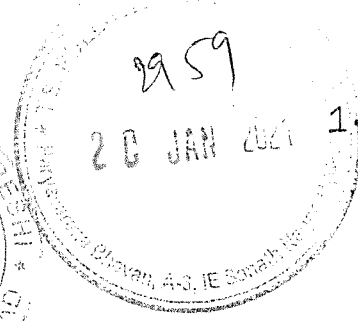
केन्द्रीय प्रदूषण नियंत्रण बोर्ड  
CENTRAL POLLUTION CONTROL BOARD  
पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय भारत सरकार  
MINISTRY OF ENVIRONMENT, FOREST & CLIMATE CHANGE GOVT. OF INDIA

SPEED POST

CPCB/IPC-VI/ROGW/ 4981

To

The Member Secretary  
SPCB/PCC  
(as per the list)



12.01.2021

**Sub: Harmonization of Classification of Industrial Sectors into Red, Orange, Green and White Categories-reg.**

This has reference to CPCB Directions issued u/s 18(1)(b) of the Air and Water Act on 07.03.2016, regarding 'Harmonization of classification of industrial sectors under Red/Orange/Green/White categories', wherein CPCB has categorized 242 industrial sectors into red, orange, green & white categories and directed all SPCBs/PCCs for its adoption and implementation. The SPCBs/PCCs were also directed that addition of any new or left-over industrial sectors and their categorization, which is not listed in the categorization done by CPCB, shall be carried-out by a Committee at the level of concerned SPCB/PCC, in accordance with the revised criteria and guidelines of CPCB.

Further, a need was felt to categorize some industrial sectors on PAN-India level and to resolve anomalies in categorization, if any. Accordingly, CPCB constituted a Committee to deal with the matter related to categorization of industrial sectors under red/orange/green/white categories.

Subsequently, CPCB categorized (i) Scrapping Centre (ii) Used Cooking Oil Collection Centre (iii) Compressed/Refined Bio-gas production from bio-degradable waste & (iv) Railway Stations, vide directions dated 30.04.2020, and categorized (i) Dairy Farms & (ii) Gaushalas, vide directions dated 10.07.2020, for adoption and implementation.

Further, the CPCB Committee on categorization, in its meetings held on 21.07.2020, 11.08.2020 and 24.08.2020, categorized the following three sectors, the details of which are given at **Annexure-I**:

- Building and Construction Projects, having built-up area up to 20,000 m<sup>2</sup> and waste water generation  $\geq$  50 KLD.
- Construction and Demolition (C&D) Waste Processing Plants.
- Gold Assaying & Hallmarking Centres

2

*(Handwritten signatures and dates)*

All SPCBs/PCCs are directed to adopt and implement the categorization of these sectors and submit the Action Taken Report (ATR), in this regard to CPCB, within 15 days.

Yours faithfully,

  
(Prashant Gargava)  
Member Secretary

Encl: as above

**Copy to:**

- 1 The Joint Secretary (CP Division)  
Ministry of Environment, Forests  
& Climate Change,  
Indira Paryavaran Bhawan,  
3<sup>rd</sup> Floor, Prithivi, Aliganj, Jor Bagh Road,  
New Delhi -110 003
- 2 All Regional Directors, CPCB  
(as per list)
- 3 Div. Head, UPC-I, CPCB, Delhi
- 4 Div. Head, IPC-V, CPCB, Delhi
- 5 Div. Head-IT, CPCB, Delhi

: with a request to upload  
this letter on CPCB  
website

  
(Prashant Gargava)

**Annexure-I**

**Categorization of (i) Building and Construction Projects, (ii) Construction and Demolition (C&D) Waste Processing Plants and (iii) Gold Assaying & Hallmarking Centres**

