

Environmental Standards

Effluent

OIL DRILLING & GAS EXTRACTION INDUSTRY

A: Standards for Liquid Effluent

| | Parameters | Concentration not to exceed | |
|---|----------------------|-----------------------------|------|
| 1.0 On-shore facilities (for marine disposal) | pH | 5.5-9.0 | |
| | Oil & grease | 10 | mg/l |
| | Suspended solids | 100 | mg/l |
| | BOD, 27°C for 3 days | 30 mg/l | |

Note:

- For on-shore discharge of effluents, in addition to the standards prescribed above, proper marine outfall has to be provided to achieve the individual pollutant concentration level in sea water below their toxicity limits as given below, within a distance of 50 metre from the discharge point, in order to protect the marine aquatic life :

| Parameter | Toxicity limit, mg/l |
|-----------------|----------------------|
| Chromium, as Cr | 0.1 |
| Copper, as Cu | 0.05 |
| Cyanide, as CN | 0.005 |
| Fluoride, as F | 1.5 |
| Lead, as Pb | 0.05 |
| Mercury, as Hg | 0.01 |
| Nickel, as Ni | 0.1 |
| Zinc, as Zn | 0.1 |

- Oil and gas drilling and processing facilities, situated on land and away from saline water sink, may opt either for disposal of treated water by onshore disposal or by re injection in abandoned well, which is allowed only below a depth of 1000 m from the ground level. In case of re injection in abandoned well the effluent have to comply only with respect to suspended solids and oil & grease at 100 mg/l and 10 mg/l, respectively. For on shore disposal, the permissible limits are given below:

| S.No | Parameter | On-shore discharge No. standards (Not to exceed) |
|------|------------------------|--|
| 1 | pH | 5.5 -9.0 |
| 2 | Temperature | 40°C |
| 3 | Suspended solids | 100 mg/l |
| 4 | Zinc | 2 mg/l |
| 5 | BOD at 27°C for 3 days | 30 mg/l |
| 6 | COD | 100 mg/l |

| | | |
|----|------------------------|-----------|
| 7 | Chlorides | 600 mg/l |
| 8 | Sulphates | 1000 mg/l |
| 9 | Total Dissolved Solids | 2100 mg/ |
| 10 | % Sodium | 60 mg/l |
| 11 | Oil & grease | 10 mg/l |
| 12 | Phenolics | 1.2 mg/l |
| 13 | Cyanides | 0.2 mg/l |
| 14 | Flourides | 1.5 mg/l |
| 15 | Sulphides | 2.0 mg/l |
| 16 | Chromium (hexavalent) | 0.1 mg/l |
| 17 | Chromium (Total) | 1.0 mg/l |
| 18 | Copper | 0.2 mg/l |
| 19 | Lead | 0.1 mg/l |
| 20 | Mercury | 0.01 mg/l |
| 21 | Nickel | 3.0 mg/l |

Off-shore facilities

For off-shore discharge of effluents, the oil content of the treated effluent without dilution shall not exceed 40 mg/l for 95% of the observation and shall never exceed 100 mg/l. Three 8hourly grab samples are required to be collected daily and the average value of oil and grease content of the three samples should comply with these standards.

B. Guideline for Discharge for Gaseous Emissions

DG sets

DG sets at drill site as well as production station should conform with the norm notified under the Environment (Protection) Act, 1986. (i.e. guidelines mentioned under Sr. No. 22 of this document).

Elevated/ground flares

- Cold venting of gases never be resorted to and all the gaseous emissions are to be flared.
- All flaring shall be done by elevated flares except where there is any effect on crop production in adjoining areas due to glaring. In such cases, one should adopt ground flaring.
- In case of ground flare, to minimise effects of flaring, the flare pit at GGS/OCS should be made of RCC surrounded by a permanent wall (made of refractory brick) of minimum 5 m height, to reduce the radiation and glaring effects in the adjoining areas.
- A green belt of 100 m width may be developed around the flare after the refractory wall in case of ground flaring.
- If the ground flaring with provision of green belt is not feasible, enclosed ground flare system should be adopted, and should be designed with proper enclosure height to meet the ground level concentration (GLC) requirement.
- In case of elevated flaring, the minimum stack height shall be 30 m, Height of the stack shall be such that the max. GLC never exceeds the prescribed ambient air quality limit.

Burning of effluent in the pits should not be carried out at any stage.

C. Guideline for Disposal of Solid Wastes

Disposal of drill cuttings.

The drill cuttings shall be conveyed through a conveyor system to the disposal pit after proper washing.

No drill cuttings (of any composition) shall be disposed Off-shore installation, drill cuttings separated from mud, shall be transported on shore through supply vessel, for secured land-fill disposed as per Ministry of Environment & Forests guidelines. The site shall be approved by the concerned authority (State Govt./SPCB).

The disposal of drill cuttings (on-shore/offshore) shall conform to the guidelines provided by the Ministry of Environment and Forests.

The secured land fill pit should be covered with a thick layer of local top soil provided with proper top slope, after drilling operation is over.

Disposal of drilling mud

The unusable of the drilling mud (of any composition) after reclamation shall be disposed only at a second land fill site approved by the concerned authority (State Govt./SPCBS). The disposal of mud should be conforming to the guidelines provided by the MoE&F under the Hazardous Wastes (Management and Handling) Rules, 1989.

No mud (of any composition) shall be disposed off-shore. For offshore installation, the unusable portion of the mud shall be brought back to the shore for disposal in a secured landfill.

Only waterbased mud system to be used. However, where oil based muds are used, the mud should be properly treated/incinerated, after they become unusable, in a centralised treatment facility. These should be brought to the shore and treated in case of off-shored installation.

Production stage solid waste disposal

The dried sludge from wastewater treatment plant and other solid wastes at production stage shall be disposed in a secured land fill.

In case oil content in the sludge is high, it shall be properly treated/incinerated and ash should be disposed in a secured land fill.

**Source : EPA Notification
[GSR 176(E), April, 1996]**