



FEDERAL SUBSIDIARY LEGISLATION

FACTORIES AND MACHINERY ACT 1967 [ACT 139]
P.U. (A) 2/1989
FACTORIES AND MACHINERY (MINERAL DUST) REGULATIONS 1989
Incorporating latest amendment - P.U. (A) 105/1989

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Preamble

IN exercise of the powers conferred by subsection (1) of section 56 of the Factories and Machinery Act 1967 [Act 139], the Minister makes the following regulations:

PART I PRELIMINARY

1. Citation and commencement.

These Regulations may be cited as the **Factories and Machinery (Mineral Dust) Regulations 1989** and shall come into force on the 1st February 1989.

2. Interpretation.

In these Regulations, unless the context otherwise requires -

"action level" means half of the value of the permissible exposure limit;

"approved" means approved by the Chief Inspector in writing;

"breathing air", in relation to an employee, means air that is or may be breathed by that employee;

"competent person" means an employee or any other person appointed by an occupier and approved by the Chief Inspector to carry out any inspection, examination or test on control equipment installed in the factory or to carry out employee exposure monitoring;

"control equipment" means water spray equipment or exhaust equipment or any other approved dust removal equipment;

"crystalline silica" means a crystalline form of free silica which includes quartz, cristobalite and tridymite;

"dust collector" means a bag, bin, or other receptacle for collecting dust and which forms part of or is installed in connection with exhaust equipment;

"employee" means a person employed in a factory by the occupier or by any person who contracts with the occupier to carry out the whole or any part of any work undertaken by the occupier in the course of and for the purpose of the occupier's trade or business;

"exhaust equipment" means equipment for removing dust by means of an exhaust draught produced by mechanical means;

"free silica" means silicon dioxide which is not combined with any other element or compound;

"mineral" means any of the substances listed in the Schedule;

"mineral dust" means dust of mineral;

"mineral process", in relation to a factory, means a manufacturing process involving the use, application, removing, mixing or other handling of mineral, but does not include the cleaning of premises, plant, equipment, furniture or fittings of the factory;

"mineral processing area" means a workroom or part of a factory in which a mineral process is carried on;

"permissible exposure limit" means the maximum allowable concentration of mineral dust an employee may be exposed to;

"personal sample" means a dust sample collected in the breathing zone of an employee by means of a sampling device directly attached to the employee and worn continuously during all work and rest operations;

"pneumoconiosis" means an accumulation of dust of solid inanimate particles in the lungs and the tissue reactions to its presence;

"prescribed area" means a workroom or other part of a factory where mineral process is carried on, but where—

(a) it would not be practical for such process to be so carried on if control equipment were implemented; or

(b) due to the nature of the process, it would not be practical for control equipment to be installed;

"prescribed work" means the cleaning (including the emptying of dust collector), inspection, examination, and testing of a processing area, or any plant, equipment, furniture or fittings in such area, or that used for the removal of mineral dust;

"protection factor" means the ratio of the ambient air concentration to the concentration inside the face piece of the respiratory protective equipment;

[*Ins. P.U.(A) 105/1989*]

"registered medical practitioner" means a medical practitioner registered under the Medical Act 1971 [*Act 50*];

"respirable dust" means that fraction of airborne dust collected on a filtering media during personal sampling which penetrates through a size selector with the following characteristics :

<i>Aerodynamic Diameter (micrometer) (unit density sphere)</i>	<i>% passing pre-selector</i>
2	90
2.5	75
3.5	50
5.0	25
10	0

"sandblasting" means the cleaning, smoothing, roughening, cutting, preparation or removal of the surface or part of the surface of any building, ship or article by the use of sand or other substances containing crystalline silica propelled by a blast of compressed air or steam or by a wheel or by any similar means;

"spray equipment" means equipment for removing airborne dust by means of water spray; and

"total dust" means the airborne dust collected on a filtering media during personal sampling.

3. Application.

These Regulations shall apply to all factories in which any mineral process is carried on.

4. Obligations of occupier and employee.

(1) Every occupier who is engaged in any mineral process shall comply with these Regulations.

(2) Every employee shall –

(a) wear and make full and proper use of the protective clothing, respiratory protective equipment and any other protective equipment provided for his use in pursuance of these Regulations;

(b) make full and proper use of the changing room and the locker or lockers for changing and storage of street clothing, protective clothing, respiratory protective equipment and other protective equipment where such changing room and lockers or lockers have been provided for his use;

(c) immediately report to the occupier any defect in any control equipment, protective clothing, respiratory protective equipment, any other protective equipment or any other thing provided in the factory, on his becoming aware of the existence of any such defect; and

(d) undergo any medical examinations or tests arranged by the occupier in pursuance to these Regulations.