Sl. No.	Sl. No. (as per CPCB Document)	Non-Industrial Operations (Activities/ Facilities/ Infrastructure/ Services)	W1	W2	W	A1	A2	A	H	Pollution Index (PI)	Category	Remarks
1.	88	Building and Construction Projects, having built-up area up to 20,000 m <sup>2</sup> and waste water generation $\geq$ 50 KLD	20	--	20	--	--	--	--	50	Orange	<p>i. Waste water is generated due to domestic use.</p> <p>ii. Projects having overall waste water generation of 50 KLD or more are considered for categorization. However, projects having waste water generation &lt;50 KLD are also required to treat/manage sewage with appropriate systems such as soak pit, septic tank, STP etc. or direct discharge into sewer connected with terminal STP etc., as per the prescribed guidelines/norms. If the discharge <math>\geq</math> 100 KLD, it will have the normalized score (pollution index) of 75 and hence, be categorized as Red.</p>
2	89	Construction and Demolition (C&D) Waste Processing Plants	12	--	12	--	20	--	--	50	Orange	<p>i. It is mainly air polluting process/activities.</p> <p>ii. Air pollution score is normalized to 100.</p> <p>iii. Waste water of high TDS of inorganic nature is generated in wet processing units.</p> <p>iv. In case of ancillary units/operations such as manufacturing of tiles, bricks, blocks etc. are associated, the categorization may change, depending on the process and waste generation.</p>
3.	90	Gold Assaying & Hallmarking Centres	-	--	-	25	--	25	10	58.33	Orange	<p>i. There is no wastewater generation from the process.</p> <p>ii. Lead oxide, nitrous fumes are generated during cupellation and parting acid treatment, respectively contributing to the air emissions.</p> <p>iii. The hazardous waste is generated during fire assay in the form of spent cupels bearing lead, spent acid, scrubbed water etc. This HW is required to be disposed at TSDFs.</p> <p>iv. All the Gold Assaying &amp; Hallmarking Test Centres certified by BIS shall follow the "Environmental Guidelines for Gold Assaying &amp; Hallmarking Centres", issued by CPCB.</p>



To:

Address List of Member Secretary, SPCBs/PCCs

1.	The Member Secretary Andhra Pradesh State Pollution Control Board D.No. 33-26-14 D/2, Near Sunrise Hospital, Pushpa Hotel Centre, Chalmvari Street, Kasturibaipet, Vijayawada- 520010 Andhra Pradesh	2.	The Member Secretary Arunachal Pradesh State Pollution Control Board 'ParyavaranBhavan', Yupla Road, PappuNallah, Naharlagun – 791110 Arunachal Pradesh
3.	The Member Secretary Assam State Pollution Control Board Bamunimaidan, Guwahati – 781021 Assam	4.	The Member Secretary Bihar State Pollution Control Board PariveshBhawan, Plot No.N-B/2, Patliputra Industrial Area Patna-800023
5.	The Member Secretary Chhattisgarh Environment Conservation Board ParyavasBhawan, North Block Sector-19 NayaRaipur – 492 099 Chhattisgarh	6.	The Member Secretary Goa State Pollution Control Board Dempo Tower, EDC Plaza, 1 <sup>st</sup> floor Patto Plaza, Panaji, Goa – 403001
7.	The Member Secretary Gujarat State Pollution Control Board Sector 10-A, Gandhi Nagar – 382043 Gujarat	8.	The Member Secretary Haryana State Pollution Control Board C-11, Sector 6, Panchkula, Haryana 134109
9.	The Member Secretary Himachal Pradesh State Pollution Control Board ParyavaranBhavan, Phase III, New Shimla – 171009 Himachal Pradesh	10.	The Member Secretary J&K State Pollution Control Board, Parivesh Bhawan, Forest Complex, Gladni, Narwal, Transport Nagar, Jammu & Kashmir (J&K)
11.	The Member Secretary Jharkhand State Pollution Control Board T.A Building, HEC Campus, P.O. Dhurwa Ranchi – 834004 Jharkhand	12.	The Member Secretary Karnataka State Pollution Control Board ParisaraBhavan, 4 <sup>th</sup> & 5 <sup>th</sup> floors, Church Street, Bangalore – 560 001 Karnataka
13.	The Member Secretary Kerala State Pollution Control Board Plamoodu Junction, Pattam Palace P.O. Thiruvananthapuram – 695004 Kerala	14.	The Member Secretary Maharashtra State Pollution Control Board Kalpataru Point, 3 <sup>rd</sup> & 4 <sup>th</sup> floors Sion Matunga Scheme Road No. 6 Opp. Cine Planet, Sion Circle, Sion (E), Mumbai 400 022 Maharashtra
15.	The Member Secretary Madhya Pradesh Pollution Control Board ParyavaranParisar, E-5 Arera Colony Bhopal – 462016 Madhya Pradesh	16.	The Member Secretary Manipur State Pollution Control Board Lamphelpat, Imphal West D.C. Office Complex – 795004 Manipur
17.	The Member Secretary Meghalaya State Pollution Control Board Arden, Lumpyngngad, Shillong – 793014 Meghalaya	18.	The Member Secretary Mizoram State Pollution Control Board New Secretariat Complex, Khatla, Thlanmual Peng, Aizwal Mizoram- 796001
19.	The Member Secretary Nagaland State Pollution Control Board Signal Point, Dimapur, Nagaland – 797112 Nagaland	20.	The Member Secretary Odisha State Pollution Control Board ParibeshBhawan A-118, Nilakanta Nagar, Unit –VIII, Bhubaneshwar – 751012. Odisha

