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SUMMARY OF OBSERVATIONS AND RECOMMENDATIONS

Observations

1. **Main observations are :**

1.1 Uncontrolled asbestos usage has been the cause of heavy and prolonged exposures to workers. Such exposures to asbestos dust may result in asbestosis, lung cancer and mesothelioma. (Para 9 of Report by Study Team 'A').

1.2 These diseases have long latent periods, making it difficult to relate exposure to the prevalence of disease at any given time. (Para 10 of Report by Study Team 'A').

1.3 There are some reported cases of low exposures in the past that resulted in no appreciable increases in risk. A report on the evaluation of risk to miners in Canada on current levels of exposures (50 fibre years) is estimated to have had no unacceptable risks. (Para 11 of Report by Study Team 'A'). Such information enables this Committee to recommend the use of asbestos in such places where it can be used under controlled and regulated conditions so that the benefits of this material continue to be exploited without any undue risks to the workers.

1.4 The latest scientific thinking favours the controlled use of not only asbestos but also other inorganic fibrous materials. (Para 13 of Report by Study Team 'A').

Recommendations

2. **General Environment**

2.1 Various studies reveal that asbestos in general environment has not been found to cause any detectable increase in risk to the people at large. (Para 21 of Report by Study Team 'A'). It is, however, prudent to control all asbestos realeases into environment as per international practices. (Para 21 of Report by Study Team 'A')

2.2 At this point of time, studies on ingestion of asbestos fibres through drinking water have been attended with negative results. (Para 22 of Report by Study Team 'A').

2.3 State Pollution Control Boards should make emission standards for the control of asbestos fibre dust in the general environment. (Para 16.10 of Report by Study Team 'B').

3. **Legislative Regulations.**

3.1 **Factory Acts & Rules**

3.1.1 Framing of rules according to the Schedule XIV and Model Rule 123A by the concerned States is an urgent requirement. (Para 16.2 of Report by Study Team 'B').

3.1.2 All operations and places where asbestos fibre is used should be brought under the purview of the Factories Act and Rules, irrespective of the size of the workforce or usage of electric power. (Para 16.8 of Report by Study Team 'B').

3.1.3 Every process and equipment related to the milling of asbestos ore and processing of asbestos fibre should be studied for its potential to create air-borne dust. In case any process/equipment releases dust that cannot be controlled to the desired limit by engineering control methods, such process/equipment should be prohibited. (Para 16.5 of Report by Study Team 'B').

3.1.4 Current prescribed level of 2f/cc as specified in Model Rule 123A is considered adequate at the present time. Membrane Filter Technique (MFT) should be used for the measurement of the air-borne asbestos fibre dust. (Para 16.1 of Report by Study Team 'B').

3.1.5 Measurement of fibre dust levels is a complex subject and efforts should be made to obtain uniformity within industry and regulatory agencies (Para 16.3 of Report by Study Team 'B'). 5.2

3.1.6 Personal protective equipment should not be considered a permanent solution in place of preventive engineering control measures. At best, this should be a contingency measure. (Para 16.4 of Report by Study Team 'B'). 5.3

3.1.7 Equipment used in the processing of asbestos should carry a certificate from the manufacturer that during normal usage as recommended, the equipment will not release fibre dust that will result in any workman being exposed to dust levels higher than the prescribed limit. (Para 16.6 of Report by Study Team 'B'). 5.4

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3.2 Mines Act; Regulations & Rules Thereunder.

3.2.1 The regulations and rules made under the Mines Act 1952 need to be modified to bring them upto the International Standards for the control of asbestos fibre dust during mining, handling and milling of the ore. 6.2

3.2.2 Where applicable, the rules under the Mines Act should be modified so as to include the relevant provisions of Schedule XIV and Model Rule 123A made under the Factories Act so far as they relate to asbestos fibre dust control. 6.3

3.2.3 Asbestosis; lung cancer and mesothelioma when they are caused by asbestos should be notified as occupational diseases under the Mines Act. 6.4

3.2.4 Specialised trained manpower and equipment are to be provided to effectively monitor the environmental exposures in mines and medical surveillance system of the mine workers. (Para 16.9 of Report by Study Team 'B').

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3.3 Licencing.

