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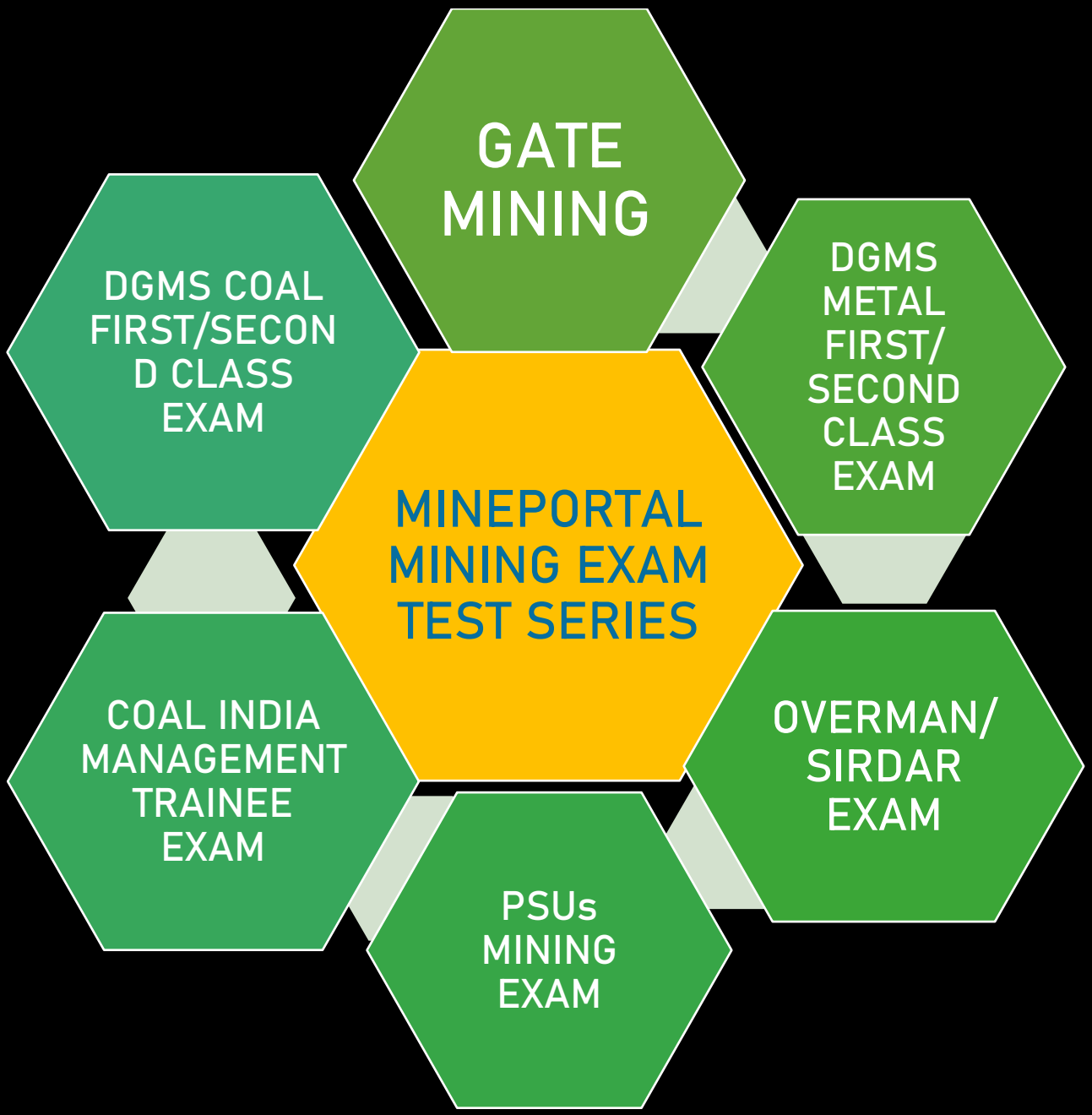