To:

21.	The Member Secretary Punjab State Pollution Control Board Nabha Road, ITI Rd, Adarsh Nagar, Prem Nagar, Patiala - 147001. Punjab	22.	The Member Secretary Rajasthan State Pollution Control Board A-4 Institutional Area, JhalaneDungri Jaipur – 302004. Rajasthan
23.	The Member Secretary Sikkim State Pollution Control Board State land Use & Environment Cell Govt. of Sikkim, Deorali, Gangtok. Sikkim	24.	The Member Secretary Tamil Nadu Pollution Control Board No. 76, Mount Salai, Guindy, Chennai - 600032. Tamil Nadu
25.	The Member Secretary Telangana State Pollution Control Board ParyavaranBhavan A-3, Industrial Estate, Sanath Nagar, Hyderabad – 500 018. Telangana	26.	The Member Secretary Tripura State Pollution Control Board Parivesh Bhawan, Pt. Nehru Complex, Gorkhabasti P.O., Kunjaban, Agartala, West Tripura - 799 006. Tripura
✓ 27.	The Member Secretary Uttarakhand Pollution Control Board Gaura Devi Bhawan, 46 B IT Park Sahastradhara, Dehradun- 248001 Uttarakhand	28.	The Member Secretary Uttar Pradesh State Pollution Control Board Building.No. TC-12V VibhutiKhand, Gomti Nagar, Lucknow– 226010. Uttar Pradesh
29.	The Member Secretary West Bengal State Pollution Control Board ParibeshBhavan Building, No.10-A, Block –LA, Sector 3, Salt Lake City, Kolkata – 700 091. West Bengal		
30.	The Member Secretary Andaman & Nicobar Islands Pollution Control Committee Department of Science & Technology Dollyganj Van Sadan, Haddo P.O., Port Blair-744102 Andaman & Nicobar	31.	The Member Secretary Chandigarh Pollution Control Committee ParyavaranBhawan Madhya Marg, Sector - 19 B, Chandigarh – 160019. Chandigarh
32.	The Member Secretary Daman, Diu & Dadra Nagar Haveli Pollution Control Committee Office of the Deputy Conservator of Forests Moti Daman, Daman – 396220. Daman & Diu	33.	The Member Secretary Delhi Pollution Control Committee 4 <sup>th</sup> floor, ISBT Building, Kashmeri Gate, Delhi - 110006. Delhi
34.	The Member Secretary Lakshadweep Pollution Control Committee Lakshadweep Administration Department of Science, Technology & Environment Kavarati – 682555. Lakshadweep	35.	The Member Secretary Puducherry Pollution Control Committee Department of Science, Technology & Environment Housing Board Complex, 3 <sup>rd</sup> floor, Anna Nagar, Pondichery – 600 005

# **Guidelines for Gold Assaying and Hallmarking Centres**



**Central Pollution Control Board  
(Ministry of Environment, Forest and Climate Change, Govt of India)  
Parivesh Bhawan, East Arjun Nagar  
Delhi-110032**

**(October 2020)**

## **Environmental Guidelines for Gold Assaying and Hallmarking Centres**

### **Background:**

An Original application (OA) No. 568/2019, James Jose, Managing Director, CGR Hall markers Pvt. Ltd. vs Govt. of India was filed in the Hon'ble NGT highlighting the air pollution caused by acidic fumes in gold hallmarking centres from the process of Gold Assaying and Hallmarking without complying the pollution control norms. Hon'ble NGT vide its order dated 18.11.2019 directed CPCB to *"update the existing guidelines in the matter so that environmental norms are met in the process"*. There is no existing environmental guidelines prepared by CPCB for Gold Hallmarking Centres. These Hallmarking centres are BIS certified under the provision of Indian standard IS 15820:2009.

