

CONFIDENTIAL

FROM E. E. Sandmeyer AT Harmarville DATE April 23, 1974
TO Mr. R. E. Rutherford AT Pittsburgh REFERENCE 100B1-5.2.0
SUBJECT CONFIDENTIAL MEMO FROM SPI OF MARCH 12, 1974

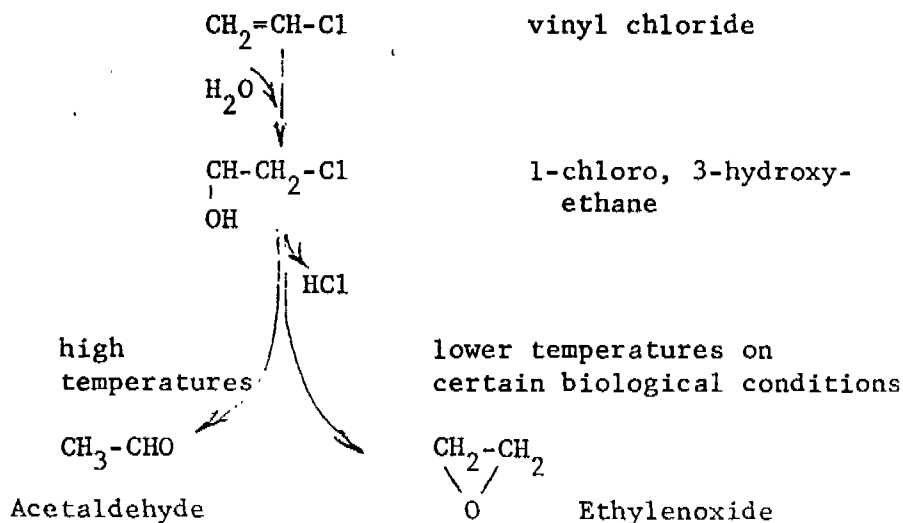
I have reviewed the memorandum from SPI (Society of Plastics Industries) counsel Mr. J. Heckman concerning PVC (Polyvinyl Chloride) and its precursor VCM (Vinyl Chloride Monomer).

The protocol for proposed animal experiments appears very extensive, and the number of animals appear sufficient for a valid statistical evaluation. This may suffice to evaluate consumer safety for the PVC use as food containers, but it would not cover aspects to study occupational preventive measures in the production of such containers.

So far I have not found any literature references concerning the metabolic and catabolic fate of PVC and VCM through the mammalian system. It is highly probable that low concentrations of inhaled or directly absorbed VCM are readily oxidized, conjugated and thus also rapidly excreted. Higher concentrations on the other hand, may cause oxygen deficiencies or in general decrease the rate of detoxification. Under such conditions different chemical reactions may occur and lead to the formation of potential carcinogenic or carcinogen potentiating intermediates. The mammalian system, in attempts to detoxify such products, may accumulate them in the liver and skeleton, i.e. at sites distant to the port of entry. Especially when hepatic pathways are involved, the accumulated compounds may interfere with DNA synthesis, and thus form the oncogenic basis.

Similarly, during industrial processes synthetic and degradative intermediates may be formed which could directly act as dermal, respiratory or hepatic carcinogens. However, as above, at low concentrations the mammalian system may readily metabolize, hydroxylate and excrete such products without detrimental effects.

The following reaction may be postulated to occur under certain industrial or biological conditions:



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DATE 4/23/74

FROM E. E. Sandmeyer

TO Mr. R. E. Rutherford

SHEET NO. 2

Acetaldehyde

(dermal and respiratory
irritant and sensitizer)

Ethylenoxide

(highly irritant to eyes,
can cause pulmonary edema,
potent nutagen; possible
carcinogen)

In order to investigate these reactions, acetaldehyde in the light of the "Meat cutter's syndrome" and the ethylenoxide and chloro-hydroxy-ethane in view of the incidence of angiosarcoma, the experimental protocol might include the study of all of these compounds.

However, as preventative measures, good industrial hygiene and adequate local ventilation should prevent any health hazard.

E. E. Sandmeyer
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EES/sma

cc: Dr. F. D. Gassaway - Pittsburgh
Dr. R. L. Gibson - Pittsburgh

