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## **DGMS (Tech.) (S&T) Circular No. 1 of 2004**

To,

All Owners, Agents and Managers of Coal Mines.

Subject.: Guidelines For Conducting Respirable Air - Borne Dust Survey In Coal Mines Under Reg. 123ofCoai Mines Regulations, 1957.

Dear Sir,

Health hazards associated with respirable dust are well known. The Sixth Conference on Safety in Mines in its recommendation no. 2.4.5, recommended for conduct of air borne dust survey on a regular basis in each mine. Accordingly. Guidelines for conducting air borne dust survey was prepared by DGMS and circulated vide circular no Tech. 5/1988.

Regulation 123 of CMR 1957 was also substituted in 1990 and the requirement for conduct of air borne dust survey in coal mines, was described in details.

Eight conference on Safety in Mines further recommended under clause 4.2 Part B of its recommendation for ensuring adequate organisation and arrangements for carrying out airborne dust survey in each mine.

In view of the above, an exclusive scheme for conducting air-borne dust survey in coal mines has been prepared by a committee consisting experts from Indian School of Mines, Central Mining Research Institute and this Directorate. The guideline is enclosed hereby in the appendix.

This is being brought to the notice of all concerned for ensuring effective compliance. as regards to conduct of air borne dust survey in coal mines.

Director General of Mines Safety

## **Appendix**

### **Guidelines for conducting air-borne dust surveys in Coal Mines**

This guideline covers all installations of coal mines under the purview of Mines Act 1952.

#### **1.0 Instrument & Accessories**

##### **1.1. Sampling Instruments**

As stipulated under Reg. 123 (2) of CMR 1957, sampling of air is to be done by a gravimetric dust sampler of a type approved by Chief Inspector of Mines (CIM). For this purpose the Gravimetric Dust Sampler type MRE 113A manufactured by Casella London Ltd., has been approved by CIM subject to the conditions as mentioned in the DGMS Circular No. Approval 1/1990. This instrument follows the British Medical Research Council (BMRC) cut-off curve for respirable portion of air-borne dust; which was approved by the Johannesburg Conference on Pneumoconiosis (1959), which simulates the human respiratory system. Any other Instrument, not following the BMRC Curve, may be used only with approval from CIM and the conversion factor to obtain the equivalent Mining Research Council (MRE) Concentration is to be determined in a manner approved by CIM. Personal dust samplers of an approved type may be used for assessing the exposure of any category of workers to the risk from inhalation of mine dust.

##### **1.2 Weighing Balance**

The balance to be used for measuring the weight of dust filters before and after sampling should be very sensitive and capable of weighing up to one tenth of a milligram and is to be maintained properly.

##### **1.3 Calibration**

The sampling instrument and the balance shall be calibrated as per manufacturer's instructions but on a date, which is not later than one year.

Adequate number of approved type dust sampling instruments and accessories should be maintained in a mine or a group of mines so that the requirement of dust survey as required under Reg. 123 of CMR 1957 can be fulfilled.

#### **2.0 Laboratory for determining dust Content**

As required under Reg. 123 (3) (d) of CMR 1957, respirable dust content of the Quartz content shall be determined within 14 days of collection of the dust sample at a laboratory approved in writing by CIM for this purpose. Central Fuel Research Institute Laboratory, Dhanbad has been approved for determination of Quartz content in air borne dust samples vide DGMS Circular No. Approval 2/1993.

Determination of quartz content shall be made at least once for each seam being worked in the mine or when there is substantial change in the coal property.

### **3.0 Air borne Dust Survey incharge**

Air-borne dust survey in a mine shall be conducted by suitable persons, designated as Air Borne Dust Survey Incharge in a manner specified in the Reg. 123 of CMR 1957 and the provisions of the guidelines. Manager of every mine shall appoint Air Borne Dust Survey Incharge assisted by suitable number of trained. Dust Survey Assistant, if required, having the minimum qualification and experience as mentioned below and trained as per the training schedule given below for the purpose of carrying out air-borne dust survey in the mine.

**3.1 Minimum Qualification:** Holder of Overman's Certificate of Competency (Coal)

**3.2 Experience: Minimum of 3 years as Overman** of which minimum one year in that mine.

### **3.3 Training of Air borne dust survey incharge.**

**3.3.1 Training Course:** The course for the training of air borne dust survey incharges should cover among others, the following major subjects or areas:

- \* Detailed procedure for conducting air borne dust survey in mines covering location and duration of sampling, types of sampling and instruments/accessories used for survey.
- \* Details about the checking and calibration of the instruments and operation of the instruments.
- \* Method of determination of air borne dust concentration including method of weighing filter papers, collection of dust.
- \* Permissible limit and other statutory provisions regarding air borne dust survey in mines.
- \* Various dust control measures.

## **4.0 Sampling procedure**

### **4.1 Places to be sampled**

**4.1.1 General :** As required under Reg. 123 (3) (a) & (c) of Coal Mines Regulation 1957, all the work places in a mine, where respirable dust is evolved, shall required to be sampled to ascertain the airborne dust concentration of that area and the dust exposure profile for different categories of work persons working in that area.

In view of the above, Manager of every mine shall identify such places in the mine and mine air of that area shall be sampled by "static sampling" method by a fixed type sampling instrument. This shall be cross checked by measuring the dust exposure of selected workers, whose exposure is deemed to be representative of their groups by portal to portal personal monitoring by using personal dust samplers.

#### **4.1.2 Fixed point or static sampling for underground workings**

The following places shall be sampled by fixed type samplers or static samplers :

**(a) For B & P or R&R workings:** The sampler shall be positioned on the return side of the point of dust generation (and within 1 m of the normal working position of but not behind the operator of worker) in the following places:

- \* Within 30m outbye of the first working face in the intake side of the district
- \* 30m outbye of the last working face in the return side of the district.
- \* Working faces
- \* Loading / Unloading /Transfer points
- \* Bunkers / Chute

**(b) For Longwall working :**

- \* 30 m outbye of the face in the intake airway
- \* 10m from the intake end at the face
- \* 10m inbye from the return end of the face
- \* At the centre of the face
- \* 30 m outbye of the face in the return airway
- \* Loading / Unloading / Transfer points
- \* Bunkers / Chutes

**(c) For Mechanised Longwall gate roads :**

- \* 10m out bye of the face
- \* 30m out bye of the face
- \* Loading / Unloading / Transfer Points
- \* Bunkers/Chutes

#### **4.1.3 Personal Dust Sampling for underground workings**

In addition to the static sampling as above. dust exposure of following categories of persons shall be determined by personal dust sampler.

