

January 5, 1980

TO: Vinyl Chloride Project Panel
Vinyl Chloride Research Coordinators

SUBJECT: An Epidemiological Study of Respiratory Disease in
Workers Exposed to Polyvinyl Chloride Dust, A Study
Completed by the Institute of Occupational Medicine,
Edinburgh, Scotland under Contract with Imperial
Chemical Industries Limited.

Gentlemen:

Attached is a final summary statement on the subject document drafted originally by Mr. R. N. Wheeler, approved by the counsels for both CMA and ICI, and checked for technical accuracy after editing and/or modifying by counsel.

During the meeting of the Research Coordinators on November 28, 1979, it was agreed that the subject document in final form would be sent to all members of the Vinyl Chloride Project Panel and to the Research Coordinators.

Sincerely,



J. T. Seawell
Project Administrator
Vinyl Chloride

JTS:das

Enclosure

CMA 008077

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.

CMA 008078

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.