



A Division of The Society of The Plastics Industry, Inc.

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1/25/90
Roy T. Gottesman
Executive Director

December 18, 1989

To: Vinyl Institute Technical Committee
Vinyl Insittute Health Safety & Environment Committee

RE: Environmental Fate and Exposure Data for Vinyl Chloride

On November 15, I sent you a copy of Peter de la Cruz's letter to me of November 13 which provided a chapter from Fate and Exposure Data for Organic Chemicals Handbook dealing with Vinyl Chloride .

Enclosed is a review of this information developed by Dr. Robert Hinderer of BFGoodrich Company, chairman of the Vinyl Institute Medical Subcommittee , which was received today.

This is for your information and files.

RTG:g

Enc.

Roy

SL 089534

December 12, 1989

REC'D DEC 18 1989

C. N. Bush
CL-OTM

SUBJECT: SUMMARY OF VCM FATE AND EXPOSURE DATA¹

The chapter on VCM states that the main sources of human and environmental exposure to VCM is from emissions and wastewater at production and manufacturing facilities, but also notes water contamination from PVC pipe, packaging, etc. Contamination of the soil, presumably through accidental release of liquid VCM, could play a role in ground water contamination. However, the authors seem to recognize that most would rapidly volatilize. They also acknowledge that VCM will rapidly volatilize from water.

Once VCM is in the terrestrial aquatic environment, it will be subject to biodegradation. Although VCM may be resistant to aerobic biodegradation, photodegradation will occur rapidly in water containing photosensitizers such as humic acid. Importantly, VCM is not retained (absorbed) in the soil, will not bioaccumulate, and therefore does not pose an added concern for those species (i.e., man) at the top of the food chain.

In the air, VCM rapidly degrades by gas-phase reaction with photochemicals to a host of chemicals ranging from HCl, to formaldehyde, to carbon monoxide. Interestingly, smog apparently reduces the half-life from 1.5 days to a few hours.

The authors state that the major human exposures to VCM are in the workplace and from the ingestion of contaminated food and drinking water that has come into contact with PVC packaging or pipe, "which has not been adequately treated to remove residual monomer". Although they do not attempt to estimate the relative or absolute significance of the latter source, one should note that this conclusion is based on 10-15 year old data and in some cases on products/applications which don't exist.



R. K. Hinderer

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cc: H. W. Dietz/W. C. Bachtel
R. T. Gottesman

¹Vinyl Chloride Environmental Fate/Exposure Potential, in Handbook of Environmental Fate and Exposure Data, Volume I, Phillip H. Howard, ed., Lewis Publishers, Chelsea, Michigan (Pages 551-560).

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