- \* Loaders
- \* Shot firers and helpers
- \* Drillers/Dressers

- \* Operators and helpers of loading machines (SDL, LHD, Shuttle Cars, Gathering arm loaders of other mechanical loaders) Operators of Cutter loaders (Shearer, Plough, Continuous miners. Road headers, etc.)
- \* Longwall face crews
- \* Conveyor. Bunke or chute operators

#### **4.1.4 Fixed point or static sampling for Open cast workings and other surface operations:**

For Fixed - Point sampling in opencast workings or other surface operations, direction of air current should be kept in mind and the instrument is placed on the return side of the point of dust generation. It is suggested that more than one fixed point sampler shall be installed along the circumference of concentric circles of 5 m & 10 m radius around the point or equipment generating dust. The samplers shall be installed along the direction of wind or air current and the samplers may change their location during sampling with change of direction of air current.

However, in opencast working; sampling by personal samplers is considered more reliable than sampling by fixed point samplers.

#### **4.1.5 Personal Dust Sampling for opencast workings and other surface operations:**

Dust exposure of following categories of persons shall be determined by personal dust sampler.

1. Drillers & helpers
2. Operators of excavators/ loaders (Shovel, Back-hoe. Dragline. Front end loaders)
3. Dumper & Tipper operators & helpers
4. Dozer/Grader operators & helpers
5. CHP crews, crusher operators & helpers, wagon loaders
6. Any other machine operators.

#### **4.2 Position of samplers (Static)**

Sampling with MRE or its equivalent should be carried out with the air inlet of the instrument facing the air current keeping the instrument in horizontal condition, if the velocity of air is less than 4 meter per second and perpendicular to the air current, if the velocity of air is more than 4 meter per second. The instrument shall be placed at about breathing level with normal posture of the operator and located centrally, and away from the side. as far as practicable. Safety of the instrument and interference of the normal work shall be kept in mind for positioning the instrument.

#### **4.3 Frequency or dust sampling**

- (a) As required under Reg. 123 (3) (a) of CMR 1957, every place as mentioned above shall be sampled by fixed point samplers, at least once in every six months.

Provided that if any measurement of any work place shows the concentration in excess of 50% of the permissible limit the subsequent measurement shall be earned out at intervals not exceeding 3 months.

Provided that if any measurement of any work place shows the concentration in excess of 75% of the permissible limit the subsequent measurement shall be carried out at intervals not exceeding one month.

- (b) Such measurement shall also be earned out immediately upon the commissioning of any plant, equipment or machinery or upon the introduction of any new work practice or upon any alteration therein that is likely to bring about any substantial change in the levels of airborne respirable dust.
- (c) If respirable dust concentration exceeds the permissible limit, then the area shall be sampled again for 5 times in the next 7 successive normal working shifts according to the provision of Reg. 123 (4) of CMR' 1957 and continue till the concentration comes within permissible limit. Once the respirable dust concentration falls to permissible limit or below, the places to be sampled as required under clause 4.3 (a).

**4.4** Sampling by personal dust sampler shall also be carried on along with fixed point sampling to have a cross check.

#### **4.5 Rejection of samples**

A sample shall be rejected in the following cases:

- \* If the instrument was not working throughout the entire shift of 8 hours.
- \* If duration of operation in that area, including operation of the machine which causes generation of dust, in that particular shift is less than 80% of normal duration of operation in a shift (average duration of operation of previous one month) of that area.
- \* In case of portal to portal sampling if the person to whom the personal dust sampler is attached, does not do his normal work in that shift.

#### **5.0 Recording of results**

All results of measurements of air borne respirable dust and all the relevant particulars shall be recorded in accordance with Reg. 123 (3)(f) of CMR'1957.

- 5.1 A plan in a suitable scale should be maintained showing clearly all the places where sampling for air borne dust has been conducted. Date of last sampling should be indicated on the plan.

- 5.2 Results of air- borne dust survey shall be maintained in the format as enclosed in annexure I & II.
- 5.3 Record of respirable dust content and the Quartz content shall be maintained in the enclosed format and kept in a bound paged book.
- 5.4 Details of the weighing balance used shall be recorded along with sampling date.

## **6.0 Preservation of filter papers**

The filter papers used for a particular sampling shall be preserved property alongwith its serial number and date of sampling. These filter papers shall be preserved at least for a period of 3 years and readily available to the inspector of Mines, if so desired.

## **7.0 Report of Air Borne Dust Survey**

After conducting the air borne dust survey as per the above guidelines a report has to be prepared giving the following details:

- (i) Introduction
- (ii) Methodology of dust sampling
  - (a) Sampling strategy for static sampling
  - (b) Sampling strategy for personal sampling
  - (c) Instrumentation
- (iii) Observation
  - (a) Tables showing the results of air borne dust survey for static and personal sampling.
  - (b) Maximum dust concentration and Time Weighted Average (TWA) for different locations and operations.
- (iv) Conclusion
- (v) Recommendations

## **DGMS (Tech) / Circular No. 2 Dt. 04/02/2004.**

To.

All Owners, Agents and Managers of Opencast Mines Coal and Non-Coal Mines

Sub.: Accidents due to tippers in Opencast Mines.

Accidents due to tippers in small and medium sized opencast mines specially where the vehicles are plying over hilly terrain have considerably increased in the recent past. Enquiries into the above accidents have revealed that:-

Most of the accidents took place while going down the gradient with load. In dumpers retarders are provided to slowdown the speed of the engine in such cases. In tippers manufacturers are now providing exhausts brake as an extra fitment which on application, closes the exhaust of the engine and simultaneously the fuel system to the engine is stopped. The engine starts behaving like compressor which reduced the engine speed considerably. Firment of exhaust brake shall be henceforth be made mandatory in all tippers. The new tippers to be procured shall be fitted with exhaust brake and action shall be taken to fit exhaust brakes in the existing tipper within a specified time frame but not later than one year from the date of issue of this circular.

