

The Society of the
Plastics Industry, Inc.

355 Lexington Avenue
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R. W. ANNONIO

December 18, 1979

TO: THE PVC SAFETY GROUP

FROM: JOHN R. LAWRENCE
TECHNICAL DIRECTOR



RE: PVC DUST STUDIES

As you know, for some time there have been questions raised with respect to possible health hazards related to workers exposure to PVC dust. Early in 1979, in an effort to resolve these questions, Imperial Chemical Industries Ltd. in the United Kingdom commissioned a study on the effect of PVC dust on the respiratory health of workers in one of its PVC facilities. This study was performed by the Institute of Occupational Medicine (IOM), an independent research organization located in Edinburgh. The IOM's report on its work dated October 1979 was reviewed by ICI personnel at a meeting of the Chemical Manufacturers Association's Vinyl Chloride Research Coordinators in the CMA's office in Washington on November 28, 1979. Copies of the full report were delivered to CMA and SPI staff representatives at that time and are being forwarded to all members of the SPI's PVC Safety Group with this letter.

Although there are no alarming findings in this health study, there is information which suggests that efforts must continue to be made to protect employees from excessive exposure to any respirable dust.

In order to maintain consistency in the way that this lengthy report is presented in a summary form within the industry, the attached interpretation of the study's scope and findings has been jointly prepared by CMA and SPI staff and legal counsel. The use of this summary of course does not preclude the review and interpretation of the full report by any individual company. Also enclosed is a copy of the letter from John Stafford of ICI forwarding the full IOM report to Dr. Robbins, Director of NIOSH.

/With respect

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With respect to whether the findings of this study constitute information which should be reported under section 8e of the Toxic Substances Control Act, we know of no company planning to deal with it in such a fashion notwithstanding the fact that a number of PVC manufacturers in this country are now familiar with the study. Despite this, no U.S. PVC producer should be inhibited by anything said herein or by any of the enclosed attachment from making such a judgment and proceeding as required by the TSCA rules.

At the present time SPI knows of no plans to replicate the ICI studies in this country. It was the judgment of CMA's Vinyl Chloride Research Coordinators at the November 28 meeting however, that ICI's continuing studies should be monitored. The question of initiating other activities will be considered at the next meeting of the PVC Safety Group early in 1980.

Attachments

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355 Lexington Avenue
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December 20, 1979

TO: THE SOCIETY OF THE PLASTICS INDUSTRY
VINYL CHLORIDE SAFETY GROUP

CHEMICAL MANUFACTURERS ASSOCIATION
VINYL CHLORIDE TASK GROUP

RE: AN EPIDEMIOLOGICAL STUDY OF RESPIRATORY
DISEASE IN WORKERS EXPOSED TO POLYVINYL
CHLORIDE DUST

In view of a number of published reports regarding abnormal lung function, pneumoconiosis and other respiratory symptoms allegedly resulting from exposure to PVC dust, in early 1979 Imperial Chemical Industries Ltd. (ICI) commissioned a study to determine whether PVC dust caused any measurable effects on the lungs of workers exposed to it. The study was carried out by the Institute of Occupational Medicine, an independent research organization based in Edinburgh, Scotland. Copies of the report covering the findings of this study dated October 1979 were delivered to the Chemical Manufacturers Association and the Society of the Plastics Industry in late November.

Review of this report indicates that the respiratory symptoms, pulmonary functions, and a representative sample of X-rays of 818 workers were compared with estimates of the amount of fine PVC dust to which each worker had been exposed. As with any study of this type and scope the results yield more questions than they answer and we have been advised that ICI plans to continue this investigation.

Of particular significance in the October report are the following study conclusions and observations:

1. Respiratory Symptoms

Exposure to PVC dust was not associated with chronic cough or sputum production, acute chest illnesses, acute bronchitis, pneumonia, pleurisy or asthma.

It was also found that workers who smoked cigarettes and had also been exposed to higher amounts of PVC dust reported slight shortness of breath on exertion more often than smokers who had been exposed to lower amounts of dust.

2. Lung Function

There was a small but significant reduction in lung ventilation capacity (forced expired volume, FEV₁) among men with higher PVC dust exposure. This effect was seen principally in current smokers and was not confirmed in non-smokers. The reduction noted was about one-seventh that caused by aging and about equal to the loss expected with a one pack a day cigarette smoker. It was also found that the forced vital capacity (FVC) was reduced to a statistically significant degree at higher PVC dust exposures but to a lower magnitude than that of the FEV₁.

3. Chest X-Rays

There was no evidence of serious progressive pulmonary fibrosis (pneumoconiosis). However, certain abnormalities similar to what might be expected from aging or smoking appeared on the lung X-rays of a small percentage of workers exposed to higher levels of dust.

4. Lung Cancer

No excess of lung cancer was found in the study population.

5. Miscellaneous

The observed effects could not be related to past exposure to vinyl chloride monomer.

While dispersion or emulsion PVC processes produce more dusts in the respirable range it was not possible to clearly separate one process from another in the study.

To summarize the results noted previously, the study indicates an adverse pulmonary effect is caused or accelerated by PVC dust inhalation particularly among smokers. On the positive side, the study shows many possible health effects are not related to PVC dust exposure. The study reinforces recommendations for the use of controls to protect employees from excessive exposure to any respirable dust.

Imperial Chemical Industries Ltd. should be commended for an excellent study. They have promised to keep industry, government and labor aware of results in their continuing studies.