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For licencing/registration of new units, specific requirements of dust control to be met by them should be listed out by the competent authority. Licence should be issued by the competent authority only after satisfying itself that such requirements have already been included in the project. (Para 16.8 of Report by Study Team 'B'). 7.2

4. Small Scale Industry.

Management and control of asbestos dust in the small scale sector of the industry need to be tackled on priority basis. Major recommendations in this regard are :

— *Financial* : Subsidy should be given for the purchase of equipment needed for the control of dust, personal sampling etc. Capital assets under this category should not be counted for the capital investment clause which determines classification for small scale sector. 7.3

— *Engineering* : A technical cell in D.I.C. or other concerned agency should be directed to pool the technology for the suppression/control of asbestos dust and to help the Small Scale Industry to select and install appropriate equipment. 7.4

— *Measurement and Health Control* : The Small Scale Industry should be encouraged to pool their resources and establish a centralised dust counting centre, as also a health surveillance centre under the supervision of a competent qualified person. 7.5

— *Education* : Employees in this industry should be made aware of the need for strict implementation of the asbestos regulations and the health hazards that might arise due to occupational exposure to asbestos. 8 Na

(Para 16.7 of Report by Study Team 'B').

5. Compliance of Regulations.

5.1 Packing of raw asbestos fibre should be in impermeable bags and should be handled as unitised loads as far as it is practicable. ISI may be requested to bring out the Code of Practice for packing, handling, transportation and use of asbestos fibre. (Para 16.11 of Report by Study Team 'B').

5.2 Effective steps to implement the Rules must be taken by providing all facilities to the state regulatory agencies. These include dust monitoring equipment and specialised trained manpower in order to produce accurate and reproducible results. (Para 16.3 of Report by Study Team 'B').

5.3 The industry should periodically monitor dust levels to ensure the effectiveness of the engineering controls. (Para 9.2 of Report by Study Team 'B').

5.4 Government should be liberal in allowing the import of equipment required for the use in dust monitoring & medical surveillance. (Para 16.13 of Report by Study Team 'B').

6. Medical Surveillance.

6.1 All the workers likely to be exposed to asbestos fibres should be covered by a well defined medical surveillance plan with no cost to the employee. (Para 27.2 of Report by Study Team 'A').

6.2 Health education of workers is an important object of medical surveillance programme. (Para 28.1.2 of Report by Study Team 'A').

6.3 Frequency of periodical medical examination should take into account age, service of employee and his exposure profile which includes his exposure level in relation to action level. (Para 29.3 of Report by Study Team 'A').

6.4 Medical records along with periodic exposure profiles should be maintained for 40 years after employment or 10 years after cessation of employment. (Para 32.2 of Report by Study Team 'A').

7. Compensation.

7.1 The employees covered under the ESI Act should also be eligible for compensation after cessation of ESI coverage, as is the case in Workmen's Compensation Act. (Para 16.12 of Report by Study Team 'B'). Employees not covered under the ESI Act should be covered under general insurance, at no cost to them. (Para 14.6 of Report by Study Team 'B').

7.2 Clear criteria for the diagnosis of asbestos related diseases should be specified and should be uniformly followed. (Para 14.2 of Report by Study Team 'B'). Criteria for diagnosis for asbestosis is included in this report for the purpose of determining eligibility for compensation. (Para 24.1.6 of Report bo Study Team 'A'). Criteria for confirming asbestos as causative factor for lung cancer and mesothelioma is also included in this report for the purpose of determining eligibility for compensation. (Paras 25.7 and 26.8 of Report by Study Team 'A)'.

7.3 The Committee recognises the need to designate an agency that possesses specialised training, expertise, competence and facilities to decide the cases entitled to compensation arising out of asbestos-related diseases. (Para 16.12 of Report by Study Team 'B').

7.4 Regional medical panels should be constituted to act as referal bodies in case of asbestos-related diseases to determine eligibility for compensation. (Para 34 of Report by Study Team 'A').

7.5 Panel should have specialists, preferably with knowledge of asbestos-related diseases. (Para 34 of Report by Study Team 'A').

8. National Standards/Codes of Practice.

ISI may be requested to expedite formulation of:

- Standard for the measurement of airborne fibrous dust.
- Code of practice for the packing, handling transportation, and use of asbestos in the factory, mine and other places.
- Code of practice for the use of asbestos containing products.
- Code of practice for disposal of asbestos waste materials, including tailings.

(Para 16.14 of Report by Study Team 'B').

I think this was a tour [49] of HF at its best behavior. BC

BOMBAY

4. Non-Cement Asbestos Products Factory : 26.3.85.

The Study Team visited this Factory in the forenoon of 26.3.85. This company manufactures brake linings/clutch facings (friction materials), CAF jointings, asbestos textile products, mill board etc.

(a) Friction Materials/CAF Jointings Plant.

The manufacturing processes observed in the case of Friction Materials and CAF Jointing were wet processes where once the asbestos fibres are fed into the mixer, along with other chemicals and the wet binders, the fibres get encapsulated with wet binder used—wet resins for friction materials and rubber solution for jointing materials. The mixings come out of the mixers in wet conditon and all further processing including forming and moulding of the linings/sheets are in wet form. The materials are then cured and are baked to get the final form, shape and size.