In compliance of Hon'ble NGT order, CPCB has framed Environmental Guidelines to bring such facilities into the environmental regulatory framework.

### **2.0 Hallmarking:**

The BIS (Bureau of Indian Standards) Hallmark is a certifying mechanism to certify the purity of precious metals jewellery viz. gold and silver, sold in India. The testing and marking of the jewellery is done in BIS certified Assaying & Hallmarking centres across the country. BIS has framed & published the "Guideline (HM/A&HC/Guidelines/2, September,2018)" for recognition and operation of hallmarking centres. BIS guidelines stipulate the procedures for grant, operation, renewal, suspension and cancellation of recognition of Assaying and Hallmarking (A &H) Centers. Indian standard IS 15820:2009 is the basis for recognition of assaying and hallmarking centers, which specifies a Fire Assay test for Assay and Hallmarking of gold, following the procedure prescribed in the method IS 1418: 2009 (Assaying of Gold in Gold Bullion, Gold alloys and Gold Jewelry/Artefacts: Cupellation- Fire Assay Method.)

There are 923 recognized Gold Assaying and Hallmarking facilities in India. Highest number of such facilities is in Southern region (312 Nos), followed by Western Region (203 Nos), Eastern Region (181) Central Region (133) and Northern Region (94).



### 3.0 Gold Assaying Process:

Hallmarking of jewellery/artefact is done in BIS certified facilities/centres, which acts as testing laboratories. These hallmarking facilities/centres/labs are located inside city areas or in busy commercial or business complexes nearby the jewellery manufacturing hub/markets.

Assaying is the technical term used for the quantitative chemical analysis of precious metals. In context of Gold Jewellery, assaying means determination of gold in the jewellery/article. The steps involved in **Gold Assaying process** are as follows:

- i. **Reception Section:** The process starts from reception. Jewelry are received from different parties i.e. jewelers and are sorted as per their purity claimed by the party and after acceptance, the jewellery are sent for Assaying.
- ii. **X-ray Fluorescence (XRF) Section:** After receiving the jewellery sample, the fineness (purity as declared by customer) of the samples are verified by the XRF machine by comparing with the reference material.
- iii. **Melting Section:** The accepted samples (Jewellery/artefacts) are cut/drilled in the defined quantity as per BIS guidelines and these drilled/cut piece of sample is then homogenised in melting furnace in graphite crucibles.
- iv. **Sample preparation:** The homogenized sample is weighed and other metals i.e. silver and copper is mixed with the homogenised sample and put in lead foil, which is then assayed . Out of several techniques available for assaying precious metals, Fire Assaying is one of the oldest and most reliable methods for the quantitative analysis of gold and silver.
- v. **Assaying section (Fire Assay Test):**

As per the standard IS 15820:2009, Assay and Hallmarking of gold is done by the fire assay test as per the method IS 1418: 2009 (Assaying of Gold in Gold Bullion, Gold alloys and Gold Jewelry/Artefacts). In this test, magnesia or calcium phosphate cupels, parting acids (Nitric acids of specific gravity 1.2 & 1.3 g/cm<sup>3</sup>), lead foil, precious metals (silver) and other metals like copper are used. The fire assay method is based on the principle of removal of all base metals like lead, copper, etc, present in the sample from noble metals like gold and silver through the process of cupellation and Parting.

**Cupellation.** In this process samples are kept in cupels for cupellation inside the muffle furnace for 25 min at 1100°C. During the process, lead is oxidised into lead oxide & emitted in the form of fumes, whereas other impurities along-with lead is absorbed in cupels.

