

PROBLEMS OF LABOUR HEALTH ON PREVENTING DUST HAZARD IN TOWNSHIP INDUSTRIES

LIU ZHANYUAN • Xiao Xingyuan • Fang Yuxiang

Liaoning Institute of Labour Hygiene, P.R. China

Along with the changes in the rural economic structure, small township factories are on the rise and have rapidly developed. These industries, however, face some serious health protection problems. Because production techniques in many factories are often backward and, in addition, their equipment is poor, economic standards in rural areas is lower, and administration regulation is not good, these factories create environmental pollution and endanger the health of workers and local residents. So how to resolve these problems are imminent. Through making investigations in township factories of Liaoning Province for more than ten years, we expound some views about labour health problems of preventing dust hazards in township factories.

INVESTIGATION

The investigation we refer to is of dust hazards in key township factories which create dust and seriously endanger the occupational workers' health. Its purpose is know the degree of dust hazard, the cause and the consequence so that we can provide the necessary basis for finding suitable preventing measures. Through our investigation in Sueizhong and Janpin County, the west part of Liaoning Province, we found that there have been 10 crushing mills of silica and feldspar in Sueizhong and in Janpin, the township-run mining factories all over the County. Above all, there are more than 10 mining stops to process perlite. In view of representative perlite in our province, we illustrate an example of investigation in it. The results are following:

1. Dust concentration is very high.
2. Among 225 workers clear irregular shadows and some speck shadows on lung X-rays were seen. There is notable relation between FEV₁ or mmEF, and the changes of lung X-rays. The more the volume of dust exposure is, the lower the aeration functions mentioned above are.
3. We injected intra-tracheally 50mg of perlite dust into rat lungs. For 12-18 months, we observed that perlite dust caused fibrosis in rat lungs. These results proved the hazard of perlite dust, and emphasized and proved that it is necessary to take preventive dust measures.

PREVENTIVE MEASURES

We have investigated and experimented in preventive dust measures of township factories in Liaoning Province for several years. Considering the difficulty of funds and low

level of techniques in these industries, we propose that the following two types of preventive dust measures can be taken.

Hydraulic Production

It is appropriate for highly hydrophobic and possible wet operating mineral production and has advantages of equipment, convenient simple administration and reliable effectiveness. It is very useful for township factories. To date, there are two sets of hydraulic production equipment spread in our province.

Closed Dry-Production

It is suitable for the mineral production which doesn't fit hydraulic operation and suitable in the areas where the water sources are poor. In this situation closed and ventilated dust-proof measures can be carried out.

This small closed-ventilated dustproof system reduced the dust concentration from 289.0 mg/m³ to 9.9 mg/m³. The measure has the advantage of less cost and obvious effectiveness. It is also appropriate to expend the measure in town enterprise

TECHNICAL GUIDANCE

At present, in township industries there are generally no specific technologists who know ventilation. So it is extremely necessary to provide concrete technical guidance and to teach some labour hygiene professionals and technicians for these township factories

Also, today's young doctors engaged in this field lack the knowledge of industrial ventilation and the experience of work, therefore for them to have some studies in industrial ventilation is very useful and necessary for their directing and supervising dust prevention situations. In our province the study class of "ventilation removing dust" or of "evaluating effectiveness of dust-proof equipments" is held every two or three years. Its effect is very obvious.

STRENGTHEN MANAGEMENT

We think that the management system of township industries is quite different from that of state industries. Therefore we should supervise and manage the township industries in labour hygiene in a different way. Much attention should be paid to the following items:

1. The departments responsible in health, in labour job and in environmental protection should match with each

other well. The cooperation among them is the necessary condition for pushing labour hygiene, safety, and environmental protection of township industries forward. The problems existing in these areas need to be planned and unified with due consideration for all concerned and tackled in a comprehensive way. It is supported by the facts that the situation is getting better wherever cooperation is better

2. The key for us to develop the labour hygiene work in township industries is relying on all stages of the government and the departments responsible for it. For example, we can supervise and urge the work, give directions, run study classes, and make programmes, together with the concerned departments.
3. The legal systems must be strengthened. Suel Zhong County has more than 10 crushing mills. Thee county government has made three decisions for the production of crushing mills. They are:

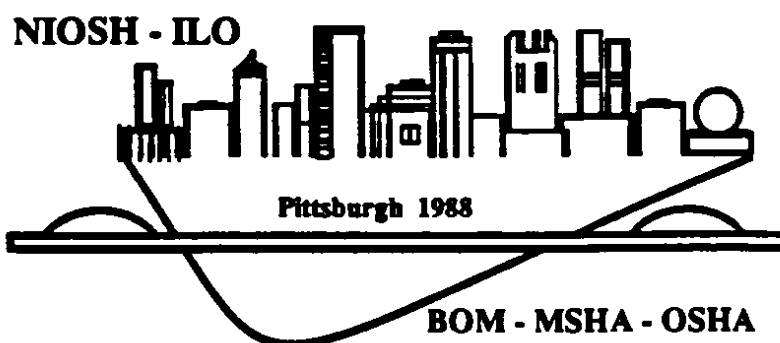
- Hydro-production is required;
- The closed production is required where hydro-production meets big problems;
- Factories could be allowed to go into production only if they have been checked and accepted by epidemic prevention station in county and labour bureau.

Due to these decisions the dust concentration has been kept on a lower level for many users. The government in Janpin County also promulgated "Mine administration regulations." Two of them are emphasized.

As a result, the county government has spread simple and effective preventive dust facilities within one year in 12 perlite mines. These "decisions" and "regulations" are promulgated by the county governments local legality. The only way to guarantee the cardinal interests of the people is to strengthen the legal system and administer strictly.

Proceedings of the VIIth International Pneumoconioses Conference *Part*
Transactions de la VIIe Conférence Internationale sur les Pneumoconioses *Tome*
Transacciones de la VIIa Conferencia Internacional sobre las Neumoconiosis *Parte*

II



Pittsburgh, Pennsylvania, USA—August 23–26, 1988
Pittsburgh, Pennsylvanie, Etats-Unis—23–26 août 1988
Pittsburgh, Pennsylvania EE. UU—23–26 de agosto de 1988



U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
Centers for Disease Control
National Institute for Occupational Safety and Health

CDC
CENTERS FOR DISEASE CONTROL

Sponsors

International Labour Office (ILO)
National Institute for Occupational Safety and Health (NIOSH)
Mine Safety and Health Administration (MSHA)
Occupational Safety and Health Administration (OSHA)
Bureau of Mines (BOM)

November 1990

DISCLAIMER

Sponsorship of this conference and these proceedings by the sponsoring organizations does not constitute endorsement of the views expressed or recommendation for the use of any commercial product, commodity, or service mentioned.

The opinions and conclusions expressed herein are those of the authors and not the sponsoring organizations.

DHHS (NIOSH) Publication No. 90-108 Part II