5. Sand blasting.

Sand blasting process shall not be used in any factory, except with the prior written approval of the Chief Inspector.

[Am. P.U.(A) 105/1989]

PART II PERMISSIBLE EXPOSURE LIMIT

6. Permissible exposure limit.

(1) No employee shall be exposed to mineral dust, containing free silica less than 1 per cent in weight, at a concentration greater than 5 milligram per meter cube of respirable dust or 10 milligram per meter cube of total dust averaged over an eight-hour period.

(2) No employee shall be exposed to crystalline silica at a concentration greater than –

(a) 0.05 milligram per metre cube of respirable cristobalite; or

(b) 0.1 milligram per metre cube of respirable quartz; or

(c) 0.05 milligram per metre cube of respirable tridymite,

averaged over an eight-hour period.

7. Permissible exposure limit when using respirators.

When respirators are used to supplement control equipment to comply with the limits specified in regulation 6 and all the provisions of these Regulations have been met, employee exposure, for the purpose of determining whether the occupier has complied with the limits specified in regulation 6, may be considered to be at the level provided by the protection factor of the respirator for those periods the respirator is worn.

PART III EXPOSURE MONITORING

8. General.

(1) For the purposes of this Part, employee exposure is the exposure which would occur if the employee is not using a respirator.

(2) Every occupier who is engaged in any mineral process shall conduct employee exposure monitoring to determine if any employee may be exposed to mineral dust at or above the action level.

(3) For the purpose of sub-regulation (2), the occupier shall collect personal samples for full shift, or for at least seven continuous hours, including at least one sample from each shift for each job classification in each work area.

(4) A full shift personal sample shall be representative of the monitored employee's regular, daily exposure to mineral dust.

9. Initial employee exposure monitoring.

An occupier shall conduct an initial employee exposure monitoring for all employees working in a mineral processing area within six months from the date these Regulations take effect or within three months from the day the employee commences work—

(a) to determine the percentage of free silica (by weight) in the mineral dust that the employee is exposed to; and

(b) in pursuance to the requirement of regulation 8 (2).

10. Frequency of monitoring.

(1) If the employee exposure monitoring conducted under regulation 8 reveals employee exposure to be below the action level, the monitoring need not be repeated except as otherwise provided by regulation 11.

(2) If the employee exposure monitoring conducted under regulation 8 reveals employee exposure to be at or above the action level but below the limits specified in regulation 6, the occupier shall repeat monitoring in accordance with this Part at least once in every six months. The occupier shall continue monitoring at the required frequency until at least two consecutive measurements, taken at least seven days apart, are below the action level, at which time the occupier may discontinue monitoring for that employee except as otherwise provided by regulation 11.

(3) If the employee exposure monitoring conducted under regulation 8 reveals that employee exposure is above the limits specified in regulation 6 the occupier shall repeat monitoring once in every three months. The occupier shall continue monitoring at the required frequency until at least two consecutive measurements, taken at least seven days apart, are below the limits specified in regulation 6 but at or above the action level, at which time the occupier may repeat monitoring for that employee at the frequency specified in sub-regulation (2).

11. Additional monitoring.

Whenever there has been a production, process, control equipment or personnel change which may result in new or additional exposure to mineral dust, or wherever the occupier has any other reason to suspect a change which may result in new or additional exposure to mineral dust, additional monitoring in accordance with this Part shall be conducted within thirty days from the date of such change or changes.

12. Employee notification.

(1) Within two weeks after the receipt of employee exposure monitoring results, the occupier shall notify each employee of the results of the monitoring.

(2) Whenever the results indicate that the representative employee exposure, without regard to the use of respirator, exceeds the limits specified in regulation 6, the occupier shall notify the employee that the limits specified in regulation 6 were exceeded.

13. Method of monitoring and analysis: Competent person to conduct monitoring.

(1) The occupier shall use an approved method of monitoring and analysis.

(2) Employee exposure monitoring shall be conducted by a competent person.

PART IV METHODS OF COMPLIANCE

14. Control equipment.

The occupier shall implement control equipment to reduce and maintain employee exposure to mineral dust below the limits specified in regulation 6.

15. Operation of control equipment, inspection and examination.

(1) The control equipment provided in pursuance to regulation 14 in connection with any machinery, plant or working area shall be operated at all times while such machinery or plant is in operation, and for such time thereafter as is necessary to comply with the limits specified in regulation 6.

(2) Such control equipment shall –

(a) be inspected by a competent person at least once in every seven days, or at such more frequent intervals as an Inspector may, by notice in writing to the occupier, require; and

(b) be examined and tested by a competent person at intervals not longer than six months.