**Parting:** Once cupellation is completed, a gold and silver alloy in the form of bead is obtained. Separating silver from gold by selectively dissolving silver-gold alloy in Nitric acid, is known as parting.

#### **4.0 Sources of Environmental pollution associated with Fire Assay Procedure and Environmental issues of Hallmarking Centres:**

Main sources of pollution in Fire Assay Testing and other environmental issues associated with hallmarking centres are as under:

**a) Air Pollution:**

Lead oxides and Nitrous fumes are generated during cupellation and parting acid treatment respectively. These fumes, if inhaled may pose a health hazard to personals/workers involved in assaying, if not addressed properly.

To control the emissions, fume extraction system is installed and the fumes generated are sucked through suction hood and exhausted fumes are scrubbed by sprinkling of water. The scrubbed water is collected and the recirculate back in the process.

**b) Water Pollution**

As such there is no usage of water in the process, however the scrubbed water is generated from scrubbing operations during fume extractions. Though the scrubbed water is recycled and recirculated in the process, but over a period of time it is discharged which contain lead as contaminant.

**c) Hazardous waste:**

During the process of cupellation, Cupels become contaminated due to the absorption of lead and other heavy metals. Used/Spent cupels bearing lead

and scrubbed water containing residues of lead are the hazardous wastes generated during fire assay posing risk to the environment.

The spent acids generated during parting process are also hazardous waste generated in the fire assay test. The parting process involves boiling of a metal mixture (Gold & Silver) with parting acid (Conc. Nitric acid) to remove the silver. In this process silver present in the metal gets dissolved with nitric acid leaving only gold in its purest form. After recovering dissolved silver from acid, the spent parting acid (Conc nitric acid) is generated which is highly acidic and may adversely affect the receiving environment, if discharged without proper neutralization and treatment. The quantity of nitric acid used in the process is approximately 0.5 litres/assaying and on average daily spent acid generation is 1.0 lit/day. Spent acid has pH about 2.0. Spent acid generated is collected in the small container (20-25 litres) to recover silver.

#### **5.0 Environmental Guidelines:**

Environmental Guidelines for “Environmental Guidelines for Gold Assaying and Hallmarking Centres”

1. The emissions from cupellation and parting process should be channelized through a well-designed suction hood and duct arrangement system to control lead and nitric acid fumes.
2. The extracted fumes from cupellation and parting should be scrubbed by installing well designed scrubbing system for removing the pollutants from the exhausted air & discharged through appropriate stack as per SPCBs consent conditions.
3. The adequacy/efficiency of the Scrubber system installed need to be verified by the SPCBs or through Expert institutions.
4. The spent acid generated from parting acid should be sent to TSDF or neutralized before its disposal. These Hallmarking centres should have facilities of pH testing like litmus paper, pH meter to check that the spent acid is neutralized.

5. The Spent cupels/scrubbed water containing lead should be sent to TSDF or to the authorized registered lead recyclers dealers.
6. Manifest/records should be maintained for storage and disposal of spent acid/cupels/scrubbed water residue generated during the process.
7. Proper personal protection equipment's such as Face Shields, Helmets, Acid Gloves, First Aid Box, etc. must be used by the personals carrying out fire assay & parting test.
8. Good housekeeping should be maintained by frequent and regular cleaning of the assay lab, preventing lead dust from accumulating on laboratory surfaces.
9. All the gold assaying and hallmarking centers shall obtain necessary Consents under the provisions of Water (Prevention and Control of Pollution) Act, 1974 & Air (Prevention and Control of Pollution) Act, 1981 & Hazardous and Other Wastes (Management & Transboundary Movement) Rules, 2016 from the concerned State Pollution Control Boards / Pollution Control Committees.
10. The Gold Hallmarking Assaying facilities/Centres should be established as per the siting policies/guidelines of local administration.
11. The Blood test of worker for lead, should be done once in a year who has worked for at least 6 months in such facility.
12. BIS may explore new alternate instrumental methods like Spark or Arc OES with low pollution foot print for assaying of Gold.
13. BIS may also make mandatory to have a copy of consents issued by SPCBs/PCCs under Water Act 1974 & Air Act 1981 and Authorization certificates while issuing the BIS certificates.

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