MEMORANDUM

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
CENTER FOR DISEASE CONTROL
NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH

TO : Chief
Environmental Investigations Branch

DATE: April 19, 1974

FROM : Industrial Hygienist
Environmental Investigations Branch

SUBJECT: Trip Report - Monsanto Polymers and Petrochemicals Company, Indian Orchard, Massachusetts

On March 12, 1974, the Monsanto Polymers and Petrochemicals Company polyvinyl chloride plant in Indian Orchard, Massachusetts was visited. An initial meeting with several plant personnel was held to explain the purpose of the visit and to obtain a general description of the activities and processes of the plant. Those in attendance were: James Jones and Richard Lemen from NIOSH; A. Scott Grivas, M.D. from CDC; Leonard D. Pagnatto from the Massachusetts Department of Labor and Industries; and Gerald M. Ellsworth, Plant Manager; Robert L. Bourget, PVC Manufacturing Superintendent; John R. Belschwender, Personnel Manager; William E. Nessel, M.D., Plant Physician; Garland W. Fletcher, Safety Manager; Cary D. Riggs, PVC Manufacturing Supervisor - Suspension; David L. Gendron, PVC Manufacturing Supervisor - Paste; Archie P. Torrenzano, PVC Senior Technical Specialist; Chester Kowalczik, Local 288 - Coordinator for Health and Welfare; George Roush, M.D., Associate Corporate Medical Director; John Fox, Plant Industrial Hygienist, Texas City, Texas plant from Monsanto.

After this initial meeting, we toured the plant and then split into smaller groups. In the afternoon and again on March 13, 1973, Mr. Jones met with plant production and industrial hygiene personnel. Copies of the plant layout, process flowsheets, raw material lists, and past environmental sampling data for vinyl chloride were obtained. Polyvinyl chloride is produced in this plant by the suspension and emulsion processes. General types of products procuced are PVC homopolymer suspension resin and PVC homopolymer emulsion resin. PVC production began in 1948, reached a peak in 1971 and has declined since. A PVC vinyl acetate copolymer suspension resin was produced from 1948 to 1967, PVC vinyl acetate copolymer emulsion resin from 1964 to 1973, and PVC chlorinated polyethylene graft copolymer resin from 1962 to 1973. A compounding and calendering operation was carried on at the plant from 1950 to 1972.

The emulsion reactors are entered about once a month for ten minutes for inspection. The suspension reactors are hand cleaned after every 30 batches. Cleaners spend an average of less than five minutes per man per shift in reactors. This cleaning frequency has been prevalant since 1972. From 1964 to 1972, reactors were hand cleaned after every 100 batches. From 1948 to-

1964, reactors were cleaned after every nine batches. Since 1964, a solvent cleaning system has been in operation which uses tetrahydrofuran as a solvent. After each batch, solvent is sprayed onto reactor walls dissolving most residual PVC. This system has vastly reduced the need for hand cleaning and reactor entry.

Vinyl chloride environmental sampling was begun in early 1974. Grab samples and gas chromatographic analysis is the method used. Vinyl chloride levels in the suspension resin area have varied from 2 to 6500 ppm, and in the emulsion resin area, from 0.4 to 950 ppm. These levels are not in most cases indicative of personnel exposures but represent an attempt to locate high level areas so that these levels could be reduced.

A plant photographer took pictures of the processes. These pictures are to be developed, checked for Trade Secret information, and then sent to us.

James H. Jones

cc: Paul Alvarado, NIOSH, Region I
Rick Waxweiler
Dick Lemen
Joe Mallov
Bill Stringer
Ken Kronoveter
Henry Falk