(3) A competent person making an inspection, examination or test referred to in sub-regulation (2) shall forthwith make a report to the occupier of the fact of and matters disclosed by the inspection, examination or test and every such report shall be kept in the factory for a period of at least two years.

[Am. P.U.(A) 105/1989]

16. Water spray.

(1) The water spray produced by the water spray equipment shall be as evenly distributed as possible and shall cover the entire surface of the mineral processing area.

(2) The size of water droplets of the water spray shall, as far as is practicable, be of optimal size to ensure maximum removal of airborne mineral dust.

(3) The water supply used for spraying shall be free of particles greater than 0.5 millimeter in diameter and, as far as practicable, acid-free.

17. Respiratory protection.

The occupier shall, at no cost to the employee, provide an approved respiratory protective equipment to, and ensure its use –

(a) whenever control equipment provided in pursuance to regulation 14 does not reduce employee exposure to or below the limits specified in regulation 6; or

(b) where an employee is employed in a prescribed area or doing a prescribed work; or

(c) after an employee has been diagnosed to suffer from an early stage of pneumoconiosis.

PART V PERSONAL PROTECTIVE EQUIPMENT

18. General.

(1) Where an employee is employed in a prescribed area, or in an area in which mineral dust in a concentration exceeding the limits specified in regulation 6, arising from a mineral process, cleaning, or any other process or work, is or is liable to be present in his breathing air, or in any prescribed work, there shall be provided, at no cost to the employee, for his use -

(a) suitable protective clothing or any other protective equipment appropriate to the type of work in which he is employed and to the extent to which he is or is liable to be exposed to the inhalation of mineral dust; and

(b) approved respiratory protective equipment.

(2) The occupier shall permit each employee who uses a filter respirator to change the filter elements whenever an increase in breathing resistance is detected and shall maintain an adequate supply of filter elements for this purpose.

19. Instruction on use of personal protective equipment.

No person shall be employed in any area or work referred to in regulation 18 unless he has been fully instructed in the proper use of the protective clothing or the respiratory protective equipment or any other protective equipment provided for his use, and the reasons for their use.

20. Protective equipment to be clean and stored in a locker: Protective equipment not to be used by other persons.

(1) All protective clothing, respiratory protective equipment and any other protective equipment shall -

(a) be kept clean; and

(b) be stored in a locker provided for such storage, and shall not be removed from such locker except for use, cleaning or other necessary purpose.

(2) No protective clothing or respiratory protective equipment or any other protective equipment which has been used by a person shall be provided for use by any other persons, unless it has been thoroughly cleaned since last being used.

PART VI HOUSEKEEPING

21. Surfaces.

All surface in a mineral processing area shall be maintained, as far as is practicable, in a clean state and be free from accumulations of mineral dust.

22. Cleaning.

(1) The cleaning in pursuance to regulation 21 shall be done, in the case of -

(a) all those parts of a floor where mineral dust could reasonably be expected to accumulate, at least once in each day that a mineral process is carried on; and

(b) workbenches, forthwith after the cessation of each shift or period of more frequent intervals as an Inspector may, by notice in writing to the occupier, require.

(2) The cleaning shall not be done by the use of compressed air or any other method which may disperse mineral dust exceeding the limits specified in regulation 6 into the breathing air of any employee.

**PART VII
MEDICAL EXAMINATIONS**

23. Medical examination.

(1) An occupier shall, at his cost, provide or make available medical examinations to an employee who in the course of his normal employment in the factory is exposed to crystalline silica at or above the action level.

(2) An occupier shall arrange for each such employee to undergo a prescribed medical examination within six months from the date these Regulations take effect or within three months from the day the employee commences work, unless he has undergone a prescribed medical examination within the two years preceding such date and thereafter at intervals not longer than two years, except in the case of an employee who is suffering from an early stage of pneumoconiosis who shall undergo a prescribed medical examination at intervals not exceeding one year.

24. Prescribed medical examination.

(1) The prescribed medical examination referred to in regulation 23 is a medical examination by a registered medical practitioner that comprises of or includes -

- (a) a chest x-ray (posterior-anterior, 350 millimeter by 430 millimeter);
- (b) a statement of the medical, occupational and smoking history of the person examined;
- (c) a clinical examination of the chest and pulmonary function test, including testing of forced vital capacity and forced expiratory volume at one second;
- (d) detailed examination for tuberculosis; and
- (e) any laboratory or other test which the examining registered medical practitioner deems necessary by sound medical practice.

(2) A chest x-ray specified in sub-regulation (1) (a) shall be taken and read in accordance with the ILO International Classification of Radiographs of Pneumoconioses, 1980.

25. Report of medical examination.

The registered medical practitioner, upon completion of the medical examination on an employee, shall furnish the occupier or the employee if requested by the employee, with a report of the results of the examination or tests conducted.

