NIOSH/CDC BRIEFING ON VINYL CHLORIDE FOR

LABOR AND MANAGEMENT REPRESENTATIVES

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Cleveland, Ohio

I. Introduction: Dr. Marcus M. Key, Director
National Institute for Occupational Safety and Health

II. Review of the Problem

A. Manufacturing and Industrial Hygiene--Mr. Vernon E. Rose

B. Medical Findings and Pathology--Dr. Henry Falk

C. Epidemiology--Dr. J. William Lloyd

D. Toxicology--Dr. Donald V. Lassiter

III. NIOSH/CDC Actions and Proposals

A. Industrial Hygiene--Mr. Vernon E. Rose

B. Epidemiology--Dr. William S. Lainhart, Dr. Joseph K. Wagoner, and Dr. J. William Lloyd

C. Medical--Dr. Clark Heath and Dr. Henry Falk

D. Toxicology--Dr. Edward J. Fairchild

Enclosure 1

NIOSH Recommended Precautionary Monitoring and Control Procedures for Polymerization Processes Involving Vinyl Chloride

I. General Housekeeping Procedures

A. The spillage of Vinyl Chloride and Polyvinyl Chloride in and around the production facilities should be controlled as follows:

1. Housekeeping procedures should be implemented to assure immediate removal of VC and PVC material around polymerization operations including drying, packaging and loading operations.

2. Recovered PVC material which is to be packaged should be stored in closed containers.

3. Waste PVC material should be stored in closed containers and consideration should be given to the adequacy of its disposal and/or destruction. Care should be taken in the storage of closed containers to insure that unsafe conditions do not result from an internal build-up of pressure in the container.

B. Inventories of beginning and recovered quantities of VC and quantities of PVC produced, packaged and recovered should be made to determine losses and probable areas affected.

C. PVC material should be removed from overhead structures and conduits where it tends to collect.

D. Consumption of food should be permitted only in separate facilities provided for this purpose, and no food products should be permitted elsewhere in the polymerization facility.

II. Protective Clothing

A. A daily change of protective clothing including full coveralls, or the equilvalent, should be provided each employee in areas where possible exposure to VC PVC could occur. Clothing contaminated by accidental spills should be changed as soon as feasible.

B. Protective gloves and footwear, or footcovers, should be worn as appropriate in those PVC operations where exposure to PVC material is possible.

C. Protective head covers should be worn during PVC operations as appropriate (e.g. hard hats in those areas where physical protection of the head is necessary and hair coverings, or the equilvalent, in

operations such as cleaning of polymerization reactor tanks and packaging operations).

D. Where employees are engaged in maintenance or cleaning operations of polymerization reactors tanks they should wear full impervious suits to guard against skin contact of PVC material and VC vapors. Procedures for safe entry to confined spaces should be observed.

III. Showers

Showers at the termination of an eight-hour work shift should be mandatory for all workers with possible contact with VC-PVC.

IV. Monitoring

A. Environmental Monitoring

1. In-plant environmental monitoring programs should be implemented; and where workers are required to enter polymerization tanks, a survey of the VC concentrations should be made in the reactors immediately after opening, immediately prior to entry of maintenance personnel and during the tank cleaning operation.

2. Data obtained from the environmental monitoring program should be used to indicate those areas where efforts should be directed to reduce airborne levels of VC.

3. Positive programs to initially control VC levels well below the present Federal Standard of 500 ppm should be developed (some companies are targeting at 50 ppm) and efforts to further reduce levels should be given consideration concomitantly with the necessary modifications in engineering and design controls.

4. The concentration of VC in exhaust ventilation should be determined to estimate the amount of VC lost during operations and the possible exposure of personnel immediately outside the facility.

5. Monitoring for PVC particulate material should be accomplished to estimate the degree of exposure to this substance throughout the facility.

B. Personal Monitoring

1. Integrated, eight-hour personal monitoring samples should be obtained from those employees considered to receive the greatest exposure to VC or PVC.

2. Breathing zone samples should be obtained to complement environmental monitoring program for VC, and similar samples should be obtained for PVC.

V. Respiratory Protection

Because VC is a gas under ambient conditions and PVC is a solid under these conditions, it is recommended that respiratory protection for employees take these circumstances into consideration.

A. Where employees are engaged in cleaning and maintenance operations inside polymerization reactors they should be equipped with an atmosphere-supplied respirator in order to protect against both VC vapor and PVC particulates.

B. During housekeeping procedures and packaging operations where the possibility of PVC dust inhalation is a factor, it is recommended that an air-purifying respirator equipped with a mechanical filter designed to remove particulate material be worn. Respiratory protective devices which meet this requirement, as well as protect against VC vapors in concentrations less than 0.1% have been approved by the NIOSH Testing and Certification Laboratory and bear the numbers: TC-23C-40, TC-23C-47, TC-23C-48.

C. Where employees are engaged in transfer operations of VC from railway tankcars to storage facilities or at any similar transfer point which requires manual operations, they should wear a self-contained breathing apparatus (SCBA) during such operations to guard against unexpected release of VC during such operations.

D. Other operations involving possible exposure to VC or PVC should be evaluated as the individual situation exists and respiratory protection provided as appropriate.