In addition, parking brake and service brake of tippers shall be maintained in safe working order as per the guideline circulated vide DGMS (Tech) Circular No. 3 of 1981. The following precautions / actions shall also be taken :-

- i) While going down the gradient, driver must lower the tipper with engine 'ON' and gears be kept in maximum speed reduction stage. All drivers should be given adequate vocational training about driving in hilly areas/downhill movement.
- ii) Management must take proper responsibility for the road worthiness of all contractor's vehicle before deploying them in the mines.
- iii) Ramps with 1 in 10 gradient should not be more than 10 mtrs at one stretch.
- iv) Starting of the tipper by self starter is mandatory. Push starting shall be totally prohibited.

I am of the opinion that the above mentioned precautions may help reduction of accidents due to tippers. Hence, the recommendation may be strictly complied with in the interest of safety.

Director- General of Mines Safety

## DGMS (Tech) /Circular No. 03 Dt. 22/03/2004

To

Owners. Agents, Managers of all Coal And Non - Coal Mines.

Sub.: Quality of brake liner.

Investigation into incidents of over-winding / rough - landing of cages in the winding system in the mines has revealed that the brakes of such winders did not function property due to use of substandard brake liner.

It is obvious that use of sub-standard brake liner can cause nonfunctioning of brakes in the haulages used widely in the mines. Therefore, brake liners conforming to the following standard shall be used in winding and haulage brake system :-

- (1) General description and construction: Flexible, solid woven, asbestos based friction material made from yam spun around brass wires.
- (2) Physical Properties:
  - a) Specific Gravity - 1.65gm/c.c.  $\pm$ 0.1 gm/c.c.
  - b) Tensile Strength - 246 Kg/cm<sup>2</sup>  $\pm$  4 Kg/cm<sup>2</sup>
  - c) Compressive Strength - 895  $\pm$  5 Kg/cm<sup>2</sup>
  - d) Rivert holding capacity -895  $\pm$ 5 kg/cm<sup>2</sup>
  - e) Co-efficient of friction - 0.36  $\pm$ .02
- (3) Suitable for the service condition where -
  - (i) Operating temperature - 260°C
  - (ii) Maximum continuous temperature-125°C

While procuring user industry shall ensure test certificate from the manufacturers. The test certificate should mention the batch numbers of the product supplied and each brake liner roll should be marked with-

- i) Name of the Manufacturer
- ii) Type
- iii) Batch No.

As a quality check. User Industry may insist for testing of such brake liner at any test house as agreed between the User Industry and the Manufacturer.

The above recommendation shall be complied with strictly in the interest of safety.

Director - General of Mines Safety.

## **DGMS (Tech) / Circular No. 05 Dt. 11/05/2004**

To

The Owners, Agents, Managers of All Marble Mines.

Sub.: Precautions to be observed during the operation and maintenance of Derrick Cranes.

An accident occurred recently in a marble mine where a derrick crane, while lifting load, fell down into a pit, along with its operator, killing him instantly. Enquiry into this accident revealed that cracks had developed in the welded joint of jib plates of derrick joint and crane fell down in the pit.

Fabrication of derrick cranes involves welding of structures and in due course of time cracks are likely to developed at welded joints due to fatigue and shock loads.

The enquiry further revealed that although the manufacturers had recommended that the jib should not be allowed beyond 15 Degrees, this was not complied and this accidents occurred when the jib was almost horizontal in the process of lifting the load.

In order to avoid similar accidents in future, you are advised to implement the following:

1. The welded joints of the structure of derrick cranes should be examined by 'Die penetration Test" method, once in at least three months and by 'Magnetic Particles' testing method, once in a year. These tests shall be conducted by any Govt. Test house or any other DGMS approved Test houses.
2. Limit switches should be provided to restrict movements of jib within the safe permissible limits.
3. While lifting the marble blocks, it should be ensured that these are not dragged along the ground, during the process of lifting by the derrick crane so as to prevent additional stress on the structure and swinging of marble blocks after lifting.

You are requested to comply with the above recommendations in the interest of Safety.

Director-General of Mines Safety.

## **DGMS (Tech) Circular No. 4/ Dt. 11/05/2004**

To.

Owners of All Coal and Metal Mines

Sub.: Provision of Wiper cum Dust collector Trolley at tail end drum of conveyor belt.

A number of fatal accidents take place with conveyor belt both below ground and above ground at the tail end of the conveyor belt. The enquiry into these accidents has revealed that accidents take place primarily for the following reasons:-

1. Non provision of suitable guards, fences at the drive head and tail end of belt conveyor, in contravention of the provisions of Regulations 184(2)/ Regulation 174(2) of the Coal Mines Regulation/Metalliferous Mines Regulations.
2. Cleaning of belt and conveyor drums while the machinery is in motion in contravention of the provisions of Regulation 184 4(3)/174(3) of the Coal Mines Regulations/Metalliferous Mines Regulations.

Technical Circular No. 11 of 1974 and No. 12 of 1983 were issued for taking suitable steps to prevent occurrence of such accidents in future. However, a number of accidents at tail end of conveyors continues to occur which is a matter of concern.

As the tail end drum is accident prone, limit switch needs to be provided with a tail end guard or the fencing. When the guard or fencing is removed, the limit switch trips the main switch and the belt cannot be started. However, in most of the mines, either the limit switch is not provided or is made defunct. A wiper cum dust collecting trolley at the tail end along with an additional limit switch has been provided at the tail end of belt conveyors in a few mines of M/s Western Coalfields Ltd. which is working quite satisfactorily.

The arrangement consists of a trolley prepared from half portion of 16" Dia. MS pipe which acts as a container for the dust collection. This half portion of 16" Dia, pipe is fitted with 4 Nos. of wheels for sliding along a fixed frame, located in between the carrying and return belt adjacent to tail end drum as shown in the enclosed drawing. This dust Collecting container is mounted on a frame having a pivoted arrangement, with the help of which this container can be tilted on either side for cleaning of tail end drum, which allows the dust to collect inside the container. There is a gate provided on one side of the system for taking out the trolley for cleaning purpose. This gate is attached with one limit switch, which activates for tripping off the control circuit of complete system when the side gate is opened for cleaning the trolley and the belt can't be started till the gate is closed. Thus there is no chance of involving the cleaner to work or clean at the tail end drum, as it is fully guarded and electrically inter-locked. The belt starts only when trolley is put to its position and then no manual operation is required to clean inside the tail end drum.

A drawing of the system is being enclosed which may be altered to suit the installation already existing.

I trust the above recommendation shall be followed strictly in the interest of safety.