26. Further examination.

If the registered medical practitioner, after carrying out the prescribed or other medical examination on an employee, is of the opinion that for reasons associated with the inhalation of crystalline silica by the employee, a further medical examination or any special diagnostic test is desirable, he shall notify the occupier and the occupier shall, at his cost, make arrangements for the medical examination or tests indicated by the registered medical practitioner to be carried out.

27. Duty to take protective measures where pneumoconiosis has occurred.

If the registered medical practitioner, after carrying out the prescribed and further medical examination and any other special diagnostic test on any employee, is of the opinion that an early stage of pneumoconiosis has occurred, he shall notify the Chief Inspector and the occupier and the occupier shall take immediate measures to comply with the requirement of regulation 17 and any other directives specified in writing by the Chief Inspector.

PART VIII CHANGING ROOMS AND LOCKERS

28. Changing rooms and lockers.

There shall be provided for the employees, for whom protective clothing, respiratory protective equipment and any other protective equipment are provided in pursuance of these Regulations, a conveniently accessible changing room, and in that room, for each employee-

- (a) a clothes locker for the storage of street clothes; and
- (b) a separate locker, or a separate dust proof part of the locker referred to in paragraph (a), for the storage of protective clothing, respiratory protective equipment and other protective equipment.

PART IX EMPLOYEE INFORMATION AND TRAINING

29. Training.

(1) The occupier shall institute a training programme for, and ensure the participation of all employees exposed to crystalline silica dust at or above the action level.

(2) The occupier shall ensure that during the training programme each employee is informed of the following:

- (a) the provisions of these Regulations;
- (b) the specific nature of the operations which can result in exposure to mineral dust;
- (c) the purpose, proper selection, fitting, maintenance, use and limitations of respiratory protective equipment;
- (d) the purpose and description of the prescribed medical examination, including information concerning the adverse health effects associated with exposure to mineral dust; and
- (e) the control equipment and work procedures associated with the employees' job assignments.

(3) The training programme shall be repeated at least once in two years.

**PART X
RECORD KEEPING**

30. Medical reports and records.

(1) The occupier shall keep in the factory and in good condition the reports furnished to him by the registered medical practitioner as required under regulation 25 for the period of employment of the employee and for at least twenty years thereafter.

(2) The registered medical practitioner shall establish and maintain an accurate record, including all x-ray photographs, for each employee subjected to medical examination in pursuance to regulation 24 for the period of employment of the employee and for at least twenty years thereafter.

31. Personal monitoring records.

The occupier shall maintain in good order records of personal monitoring of an employee in pursuance to the requirements of Part III for the period of employment of the employee.

32. Availability of records.

The occupier shall make available upon request all records required to be maintained under these Regulations to the Chief Inspector.

33. Transfer of records.

(1) Whenever an occupier has ceased to carry on business, the successor occupier shall receive and retain all records required to be maintained under these Regulations.

(2) Whenever an occupier has ceased to carry on business and there is no successor occupier to receive and retain the records required to be maintained under these Regulations, the records shall be transmitted to the Chief Inspector.

(3) At the expiration of the retention period for the records required to be maintained under regulations 30 and 31, the occupier shall give the Chief Inspector at least three months notice that he intends to dispose of such records, and he shall transmit those records to the Chief Inspector if requested to do so within that period.

**PART XI
WARNING SIGNS**

34. Warning sign.

The occupier shall post the following warning sign in a mineral processing area:

CAUTION
MINERAL PROCESSING AREA
WORK AREA CONTAINING TOXIC DUST

**PART XII
MISCELLANEOUS**

35. Amendment of Schedule.

The Minister may by order amend the Schedule at any time.

36. Penalty.

Any person who contravenes any provision of these Regulations shall be guilty of an offence and shall, on conviction, be liable to a fine not exceeding one thousand ringgit.

SCHEDULE

(Regulation 2)

List of Minerals

Substances

Barite
Clay
Coal
Corundum
Cristobalite
Diatomite
Emery
Feldspar
Garnet
Graphite
Gypsum
Kaolin
Kyanite
Limestone
Magnesite
Marble
Mica
Mineral Wool
Perlite
Portland Cement
Potash
Quartz
Soapstone
Talc (free of asbestos fibre)
Tridymite

Made the 10th December 1988.
[KB. (S) 32/1/2/5/1/1; PN. (PU²) 235/V.]

ENCIK LEE KIM SAI,
Minister of Labour

LIST OF AMENDMENTS

<i>Amending Law</i>	<i>Short Title</i>	<i>In force from</i>
P.U. (A) 105/1989	Factories and Machinery (Mineral Dust) (Amendment) Regulations 1989	7 April 1989