

ALLIED CHEMICAL CORPORATION  
MEMORANDUM

MAR 2 1973

vcm:slc

March 1, 1973

MEMO TO: Mr. W. S. Ferguson  
FROM: W. A. Knapp  
SUBJECT: Vinyl Chloride Monomer (VCM)

Pursuant to your request, the following is a brief summary of status of industry supported MCA studies and of propellant use of VCM.

With respect to MCA study, a delegation headed by Dr. Torkleson (Dow) visited the European toxicology project at Milan and reported satisfaction with work but a question concerning exposure of food and bedding to the toxicant, a practice not practiced in inhalation studies here. To resolve this question, the MCA study will include one group of animals (highest inhalation level only) with food and bedding similarly exposed. Present MCA study to be conducted by Industrial Biotest now includes 12 month inhalation to 5000, 500 and 50 ppm with three species (mice, rats and hamsters). Some 2400+ animals will be used.

Four epidemiological consultants were invited to the February 20 meeting to explore possibilities and costs in this area. They were Tabershaw, Harvard, a Nebraska firm represented by Dr. John Keller and U. of Mich. represented by Dr. Ralph Smith. The most recent results of Italian study were not disclosed to the consultants, the concern of the industry being based on the original Viola article and the expectation that Dr. Viola will have further results at a symposium to be held in the fall of 1974. There is also the possibility that TLV for vinyl chloride may be further lowered based on the Torkleson et al work of 1961 (Am. Ind. Hyg. Assoc. J. 22, 354-61 (1961)).

The epidemiologists were requested to submit programs by March 9 and an MCA meeting arranged shortly thereafter, possibly on March 13.

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Mr. W. S. Ferguson

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March 1, 1973

Concerning use of VCM as aerosol propellant, it was opinion of those present (Research Coordinators) at the January 30 meeting that serious consideration should be given to withdrawal from this market since value of market was limited and potential for liability great. The TLV is now reduced to 200 ppm and there is a probability that this will be reduced further. It is not reasonable to recommend propellants with low TLV's. The writer believes that a decision to suspend sale should be executed by personal visits to substantial fillers (or marketers) using this propellant.

At present, SCD purchases aerosol grade VCM from Dow on a swap arrangement and from Ethyl Corporation. ICD product is not suitable for aerosol use due to very low concentrations (ppm) of butadiene and/or butenes which polymerize.

WAK:md

cc: Mr. E. W. Callahan

  
W. A. Knapp

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ESTIMATE OF SITUATION - VCM IN AEROSOLS

1. VCM - use in aerosols - reasons

Functional - high solvency combined with good propellant characteristics uniquely suited to paints and lacquers.

Economy - lowest priced chlorinated solvent/propellant available as simple diluent.

2. Hazards

Flammability - imposes upper limit on percent VCM in mixes.

Toxicity - acute. Dizziness in humans at 0.8 - 1.2%.

Narcotic effect at 8% concentration; impairs cardiac function at this level - sniffing probably dangerous although lethal limit is said to be 30-40%.

Toxicity - chronic.

a. Vague liver function impairment at about 300 ppm  
8 hr/day

b. Dow article claims increase in liver wt. @ 50 ppm,  
recommended 100 ppm TLV and time weighted 50 ppm.

Irritation - not well documented but believed to be irritant to some subjects above about 500 ppm.

Tumorigenesis - Tumorigenic @ 30,000 PPM. Possibly tumorigenic in rats at 6000 and 10,000 ppm. Tumorigenicity suspected at lower doses.



3. History of Industrial TLV's

Before 1971 - 500 ppm

1971 No value - referred to notice of Int. Ch. to 200

Currently (1972) - 200 ppm

Predicted basis current work - 50 or less; possibly some use restrictions.

General Population exposures - generally permitted at 1% of TLV; seldom more than 10%.

4. ACC legal exposures

Common law duty to warn; (also strict liability?) - runs to customers and their customers.

OSHA - advise customers of potential hazards - only if asked.

DOT - covers fire hazard and acute toxicity only.

Consumer product safety act. Applies to our customers but not to us. However, we may have implied duty to warn our customers if we are presumed to be knowledgeable and they are presumed not to be.

Toxic substances control act (pending). Will probably have distribution controls and/or prohibited uses for all suspect carcinogens.

Note: Have made positive recommendations to use VCM mixtures in 1962 bulletin and by letter at later dates in response to specific inquiries.

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5. Reasonably possible developments not under ACC control.

Link of cancer scare with aerosol safety in general, citing Viola. Possible sources: Hueper et al, Nader groups, liberal journalists.

Failure of ongoing animal work to demonstrate no tumorigenic effect level in animals at less than about 1000 ppm

"Sniffing" deaths related to VCM containing formulations

Consumer safety regulations covering aerosol formulations

Consumer items containing VCM become prohibited uses under pending legislation.

or

In anticipation of any of the above, withdrawal of aerosol grade from market by Dow et al.

6. Options open to Allied Chemical

- a. Discontinue marketing without explanation or with verbal explanation.
- b. Discontinue marketing with written explanation.
  - (1) Alt. 1 - full disclosure
  - (2) Alt. 2 - emphasize declining trends in permissible industrial exposures; i.e., TLV's

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- c. Orderly withdrawal from market, without explanation
  - (1) Passive.
  - (2) Active.
  
- d. Issue warning but continue to supply if demanded.  
(Has been done in some cases)
  
- e. Express general concern and offer alternate formulations
  - (1) Continue to supply VCM if demanded
  - (2) Discontinue VCM
  
- f. Do nothing affirmative but respond to future events.

WSF:md  
3/13/73

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