Director-General of Mines Safety

## **DGMS (Legis) Circular No. 01 Dt. 06/02/04**

To,

Owners/Agents/and Managers of all Oil Mines

Notification No. 16 (38) 79 Genl/2448 dated 5<sup>th</sup> August 2003, published in the Gazette of India, Part-II Sec.3 (i) on 16.06.2003 vide G.S.R.-296 is reproduced below for information and taking necessary steps to comply with the requirements of the same:-

"In exercise of the powers conferred on me under sub-regulation (I) of Regulation 73 of Mines Regulation 1984.

1. Ravindra Sharmas. Chief Inspector Mines also designated as Director General of Mines Safety hereby declare 1st September. 2003 as the date from which all type of gas detectors to be used in Oil Mines will be of such types standard and make as approved by me by a general order on special order in writing

DIRECTOR - GENERAL OF MINES SAFETY.

## **DGMS (LEGISLATION)/MMR/Circular No. 2/2004 Dt. 21/04/2004**

To.

All Owners, Agents and Managers.

Subject.: Amendment to Regulations 15 (2), 15(3), 16(1). & 16(2) of the Metalliferous Mines Regulation 1961

Sir,

1.0 The provisions of Regulations 15(2), 15(3), 16(1). & 16(2), of the Metalliferous Mines Regulations, 1961 relating to qualifications and practical experience of candidates for certificates granted by the Board have been amended vide Government of India Notification No. GSR 823(E) dated 501 November, 2001 published in the Gazette of India, Extraordinary Part II, Section 3(i) of even date.. The provisions of these amended regulations have come into effect from the date of their publication as indicated above (i.e. 5<sup>th</sup> November, 2001) with certain relaxations for three years from coming into force of these amendment (i.e upto 5th November, 2004).

2.0 Amended provision of these regulations are reproduced below:-

### **Regulation 15 (2):**

No person shall be admitted as a candidate to any examination for Managers, Surveyor's, Foreman's Certificate unless he has passed the "Senior Secondary School examination or Intermediate Examination or its equivalent from a recognized Board or University or Diploma in Engineering or Degree in by the Central Government" and for Mate Engine-drive's or Blaster's certificate unless he satisfies the Board that he is literale

"Provided that nothing in this sub-regulation shall be deemed to debar a person, not satisfying the provisions thereof, from being admitted at any of the aforesaid examinations from the date of commencement of the Metalliferous Mines(Amendment) Regulations, 2001, if he had been admitted at such examinations for the said certificates before such commencement;

Provided further that nothing in this sub-regulation shall be deemed to debar a person not satisfying the provisions thereof from being admitted at any of the aforesaid examination for the said certificates for three years from the date of commencement of the Metalliferous Mines (Amendment)

**Regulation 15(3): Omitted.**

**Regulation 16. Practical experience of candidates for Manager's examination**

- (1) No person shall be admitted as a candidate at any examination for a First or Second Class Manager's Certificate (other than an Exchange Certificate to which the provision of regulation 22 apply), unless he has satisfied the Board that he has had practical experience in a Metalliferous mine for a period of not less than six and years respectively:-  
"provided that.-
  - (a) in the case of a candidate who has received a Diploma in Mining or Mining Engineering or other equivalent qualification approved in that behalf by the Central Government, such period shall be reduced to "five" and "four" years. respectively
  - (b) in case of a candidate who has received a Degree in Mining Engineering or other equivalent qualification approved in that behalf by the Central Government such period shall be reduced to "two" and "one" years, respective and
  - (c) in case of a candidate who has received a degree in Applied Geology, Civil. Mechanical or Electrical Engineering or other equivalent qualification approved in that behalf by the Central Government, such period shall be reduced to "four" and "two and a half years, respectively.

Provided further that each of the aforementioned periods of practical experience shall have been obtained after receiving the requisite Diploma Degree or other equivalent qualification, as the case may be."

- (2) The nature of the practical experience required of a candidate for Manager's Certificate shall be approved by the Board and gained in one of the following capacities in a Metalliferous mine having an average employment of not less than 60 in workings belowground or not less than 160 in all in the mine [or in such other mines as the Board may approve in this behalf,
  - (a) As a workman, or mining apprentice having direct practical experience of getting ore and of a stone-work, timbering and repairing, or
  - (b) As an official in respect of mining operations :  
Provided that out of the period of experience required under sub-regulation (1) from candidate for an examination of-
    - (i) First Class Manager's Certificate not restricted to mines having opencast workings only. a period of not less than eighteen months should have been spent in the workings belowground of a mine:

- (ii) Second Class Manager's Certificate not restricted to mines having open east working only, a period of not less than twelve months should have been spent in the workings belowground of a mine:

Provided further that the Board may approve a part of the period of the experience gained while engaged in inspection, rescue, research, planning or any other work, connected with mining operations, so however that, the afore said period shall not, inclusive of the period of experience in coal mines approved under regulation 19, exceed, six months in case of Second Class and one year in case of First Class Manager's Certificate. The amended portions of Regulations have been highlighted.

You are requested to give wide publicity amongst all the persons working in your area for information and compliance

Yours faithfully  
Direct-General of Mines Safety

## DGMS(LEGISLATION)/CMR Circular no.3/2004 Dt. 21/04/2004

TO,

All Owners. Agents and Managers.

Subject.: Amendment to Regulation 15(2). 16(1). (2) & 21(1) of the Coal Mines Regulation- 1957.

Sir,

1.0 The provisions of Regulation 15(2). 16(1).(2) & 21(1) of the Coal Mines Regulation. 1957 relating to qualification and practical experience of candidates for certificate granted by Board have been amended vide Government of India Notification No. G.S.R 824,(E) dated 5th November. 2001 published in the Gazette of India. Extraordinary Section 3(1) of even date. The provisions of these amended regulation have come into effect from the date of their publication as indicated above (i.e. 5th November.2001) with certain relaxations for three years from coming into force of these amendments (i.e. upto 5th November. 2004).

2.0 Amended provisions of these Regulation are reproduced below:-

### **Regulation 15 (2)**

No person shall be admitted as a candidate to any examination for Manager's, Surveyor's, Overman's or Sarder Certificate unless he has passed the "Senior Secondary School" Examination or Intermediate Examination or its equivalent from a recognised Board or University or passed a diploma in Engineering or Degree in Mining Engineering or other equivalent qualifications approved in that behalf by the Central Government" and for Engine-driver's or Shotfire's Certificate unless he satisfies the Board that he is literate:

Provided that nothing in this sub-regulation shall be deemed to debar a person not satisfying the provision thereof from being admitted at an examination for "any of these certificates for three years coming into force of the Coal Mines

(Amendment) Regulation, 2001", if he had been admitted at an examination for the said certificate earlier.