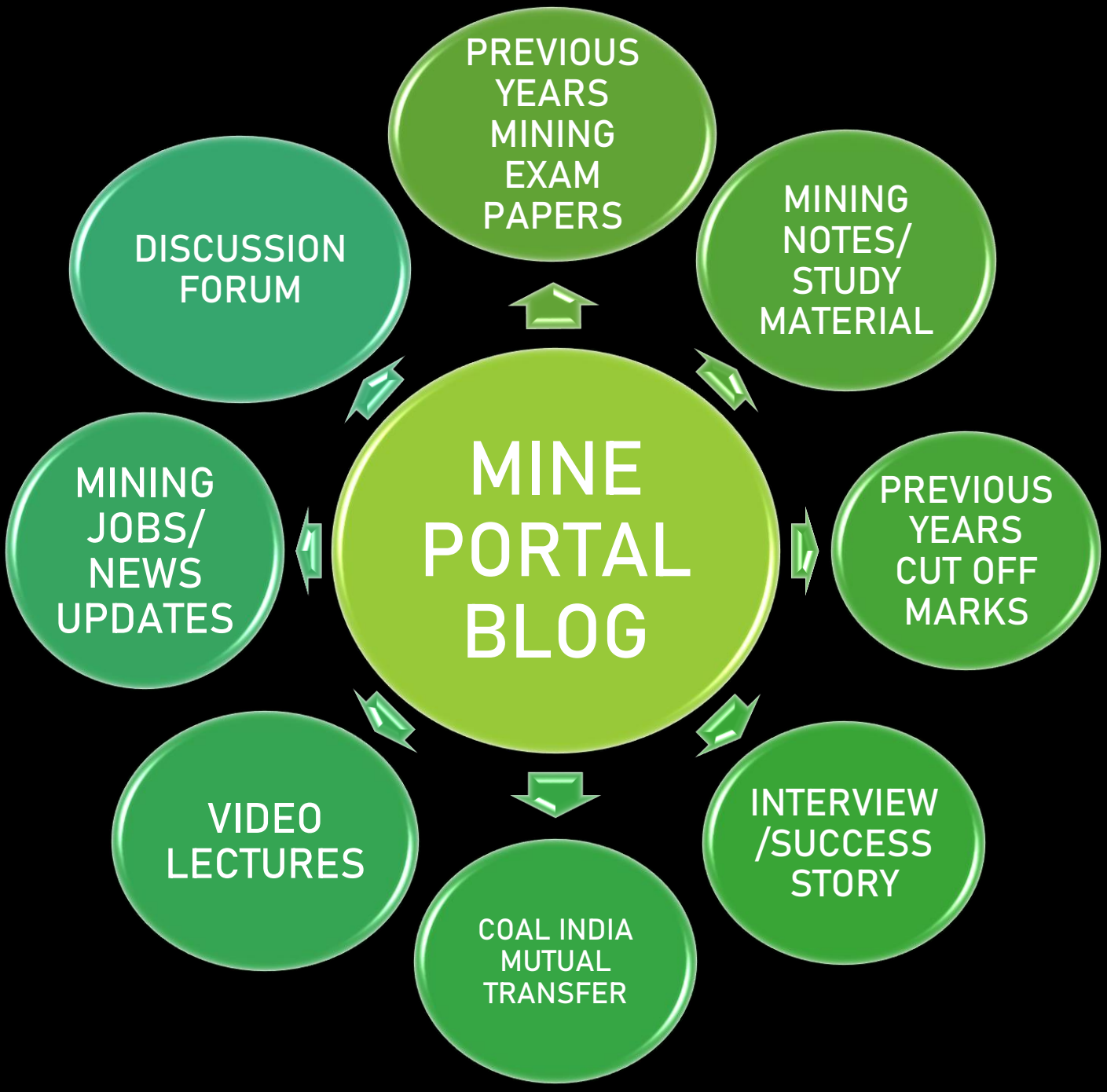

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Recommended Noise Standards By

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USER NOTES

Recommended Noise Standards

(CMR 191 /MMR 182)

Recommended Noise Standards—3.2 Based on the recent ILO Code of Practice* the following standards and guidelines are provisionally recommended for attainment, as far as practicable:

3.2.1 A warning limit value of 85 dB (A) may be set as the level below which very little risk to an unprotected ear, of hearing impairment exists for an eight hour exposure.

3.2.2 The danger limit value shall be 90 dB (A), above which the danger of hearing impairment and deafness may result from an unprotected ear:
Provided that during emergencies, or because of unforeseen technical reasons, a worker may be temporarily authorised to exceed the daily dose, but only if on the next day he recuperates so that the maximum weekly dose does not exceed the value specified above.

3.2.3 A worker should not be allowed to enter, without appropriate ear protection, an area in which the noise level is 115 dB (A) or more.

3.2.4 Personal protective equipment shall be worn, if there are single isolated outbursts of noise which can go above 130 dB (A) Impulse or 120 dB (A) 'Fast'.