The mixing operations where asbestos fibres are fed were observed. In the case of the Brake Lining Plant, the pre-packed asbestos fibre bag is cut manually and charged into a bottom opening bin along with other raw materials, including the binder. This bin is raised and the raw materials are charged into the mixer body which is provided with sufficient negative pressure. In the case of CAF Plant, the asbestos fibres are fed into the hoppers of the mixers with negative suction at the feeding end itself, which ensures negligible dust emission. In both cases, the fibres dust level recorded in these operations (as per management records) is well within the 2 fibres/cc level.

Linings and facings so produced, are then machined to dimensions in special purpose grinding machines/drilling machines where adequate dust collection systems are provided to remove swarf anddust produced in the machining operations. In the case of jointings, the sheets are cured in the calendering process and the subsequent finishing involves only cutting to size with scissor guillotine, where possibility of release of dust is negligible. The Team observed that all subsequent finishing operations were provided with eleborate dust collection systems wherever it is necessary.

The Team then visited the Asbestos Textile Plant of this Factory.

(b) Asbestos Textile Plant.

In the manufacture of Asbestos Textiles, different grade of fibre are received in pressure packed bags. These bags are cut manually and fed into blending hoppers with negative suction at the feeding end itself which does not allow any fibrous dust to come into the breathing zone of the operators. The blending operation is done in a totally closed system and the blended fibres are re-bagged in polythene bags manually under controlled suction conditions at the bagging stage.

The blended fibres are then fed into the hoppers of the carding machines which are all maintained in total enclosure of flexible curtains made up of overlapping plastic strips. Adequate suction is provided on the various carding machines. The operators required to work inside the enclosures for maintenance and/or other work on the machines are required to wear Ori-nasal respirators. The cleaning of any fibre droppings inside the enclosure is done with the help of centralised vacuum collection system.

It was also noted that the card stripping operation is carried out using a totally enclosed stripping attachment connected to a high velocity suction unit. This arragement enables the card stripping operation to be carried out in such a manner where dust from the main cylinders of the card are collected into a bagging unit for easy disposal.

The carded sliver is then spun on spining frames which are provided with wetting roller arrangement so that the dust emanation is contained. The yarn so processed is in reasonably wet stage and not prone to release of dust. The spining frames at the time of doffing yarn are also cleaned any spillages with the centralised vacuum suction system. Further, the processing like plaiting/c

weaving are carried out in wet condition. The finished product, viz, cloth and plaited packings are finally dried before packing in polythene wrappers and water-proof packing paper. All the individual process machine work stations viz, carding, weaving and/or plaiting have been provided with dust collection arrangements which are connected to the centralised dust collection systems.

(c) Medical Surveillance :

The Company maintains extensive records of health status of its employees over several years including pre-employment records. These records include clinical examinations, chest X-rays and pulmonary function tests. All the employees of the company are periodically examined by the Company Medical Officer.

(d) Environmental Surveillance :

Dust level monitoring were also observed to be maintained by the Company at the various processing stations. They were also found to be well equipped in the areas of dust monitoring and measurement equipment.

The Company provides each of its employees with the twin locker facility, spaced well apart to store their street and work clothes separately.

Asbestos Textile Plant : 26.3.85

The Team visited an Asbestos Textile Plant at Bombay in the afternoon of 26.3.85.

The pre-packed asbestos bags are manually cut and fed into the Feed Hoppers of the blending plant and the blended fibres are conveyed pneumatically to the Card Hoppers. The exhaust provided at the hoppers appeared inadequate.

Carding machines are provided with plastic curtain enclosures. The system of curtains could have been improved with proper overlaps to avoid leakages.

A pit underneath the carding machines is used to collect droppings from the cards which was having considerable droppings which are reported to be periodically cleaned. Such an operation should be performed with personal protective equipment.

The Team also observed spinning and twisting operations where the yarn was being wetted before entering the spinning/doubling flyer. The Company has installed centralised vacuum system to periodically clean the frames.

Some of the sections of the factory were not working. Other operations, such as, weaving, plaiting etc. are located in another factory, which the Team could not visit.

The Team could not see any medical examination facility in this Company.

This is a small unit, with less than 150 workers.

The blending operation is done in a totally enclosed system and the blended fibres are then fed into the hoppers of carding machine by pneumatic conveying system.

Central vacuum and dust extraction plant is installed on a German dust extraction specialist design having a system of pipe lines reaching all the working areas of the factory premises. The pit in the carding is equipped with devices to extract and transfer the droppings pneumatically to the central vacuum cleaning plant. The dust extraction plant clears card stripping operation dust/fibre from the main cylinders and keeps the floor, machines, walls etc. clean of dust, fibre and droppings.

The management mentioned that operators are provided with Ori-nasal respirators. Airline respirators are also provided wherever exigencies of work so demand.

Workers are provided with two sets of lockers away from workplace.