**Regulation 16.** Practical experience of candidates for managers examination-

(1) No person shall be admitted as a candidate at any examination for a First or Second Class Manager's Certificate other than an exchange certificate

to which the provisions of regulation 21 apply unless the Board is satisfied that he has had practical experience in coal mine for a period of not less than six and five years respectively.

"Provided that a candidate:-"

- (a) who has received a diploma in mining or mining engineering or other equivalent qualification approved in that behalf by the Central Government, such period shall be reduced to five and four years respectively, and,
- (b) who has passed a degree in mining engineering or other equivalent qualification approved in that behalf by the Central Government, such period shall be reduced to two and one years respectively,

Provided further that aforementioned period of experiences mentioned; in the above shall be obtained after engineering the relevant academic qualifications",

- (2) The nature of the practical experience required of a candidate for a Manager's Certificate shall be experience approved by the Board gained in workings below ground in one; or other of the following capacities in a coal mine having an average monthly Output of not less than 1.000 (tonnes)-
  - (a) as a workman/or a mining apprentice having direct practical experience of getting coal and stone work, timbering and repairing; or
  - (b) as an underground official.

Provided that the Board may approve a part of the period of practical experience which has been obtained in any of the aforementioned capacities in an open cast mine or in a mine other than a coal mine or in any mine which is under development, or part of the period of the experience gained while engaged in inspection, rescue, research, planning or any other work, connected with mining operations, upto a period not exceedomg 'six months' in case of Second Class and one year' in case of First Class Manager's Certificate.

#### **Regulation 21. Exchange Certificates**

- (1) The Board may grant to any person, holding a Manager's, Survyor's, Engine- Driver's Foreman's Mate's or Blaster's certificate granted under any law for the regulation, of mines in force in any other country or under the Metalliferous Mines, Regulations made under this Act, a corresponding certificate of similar class under these regulations if he possesses such 'Qualification' experience and passes such examination as the Board may stipulate.

The amended Portions of Regulations have been highlighted.

You are requested to give wide publicity amongst all the persons working in your area for information and compliance.

Yours faithfully,  
Director General of Mines Safety

## **No. DCMS/SOMA/(Tech) Cir.No.6 of 2004 Dt. 22/06/2004.**

To

The Owners, Agents and Managers of all coal mines.

Sub.: Monsoon preparation and Precaution against danger of inundation from surface water.

Precautions against inrush of water into the mine L or part thereof has been provided under Regulation 126(1)(a) of CMR1957.

Identification of possible sources of danger due to surface water and remedial measures to avoid such danger was also emphasized in DGMS Tech. Circular No. 2 of 1978.

In spite of above guide lines and caution letters issued from this Directorate time to time, there have been cases of inundation in underground and-opencast mines, mainly because adequate precautions were not observed. It is pertinent to mention that seasonal water bodies are more dangerous than the pereminal one- because of sudden rise in water level due to rains in or around the catchments area and heavy current of water which cuts across the bunds and barriers deviating its normal course of water thereby flooding low lying areas including mines etc. Again it is reiterated that evolving a system is not enough, it is required to ensure that no link fails at critical moment.

Apart from ensuring the system as comprised in DGMS Cir. No. 2 of 1978 following additional arrangements shall also be made.

1. Surface cracks, pot holes and subsidence area shall be filled up and levelled; and bore holes if any shall be plugged/covered effectively.
2. Surface garland drains shall be made around the mine especially in hilly terrain and in ground slopping towards mine openings so that water flows away from the mine.
3. Water dams and pumping capacities shall be suitably enhanced to accommodate increase in seepage water.
4. Additional pumps and delivery lines of suitable capacity shall be maintained for group of mines in each area.
5. Two separate power lines shall be ensured for pumping, wherever possible Diesel Generator sets with independent power lines shall be maintained.
6. (i) In opencast mines, wherever pontoon pump are installed, it shall be ensured that pontoons of adequate design are properly maintained.

- (ii) Standing order for safe operation and maintenance of pontoons and pumps shall be formed and strictly enforced.
  - (iii) Mock rehearsals shall be held at regular interval prior to monsoon so that all concerned are familiar with the standing order.
7. Detailed precautionary measures against danger of inundation shall be laid down while working beneath or in the vicinity of rivers and surface water bodies, particularly during rainy season. The other precautions as recommended by the Gaslitand court of enquiry which were circulated vide DGMS circular No.1 and 2 of 2001 shall also be followed.

I solicit your co-operation towards effective implementation in the interest of safety of persons employed in the mines.

Sd/-  
Director General of Mines Safety

## DGMS (Tech)(SOMA) Circular No. 7 of 2004 Dt. 5/07/2004

To

The Owners, agents and managers of all mines.

Sub.: Accident due to side fall and fall of persons in opencast mines during monsoon season.

Analysis of 288 fatal accidents that occurred in non-coal mines during last five years (1999-2003) has revealed the following:

Cause	No. of accidents	Percentage
Dampers and trucks	74	25
Fall of persons	51	18
Side fall	46	16
Explosive	31	11
Fall of objects	13	5
Roof fan	7	2
Other	66	23

From the above, it is observed that fall of side and fall of person together accounts for 97 accidents i.e. 34% of all accidents, which occurred mostly during monsoon months. Such accidents occur mainly due to-

- (1) Non-formation of proper benches and non-maintenance of slopes, especially in overburden consisting of alluvial soil, morum, gravel, clay, debris or other similar ground.
- (2) Formation of undercuts causing overhangs.
- (3) Working near the edges of high benches without wearing safety belts.

It has been observed that during normal season high benches are stable and tolerate certain amount of under cut. But during rainy season, specially after the first shower the ground is likely to be soaked with rainwater. Cracks and crevices which are created by mining also get filled with water. The slope faces are subjected to high water pressure leading to collapse of side causing accidents to persons engaged at the bottom of the bench and/ or persons engaged at the edge of the quarry.

The Persons engaged thereat are ignorant about the dangers about the changed situation due routine nature of job and sense of complacency and try to work in normal way ending up with accident

In few cases loose boulders/rocks which are not cleared and kept away from the edges of the quarry have rolled over and fallen on the person engaged at the bottom of the bench. Similar is the case with those who are engaged at the edge of the high benches.