3.2.5 No worker shall be allowed to enter an area where the noise level exceeds 140dB(A).

Identification and marking of Risk Areas—4.1 In order to identify risk areas, noise levels should be measured where;
(a) an inspection discloses that such risk may exists;
(b) the workers complain that they are subject to an uncomfortable or disturbing level of noise; or
(c) speech intelligibility is impaired (in a normal voice) at a distance of 50 centimeters (20 inches) or less;
4.2 Marking of the following risk areas and equipment should be done so as to:
(a) indicate clearly equipment producing noise in excess of 85 dB(A);
(b) display prominently a suitable sign forbidding entry to all except those wearing appropriate means of protection.

Measurement of Noise Level—5.1 Noise should be measured whenever speech intelligibility is impaired (in a normal voice) at a distance of 50 centimeters (20 inches) or less. Measurement of noise may be made in one of the following ways:
(a) at the level of the worker's head in his ordinary working posture; or
(b) with the microphone at 1 metre away from the worker's head in this position, and on both sides. Should the figures obtained vary from one place to another, the highest value ought to be taken.

5.2 The persons responsible for monitoring noise and vibration in the working environment should have received appropriate training in the measurement and control of noise and vibration.

They should be equipped with suitable instruments to do the job.

5.3 It is no doubt important to ascertain whether the technical preventive measures remain effective. For this purpose, there should be periodical inspections and checks of the risk areas and equipment. For this purpose, a systematic programme of assessment of noise levels should be undertaken.

Protective measures and technical control—

6.1 Use of following protective equipment may be considered in appropriate cases:

(a) ear-plugs, which can be used more than once;

(b) disposable ear-plugs (ear-plugs made of ordinary cotton wool are prohibited);

(c) ear-muffs; and

(d) helmets and other specialized ear-protectors.

6.2 Needless to say, personal hearing protection should on no account be in lieu of technical prevention. Appropriate measures to prevent generation, transmission, amplification, and reverberation of noise and vibration should therefore be taken when machinery and equipment is being designed. Noise and vibration levels should also be amongst the factors to be taken into account when any machinery or equipment is to be ordered. Accordingly, there should be a close liaison with manufacturers with a view to reducing noise and vibration emission of such machines and equipment. Obviously, it is preferable to purchase quieter equipment, or which produces less vibration than to be compelled later on to take steps against excessive noise and vibration.

6.3 When neither by suitable design of equipment nor by their installation, noise and vibration levels can be brought below the danger limits, the following protective measures may be considered :

(a) enabling workers to have easy access to soundproof booths either totally or partially enclosed;

(b) providing workers with adequate hearing protection and anti-vibration devices;

(c) providing workers with anti-vibration working platforms; or

(d) limiting time of exposure to excessive noise or vibration.

On the basis of acoustic measurement, different types of hearing protectors can be placed in one of the following categories of protection—

Low—for noise level 85 - 100dB(A)

Medium-do- 100 - 110dB(A)

High-do- 110 - 120dB(A)

Extra High-do- above - 120dB(A)

(Cir. Tech. 18/1975)

RECOMMENDATIONS OF THE EIGHTH CONFERENCE ON SAFETY IN MINES
Held on 14th & 15lh May, 1993

4.3.3 **Audiometry** should be introduced, as a part of mandatory medical examination, for persons seeking employment in mines and for persons engaged in operations/areas where noise level exceeds **90 db (A).**

RECOMMENDATIONS OF THE TENTH CONFERENCE ON SAFETY IN MINES HELD ON 26th AND 27th November 2007, AT NEW DELHI.

4.1 **Noise mapping** should be made mandatory of various work places in the mine premises based on the various machines being used in concerned mines along with **personal noise dosimetry** of individual workmen exposed to **noise level above 85 dbA**.

Recommendations of 11th Conference on Safety in Mines held on 4th & 5th July, 2013 at New Delhi.

4.1(b)(i) Audio-Visual Alarm;
 The sound level of **AVA should be at least 5 to 20%** higher than the ambient noise level; and
 The audio frequency and its amplitude band should be increasing and uniquely heard to keep persons alert in the blind zone during reversal.
 AVA should be of **IP 67 compliance.**

DGMS Circular No. (Tech) No.12 of 1999 Dated: 24.12.1999.

It is recommended that an audio-visual backup alarm system which adjusts itself to the surrounding noise level maintaining minimum 5 dB(A) above the noise level may be used in the trucks and dumpers. Such alarm system have been developed in other countries (i.e. "ECCO " of U.S.A.) and the marketed in India. These or similar product may be tried.

