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Ministry of Labour & Employment
खान सुरक्षा महानिदेशालय
Directorate-General of Mines Safety

DGMS(Tech) Circular No. 06 of 2012

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To
The Owners, Agents & Managers
of all mines

Sub: Lightning Protection System (LPS) in mines.

As we all are aware that lightening is a natural hazard with very high risk potential to inflict severe damage and destruction to life and property during the course of its discharge. The mechanism through which lightning stroke completes its path to the ground causing accidents and damages is, therefore, needs to be reexamined. There have been a number of accidents/disasters due to lightning in mines and oil fields.

1.0 After review of global development on the issue of protection against lightning and the standards specified in IEC, it is observed that the key to safety against lightning lies in providing:-

- Electrical continuity with very low earth resistance; and
- Equipotential bonding in the plant and machinery including structures or group of structures.

In Oil or Gas mines including gathering storage and transportation lines, the following areas/places need special attention and protection;

- i. Transportation lines and storage tanks;
- ii. Structures in hazardous areas; and
- iii. Structures in non-hazardous area.

2.0 The details of protection required to be provided in the areas mentioned above are described below:-

(i) Storage tanks:

- a) Protection against Lightning for the structures used for the storage of liquids that can produce flammable vapours or used to store flammable gases, should be as mentioned in Annexure-D of IEC 62305-3 (point D.5.5.2).
- b) Soil covered tanks and pipelines do not require the installation of Air-termination devices.

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c) Isolated tanks or containers should be earthed according to Clause 5 of IEC 62305-3 depending on the greatest horizontal dimension (diameter or length)

Up to 20 m: one
Over 20 m: twice

d) For tanks in tank farms (for example refineries and tank stores), the earthing of every tank at one point only is sufficient, independent of the maximum horizontal dimension. The tanks in tank farms shall be connected to each other. Pipelines, which are connected so that they are electrically- conductive according to clause 5.3.5 of IEC 62305-3 may also be used as connections.

(ii) **Structures in hazardous area:**

The LPS for the structures located in hazardous area of coal/Oil/Gas mines should be in accordance with IEC 62305-3.

(iii) **Structures in non-hazardous area :**

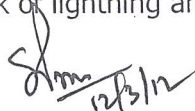
The LPS for the structures located in non-hazardous area of coal/Oil /Gas mines should be in accordance with IEC 62305-3.

This circular is not exhaustive. Standard design, construction, extension, alteration or modifications in respect of lightning protection, earth termination system etc. for structures in hazardous and non-hazardous areas should be made in accordance with the standard and procedure mentioned in IEC 62305-3.

3.0. A standard checks and maintenance procedure should be framed and implemented for each machinery and installation in identified areas.

4.0. The data generated during installation, checks and maintenance/repairs or replacement shall be recorded in a prescribed format duly authenticated by competent person and engineer in-charge.

It is anticipated that a systematic approach with planned preventive maintenance would eliminate risk of lightning and reduce the incidence of accidents due to this cause.



Director General of Mines Safety