To avoid such accidents, adequate provisions have been provided under Regulation 106 of MMR, 1961 and Reg. 98 of CMR, 1957, which are not generally being followed wherever such accidents have occurred. Therefore, once again it is impressed upon all concerned, of open cast coal and non-coal mines, particularly small mine operators, working in stone, marble, clay, sandstone, slate, limestone, iron ore etc. to pay adequate attention to :

1. Formation of proper benches as specified under) Regulation 106 of MMR 1961/98 of CMR 1957.
2. Dressing and making the sides of benches secure before employing person.
3. Clearing loose stones and debris lying within 3 m. from the edge of the benches.
4. Not allowing any persons to work at the edge of the bench/quarry without wearing a safety belt fully secured.
5. Not allowing any persons to do under cutting of the face/side so as to form overhang.
6. Caution all persons working at the quarry regarding failure of benches due to rain water and its consequences.
7. Construction and maintenance of garland drains around the excavation before the onset of monsoon to divert the rain water away from the pit

It is expected that if above precautions are taken and efforts are made to ensure strict compliance of law, incidents due to side fall and fall of persons from the benches in open cast mines can be prevented.

Director-General of Mines Safety.

## **DCMS ( Tech.) Circular No. 08 Dt. 15/07/2004**

To.

All Owners/Agents/Managers of all Oil Mines.

Subject: Shot Fires Certificate for transport handling and use of explosives in seismic survey and well perforation operations in oil mines.

You are well aware that the transport, handling and use of explosives is regulated under the Explosive Rules, 1983 framed under the Explosives Act, 1884. Various types of explosives that are being used in oil mines for seismic survey and well perforation operations are also covered under these provisions. Rule 144 of the Explosives Rules, 1983 requires that "no person shall use explosives for blasting unless he employs a qualified shot-firer holding shot-firer's Permit.....Provided that for blasting operations in mines coming under the purview of the Mines Act, 1952, such shot-firer shall have qualifications prescribed in the regulations framed under the said Act"

Representations have recently been made by ONGC that Department of Explosives have pointed out to them that since the oil mines are within the purview of the Mines Act, their officials engaged in transport, handling and use of explosives need to have shot-firer's certificate issued under the Oil Mines Regulations, 1984.

The use of explosives for well perforation is regulated under Regulation 49 of the Oil Mines Regulations, 1984 but there is presently no statutory provision to regulate issue of shot-firer's certificate under the Oil Mines Regulations.

In order to overcome this gap in legislation, it will be necessary to suitably amend the Oil Mines Regulations, 1984 and necessary action in this regard is being taken. In the interim period, you are advised to adopt the following procedure:

1) A provisional shot-firer's certificate shall be issued to candidates who

- is not less than 23 years of age and is medically fit
- holds a valid first-aid certificate of the standard of St. John's Ambulance Association (India)
- has passed Intermediate or equivalent examination of a recognized Board or a diploma in engineering of a recognized Board.
- have at least six month's experience and practical training in connection with use of explosives, and
- passes an oral examination conducted by the DGMS.

- 2) Application for an examination shall be made by the candidate in a form given at Annex I and shall be forwarded by the Manager to the Director of Mines Safety concerned. Particulars of Practical Experience obtained by the candidate shall be given in the form at Annex II. Performa for Certificate of Practical experience to be issued to the candidate by the Manager shall be inform at Annex III.
- 3) A fee of Rs. 25 shall be paid in form of a Postal Order/ Bank Draft payable to the Director-General of Mines Safety at Dhanbad.

Director General of Mines Safety

## DGMS(Tech)/Circular No. 09 Dt. 26/07/2004

To,

The Owner, Agent and Manager of all Coal and Non-Coal Mines.

Sub.: Design of 'C' type coupling of 5 tonne drawbar pull.

The attachment between any two tubs in a set or train of tubs is required to be a type approved by the Chief Inspector as required under Reg. 89(1)(c) of the Coal Mines Regulations, 1957/Reg. 97(1)(c) of the Metalliferous Mines Regulation 1961 DGMS(Tech) circular 1 of 1986 recommended design of four types of tub couplings namely.

- 1) Hook coupling
- 2) Two shackles and pin 'R' type
- 3) Shackle and pin
- 4) 'C' type coupling. -

These four types of couplings conforming to DGMS(Tech) circular 1 of 1986 can be used in haulage system in mines and no separate DGMS approval is necessary.

Amongst the above type of couplings, 'C' type coupling are being used extensively in most of the haulage systems and there had been a feed back from the Industry that the couplings are opening out under load,

In view of the above, a few fresh prototype samples were 'tested and it has been decided to change the dimensions of the couplings and to specify the material suitably to achieve higher factor of safety. Henceforth the 'C' type coupling of 5 tonne capacity shall be of the following specification :-

- 1) Dimensions - all dimensions must conform to the enclosed drawing DGMS/'C' type coupling/001/04.
- 2) Material - A1FC type couplings shall be made from 20 Ni 55 Cr 50 Mo 20 conforming to IS 4432 of 1967. No other material shall be allowed. .
- 3) Hardness - 250 to 280 BHN.  
In no case/ the hardness should exceed 280 BHN to avoid brittiness
- 4) Heat treatment -

The coupling after all forging and welding operations shall be hardened and tempered or normalised or normalised and tempered at suitable temperature to achieve the desired hardness