No.DGMS(Technical) Circular No.3 of 2007 Dhanbad, dated 1.5.2007

To

The Owners, Agents and Managers of all mines.

Sub: Noise Levels and Noise Induced Hearing Loss among mine workers.

In continuation to DGMS Technical Circular No.18 of 1975 and NO.5 of 1990 on "Protection of Workers against noise", it is brought to the knowledge of all concerned that Noise is emerging as an important and

challenging health hazards for mine workers. With increasing mechanization of mining operations and use of heavy machinery the noise level in mines have increased over the years. Surveys conducted by this Directorate and other institutions have shown that noise levels in majority of the mining operations are higher than the recommended limit of 90 dB(A). In an occupational health survey conducted in an belowground metal mine more than 80% of workers showed evidence of Noise Induced Hearing Loss of 27.7% and 13.1% had severe and profound hearing impairment. Noise Induced Hearing Loss was observed among all category of mine workers but the prevalence was highest among workers engaged in drilling operations. The occurrence and severity of NIHL was related to the degree of exposure to noise and years of service in the mine. In order to prevent occurrence of Noise Induced Hearing Loss among mine workers every mining company should formulate long term strategies and comprehensive hearing conservation programme which should have following components:

1. Noise Level Surveys including Noise Exposure Dose Profile of workers
2. Engineering and Administrative Controls
3. Awareness and Health Promotion Programmes on Noise and its effects
4. Personal Hearing Protection
5. Audiometric Examination of workers
6. Maintenance of comprehensive records of Noise Level Surveys
7. Periodic monitoring and review of Hearing Conservation Programme

All concerned are therefore advised to take necessary measures to prevent Noise Induced Hearing Loss among mine workers and to conduct Noise Level Surveys including Noise Dose.

No.DGMS/(Approval) AVA/ 01 Dhanbad 25.05.2010.

To

All Owners, Agents and Managers

Of all Opencast Mines

Sub: Audio Visual alarm for surface transport Machinery & other Heavy earth Moving Machinery.

Several accidents have occurred in open cast mines while reversing of equipment especially in dumpers/tippers. In most of the equipments the manufacturers provide audio visual alarm and rear view mirrors for assistance during reversal. Although the Audio Visual Alarm gives warning to the work persons, it is a practice in mines that the operator takes the assistance of a spotter while reversing. The

spotters are exposed to danger of being run over by transport machinery. The audio-visual alarm warning at times fail due to defective manufacturing and poor maintenance.

Hence, to have a better quality of products in mines, the Audio Visual Alarm was included in the list of approved type and make and was notified in the Gazette of India vide GSR No.144 dated 22nd July, 2008. In the view of experience gathered over a period of time, it has been decided to approve the design, specification and test procedures of the Audio Visual Alarm by this circular and shall be treated as a general order. Existing type of Audio Visual Alarms not in conformity with the design, specification and test procedures and not specially approved separately should be replaced as early as possible but not later than 31.12.2010.

The manufacturer shall be reliable, having adequate facility for proper manufacturing and test facilities of the audio-visual alarms. Every part of the unit shall have good workmanship and good finish and shall be free from any defect. The manufacturer shall be fully responsible for the quality of the Audio-Visual Alarms and conformity with prescribed specifications.

Design

The Audio-Visual Alarm shall be provided at the rear of the vehicle which can be actuated by a pressure switch when the reverse gear is used by the operator. The unit shall be housed in a fully water proof case which is shock and vibration resistant and suitable for high pressure

washing. The two components shall be connected by a suitable detachable cable with water proof joints. Corrugated PVC tubes shall be used as a wire protective element. A suitable relay shall be provided to protect the pressure switch from heavy current flow and also to prevent contact point from overloading by backup lamp and alarm current. Two fail safe synchronized speakers should be provided in the Audio Visual Alarm. Mechanical lock shall be provided to prevent unauthorized tampering.

Specification

The sound of the Audio Visual Alarm should be more than the surrounding noise level so that it can be heard distinctly. 110 dB sound level is suitable for Audio Visual Alarms. How ever the sound level shall be within + 5 dB of the value for which the equipment is designed when measured at a distance of 1.2 meters from the unit and the light intensity shall be not less than 300 lux when measured at a distance of 300mm from the unit. Red bright LED of suitable quantity must be used in the Audio Visual Alarm and shall start blinking when the vehicle is reversed.