

UNION CARBIDE CORPORATION

CHEMICALS AND PLASTICS

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SOUTH CHARLESTON PLANT

January 21, 1980

Mr. R. L. Hollingshead
Pitney Hardin & Kipp, Esq.
163 Madison Avenue
Morristown, New Jersey 07960 (Maliko et al versus UCC)

Subject: Tribukh et al "Working Conditions and Measures for their
Improvement in Production and Use of Vinyl Chloride Plastics"
Gigiena i Sanit. (10) 38-44, 1949

Dear Bob:

The subject paper has been repeatedly cited as evidence of the early incidence of vinyl chloride and polyvinyl chloride toxicity. Other sources have stated that the author concluded that the toxic effects came from the plasticizers used. In an effort to clarify the discrepancy a copy of the original article in Russian was obtained and retranslated. The translation does not clearly attribute cause and effect to anything.

The authors' conclusions are as follows:

1. Organo chlorine compounds, hydrocarbons, hydrogen chloride and carbon monoxide are given off during the fabrication of PVC plastics.
2. These cause irritation of the mucous membrane in the upper respiratory tracts. Dusts and vinyl chloride resin vapors cause dryness and atrophy of the mucous membrane and cause chronic bronchitis over a long period of exposure.
3. Changes in worker upper respiratory tracts and hepatitis indicate the need for further health research.
4. Use of sovol (diphenyl chloride) as a plasticizer causes acne type skin injury to workers.
5. Protective clothing and showers should control the skin injury from sovol.
6. For cleaner work atmosphere the decomposition of PVC must be reduced and a rational ventilation system provided.

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The authors are aware that diphenyl chloride and chlorinated naphthalenes (sovol and golowax) attack the parenchymal organs (parenchymal refers to distinguishing cells of an organ-not too clear). Severe toxic effects are acute and sub-acute yellow atrophy of the liver. They make no connection between this knowledge and the worker hepatitis.

Other items of note are:

1. The specific process source of the PVC resin is not identified except that for shoe soles. Emulsion PVC is used for molding shoe soles. This type of PVC would be quite dusty and low in residual vinyl chloride monomer. Because of the widespread use of emulsion process PVC in Europe during this time it could be reasonably assumed that all the PVC used was made by this process.
2. The identification of potassium stearate as a stabilizer is in error. This is a soft soap probably used as a lubricant and non-stick agent. The stabilizer was probably some form of basic lead carbonate. No mention is made of pigments, fillers, etc. used which would contribute to dust and to toxic effects.
3. Neither diphenyl chloride (sovol) nor chlorinated naphthalenes golowax are good plasticizers for PVC. Dibutyl phthalate is the primary plasticizer. The other materials were probably added to the DBP to cheapen the cost or to get certain properties in the plastic.
4. The authors attribute the presence of organo chlorine compounds in the processing fumes to cleaved molecules of vinyl chloride (PVC-?) in different quantitative chain compound compositions. Boettner et al (Analysis of the Volatile Combustion Products of Vinyl Plastics) reports the major organic compounds given off during combustion pyrolysis of PVC are benzene and toluene with no condensible organo chlorine compounds.
5. Sampling and analytical techniques were not very sophisticated in 1949. Reactive gases such as hydrogen chloride and carbon monoxide could be accurately determined but the detection of hydrocarbon gases was based on the condensation of the material with ice or dry ice thus there could be no entrapment or measurement of very volatile hydrocarbons such as ethane, propane, butane or vinyl chloride. If organo chlorine compounds were truly collected and identified they must have resulted from the chlorine containing plasticizers in the plastic.

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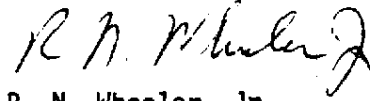
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My own conclusion is that this study should not be related to any vinyl chloride or polyvinyl chloride health effects.

The translation was done by A. D. McCormick Company, P.O. Box 187, Dunbar, West Virginia 25064 not by Union Carbide Corporation.

Very truly yours,



R. N. Wheeler, Jr.

RNWJr:ke

cc: J. W. Whittlesey

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