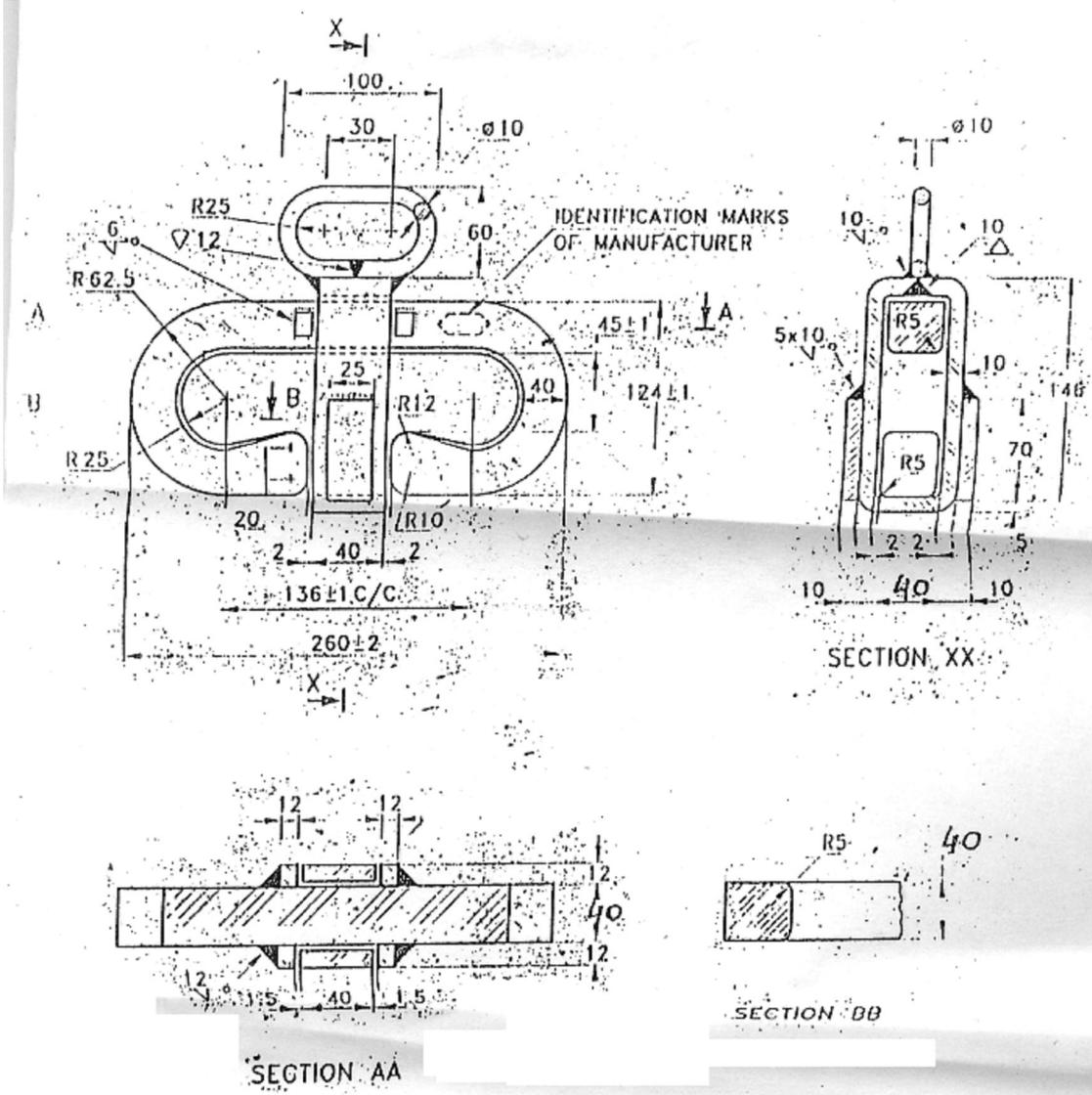
The following guideline may be followed :-

Designation of steel	Normalising °C Temp	Hardening °C Temp	Tempering °C Temp	Quenching; Agent
20 Ni 55 Cr 50 Mo 20		820 - 850		Oil

- \* Suitable temperature may be adopted so as to attain the optimum properties. All other stipulations and conditions shall be as stipulated in DGMS(Tech) circular No. 1 of 1986.

Hence forth, you are requested to use only modified design of 'C' type couplings. 'C' type couplings conforming to DGMS(Tech) circular 1 of 1986 which are already in use in the mines shall be replaced by the modified design at the earliest but not later than one year from the date of issue of this circular.

Director - General of Mines Safety.



All dimensions in millimetres.  
 FIG. 1 C TYPE COUPLING

DGMS DRAWING / C TYPE COUPLING / 001 / 04

equipment in near future, user Industry shall provide semi automatic fire fighting arrangement in such dumpers/HEMM. Such system has been locally developed by M/s. Sesa Goa Iron Ore Mines and M/s Western Coalfields Limited by providing 4/5 discharge nozzles at the vulnerable points in the engine room of the machine using dry chemical powder propelled by Nitrogen or Carbon dioxide or system. Incase of fire, the operator has to actuate a knob located near his sitting arrangement.

Such semi automatic fire fighting arrangements are also available indigenously.

4. All high pressure hydraulic hose fitted in the engine room must confirm to the specification as laid down by the OEM and their quality to be ensured. The hoses shall be replaced at the prescribed interval or earlier if there is any sign of deterioration.
5. User industry shall henceforth report any incident of fire in HEMM to the Regional Inspector of Mines Safety so that the matter is studied in depth to take corrective actions.
6. Although some of the manufacturers of Heavy Earth Moving Machineries have tried to cover this potent source of danger in the inherent manufacturing process, nevertheless such fires highlight the need to review from design as well as maintenance angle. The above stipulations shall be complied strictly in the interest of Safety.

Sd/-

Director General of Mines Safety

## **DGMS(Tech)/Circular No. 10 Dt. 30/07/ 2004**

To

The Owners/Agents/ Managers of All Coal & Metalliferous Mines

Sub.: Preventing fires in Heavy earth Moving Machineries.

In the recent past there have been instances and reports of fire in HEMM, with the increase in output, use of costly and large size HEMM, has become imperative, Installation of automatic fire fighting systems in such Heavy Earth Moving Machines as required by Circular No. 3 of 1981 needs no emphasis.

In a recent fire incident in HEMM that took place a heavily mechanized OC mine it was revealed that while a 35 T articulated dumper was hauling load of ore from the face to the top on the haulage road, the hydraulic oil from the return hose in the engine house spilled on to the hot exhaust pipe and it caught fire. The carriage and the cabin of the dumper were burnt. Had the oil carrying hoses in the engine house been housed separately and away from the hot parts of the engine the incident would have been averted. The costly articulated dumper met the fate because neither the oil bearing hoses were compartmentalized nor the hot parts of the engine room were insulated in a manner not to ignite oil.

