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DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
CENTER FOR DISEASE CONTROL

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ADAMS

Sent To
Dr. Ross Adams
2000 Longwood Drive
Longwood, Florida
Med. Sch. Fla.

NATIONAL INSTITUTE FOR OCCUPATIONAL
SAFETY AND HEALTH
5600 FISHERS LANE
ROCKVILLE, MARYLAND 20852

December 4, 1975

Dr. A. Ross Adams
Air Products and Chemicals, Inc.
Chemicals Group
Five Executive Mall
Swedesford Road
Wayne, Pennsylvania 19087

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A. ROSS ADAMS

Dear Dr. Adams:

We have received your letter of October 31, and it has been discussed among staff of the Bureau of Epidemiology and the National Institute for Occupational Safety and Health (NIOSH) of the Center for Disease Control (CDC). Our scientists may differ in their interpretation of particular studies in relation to vinyl chloride exposure and teratogenesis. They are, however, in complete agreement that while the issue is not yet resolved, the potential public health ramifications remain a cause for concern. (In reference to your letter, please note that we are speaking only of vinyl chloride monomer-VCM, and not of polyvinyl chloride plastic.)

The points raised in your letter deal specifically with the issue of teratogenicity of VCM among humans. Neither the Infante nor the CDC study resolve the matter. Dr. Infante's study used available birth and fetal death record information and identified three areas with increased rates of central nervous system malformations. The CDC investigation followed up cases in one city and found no parental association between VCM exposure and plant employment. There also appeared to be no differences between cases and controls with respect to location of residence relative to the plant in Painesville. In this circumstance no association could be established with VCM. However, the sentence following the one you quote from the MMWR article puts this in appropriate perspective. It states, "This study clearly does not rule out the possibility that vinyl chloride may be teratogenic." Because of the small numbers of cases involved, there still might be an effect that was not detectable in Painesville.

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It is pointed out that the possible effects of VCM exposure also include mutagenicity. Mutagenesis and carcinogenesis are sufficiently correlated that demonstration of one is cause for concern about the other. The carcinogenicity of VCM in humans is well demonstrated via the NIOSH cohort mortality study and by various animal studies. There are also data to demonstrate VCM-induced transplacental carcinogenesis in rats. In the past year, several reports have indicated that VCM is mutagenic via the microbial test system, and that VCM metabolites have induced mutations in the mammalian cells. Likewise, four independent reports from four different countries have shown an excess of chromosomal aberrations in lymphocytes of workers exposed to VCM as compared to controls. Thus, while no conclusive data are available concerning mutagenesis in the human setting, such animal and laboratory findings suggest a need for caution with respect to human exposures.

From information at hand, therefore, sufficient grounds exist for advising men and especially women in child-bearing years that VCM exposures can lead to an increased risk. In the future, if the OSHA standards for workplace are adhered to, and if the EPA emissions standards are promulgated, there should be less reason for concern about the effects of VCM inasmuch as these regulations should ensure greatly reduced workplace exposures and even lower community exposures.

Sincerely yours,

John F. Finklea, M.D.

John F. Finklea, M.D.
Director