To avoid/fight such fire, the following recommendations are being made :-

1. This incident highlights that the oil-bearing hosepipes should be housed separately and away from the hot parts of the engine like turbocharger, exhaust and manifold. Simultaneously the hot parts of the engine should be insulated in a manner so that even if oil is spilled on them, it does not come in contact with the hot parts of the engine.
2. User industry should also ensure that henceforth OEM of HEMM should provide proper type of automatic fire detection and suppression system (AFDSS) in all HEMM with recommendations for periodical testing procedure and maintenance schedule. In all existing shovels and dumpers fro 50 tonne capacity and above, user industry must provide suitable AFDSS where OEM has not supplied AFDSS with the equipment. All AFDSS shall be maintained in safe working order in such dumpers/HEMM. Maintenance of such automatic fire detection and suppression system be carried out by the experts specially trained for the purpose.
3. In small dumpers and other HEMM like excavator etc. where OEM may not be in a position to provide automatic fire fighting arrangement with the equipment in near future, user Industry shall provide semi automatic fire fighting arrangement in such dumpers/HEMM. Such system has been locally developed by M/s. Sesa Goa Iron Ore Mines and M/s Western Coalfields Limited by providing 4/5 discharge nozzles at the vulnerable points in the engine room of the machine using dry chemical powder propelled by Nitrogen

or Carbon dioxide of system, in case of fire, the operator has to actuate a knob located near his sitting arrangement.

Such semi automatic fire fighting arrangements are also available indigenously.

4. All high pressure hydraulic hose fitted in the engine room must confirm to the specification as laid down by the OEM and their quality to be ensured. The hoses shall be replaced at the prescribed interval or earlier if there is any sign of deterioration.

5. User industry shall henceforth report any incident of fire in HEMM to the Regional inspector of Mines Safety so that the matter is studied in depth to take corrective actions.

7. Although some of the manufacturers of Heavy Earth Moving Machineries have tried to cover this potent source of danger in the inherent manufacturing process, nevertheless such fires highlight the need to review from design as well as maintenance angle. The above stipulations shall be complied strictly in the interest of Safety.

Sd/-

Director General of Mines Safety

## **DGMS (Tech) Circular No. 11 Dt. 06/08/2004**

To,

The Owner/ Agent / Manager Of All Coal, Metalliferous and Oil Mines.

Sub.: Intimation of accidents causing burn injuries due to electric flash/spark.

It has been observed that while handling electrical apparatus, work persons are getting burn injuries due to electric? Hash/ spark which some time turn into serious and fatal accident. .

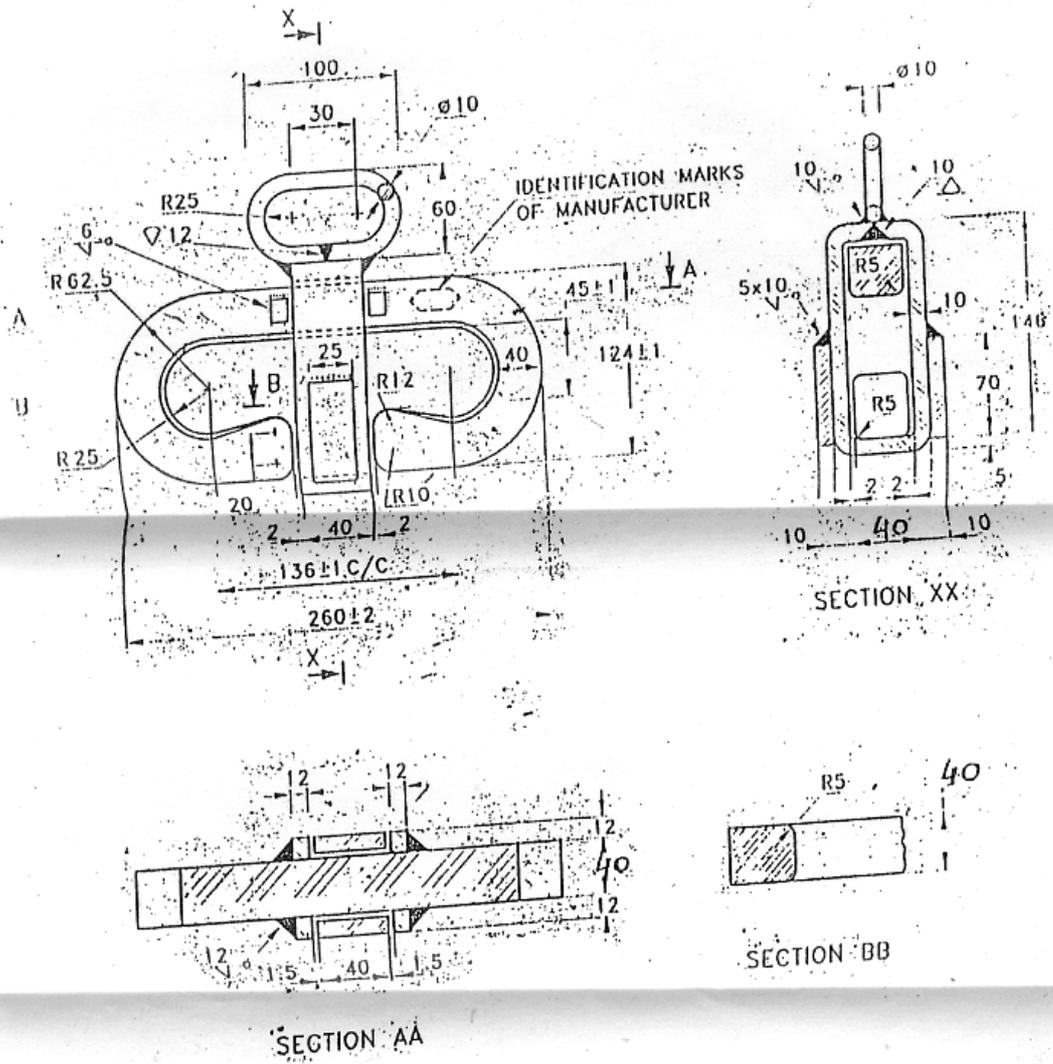
The provisions of Regulation 9 of the Coal Mines Regulations, 1957, 9 of the Metalliferous Mines Regulations, 1961 and 7 of the oil Mines Regulations, 1984 require intimations of serious and fatal accidents due to electricity to the Electrical inspector of Mines.

Since intimation of accident due to electrical burn has not been included in the above said Regulations intimation of the same is not sent to DGMS unless it is serious/fatal, However, it is felt that such accidents should also be enquired into to ascertain the cause of accidents for taking the remedial measures to prevent such type of accidents in future.

It is, therefore, requested that intimation of all accidents caused due to electric flash/ spark in the mines be sent to the Electrical Inspector of Mines within the time stipulated under above Regulations.

Sd/-

Director General of Mines Safety



All dimensions in millimetres.

FIG. A C-TYPE COUPLING

DGMS DRAWING / C-TYPE COUPLING / 001 / 04