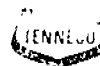


Tenneco Chemicals
A Tenneco Company



Parker Plaza West
Suite 1000 • Dallas 75002
(214) 761-1000

August 30, 1974

Mr. Sam Crowther
Texas Air Quality Services
2520 Shoal Creek Blvd.
Austin, Texas 78758

Dear Sam:

This letter and its attachments are intended to briefly summarize some background documents relating to the current concern over Vinyl Chloride Monomer. We are supplying a second paper dealing with technical aspects of PVC manufacture, emissions, emission control technology, etc. To date, most attention has been given to employee health related problems and little to environmental problems.

As a general summary, information now available leads to the very strong presumption that there is a cause-effect relationship between prolonged exposure to high levels of Vinyl Chloride Monomer and the incidence of angiosarcoma. Valid scientific data on the health effects are too sparse to permit sound statistical correlation; however, a careful analysis of the information available certainly points to long exposure to a high concentration of VCM as a prerequisite to serious health effects; and conversely, to VCM concentrations in ambient air outside manufacturing plants being well below level associated with adverse health effects.

Each of the attachments contain material we feel will be useful to you in your evaluation of the problem. A listing and summary of each follows:

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Enclosure No. 1-M.C.A. Press Release, "Vinyl Chloride Chronology"

This paper highlights the M.C.A. involvements from 1967 through May 10, 1974. Since most VCM-PVC producers were and are M.C.A. members, this probably is a fair summation of industry viewpoints and activities. In brief, up until the announcement by B. F. Goodrich in January-February 1974 that the death of some employees and former employees was definitely due to angiosarcoma, there was much more concern about the fire and explosion hazards associated with VCM than with its employee health effects. Although animal studies by Dow as early as 1961 pointed to slight liver damage from exposures down to 100 ppm VCM, other work at Yale University indicated that 500 ppm offered adequate safety for humans and official standards published first by AGGLH (1962) and later OSHA (1971) set a 500 ppm workplace standard.

Animal studies in Italy in the early 1970's reported tumor development in test animals at 250 ppm exposure but not at 50 ppm. MCA and its member companies commissioned an expanded year-long study in the United States by Industrial BIO-TEST Laboratories, Inc. in early 1973. The preliminary results of this study which were released in April, 1974 (after release of the Goodrich report) contained reports of liver cancer in mice at exposures down to 50 ppm. Dr. M. L. Kepplinger who directed the animal experiments at BIO-TEST emphasized the unreliability found in correlating animal to human experience.

The industry sponsored TABERSHAW-COOPER survey of VCM-PVC industry employees in 1973-1974 showed an overall death rate from cancer among those employees comparable to the U.S. industrial population as a whole and less than the general public. There was some suggestion of dose-related increase in in-

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vidence of cancer other than angiosarcoma in the longer exposed workers.

Enclosure No. 2 "NIOSH Recommended Occupational Safety and Health Standards"

Shortly after the announcement in January, 1974 of the death of the Goodrich workers, NIOSH launched an extensive investigation into the matter and published a memorandum recommendation on March 11, 1974.

The key point in the NIOSH recommendation was the rejection of the concept of a threshold limit for VCM in the work place. It would appear that the rationale by NIOSH in proposing the "zero limit" was the simplistic and extremely conservative one that if there is no proven safe limit, then the only premissable limit is zero.

In addition to the central point of "zero exposure", the NIOSH report contains a large number of detailed precautions and requirements.

Enclosure No. 3-OSHA Temporary Standards

OSHA reacted to the NIOSH report by publishing a temporary standard of 50 ppm maximum exposure in the working place on April 5, 1974. An entry in the Federal Register on May 10, 1974 carried an announcement of a proposed standard setting a ceiling at the limit of detectability.

In addition, the proposed permanent standard incorporated many other items contained in the NIOSH recommendation.

A public hearing on the proposed standard was held beginning the week of June 24, 1974 and developed a large mass of testimony, both oral and written. By law, OSHA must promulgate the permanent standard by October 5, 1974.

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Enclosure No. 4-"EPA Press Release regarding a June 11, 1974 meeting between Mr. Russell E. Train and senior executives of VCM-PVC producing companies".

EPA took an early interest in the matter and set up a committee headed by Mr. Glen Schweitzer, Director of Toxic Substance, EPA, to investigate the problem and report back to the Administrator.

MCA arranged a briefing seminar for various EPA officers, primarily Mr. Schweitzer's committee, by its member VCM-PVC producer companies in early April, 1974. EPA followed that up with an elaborate questionnaire to all PVC producers in May. A smaller number of PVC producers, Tenneco being one, were invited to meet individually with an EPA task force in Durham, North Carolina.

EPA also carried out a limited field sampling program during May, 1974 in the vicinity of one PVC plant in each of the EPA regions. Tenneco, Flemington, New Jersey was the Region 11 sample.

Mr. Train summed up the EPA position during the June 11 meeting by saying that there is no scientific evidence to indicate an imminent health hazard to people living in the vicinity of PVC plants, but prudence dictated reasonable steps to promptly reduce emissions to the lowest level.

Mr. Train touched on the monitoring programs to say that 95% of the ambient air samples showed concentrations of less than 1 ppm VCM.

Enclosure No. 5-Tenneco Testimony, OSHA Hearing, June 25, 1974

Tenneco in testimony during the hearing opposed the "zero dectable" limit on the grounds that it is not technically feasible and as an alternate,

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proposed a step-down reduction of the maximum limit to 40 ppm with a 25 ppm TWA by October 5, 1974, a 25 ppm ceiling by October 5, 1974, with the addition of a 10 ppm TWA average by October 5, 1976. Tenneco estimated a capital cost in excess of \$10,000,000 with added annual operating costs amounting to millions of dollars to reach the goals.

Miscellaneous Items, Not Documented

I. Recent EPA Actions

In the course of a visit by representatives of the EPA Industrial Studies Branch to Tenneco Burlington, New Jersey on August 22, 1974, Mr. Leslie Evans made these points concerning probable EPA actions:

- A. His industrial studies group will recommend that EPA declare VCM a "hazard substance" in order to allow the agency greater freedom of action in setting standards.
- B. So far, the investigation has not shown VCM to present a serious health hazard to the general public outside PVC producer's plants.
- C. EPA will not be as rigid in their position as OSHA has been, and will give much more weight to economic considerations.
- D. EPA will probably set an allowable ambient air concentration.
- E. EPA rule making will probably take at least six months and possibly more than a year.
- F. EPA is greatly concerned about the lack of definitive health effect data on which to base a standard.
- G. EPA believes it is feasible for a PVC plant to reduce VCM emissions to less than 1% of the monomer charged with 0.77% being near the minimum limit possible with available technology.

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II. Health Effects Summary

There is unfortunately little available data actually relating employee exposure to VCM to employee health. Dow is the only company known to have long term records which can be used to correlate exposure with health effect. In testimony at the June 25, 1974 OSHA hearing, Dow reported that their data showed some increase in medical abnormalities in workers exposed to VCM levels above 200 ppm but none to workers exposed to levels below that figure.

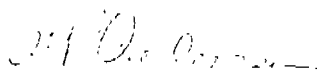
In this same hearing testimony regarding 13 cases of angiosarcoma identified among employees of U.S. PVC plants showed that seven were employed at one plant, three at a second, two at a third and one at the fourth. All of these plants were more than 20 years old and were built prior to the development of many now current engineering standards. While there is no record of VCM levels in these plants in the 1940's and 1950's, the best estimate based on employee's memories of odor levels is that levels exceeded 250 ppm and in some cases, may have exceeded 1000 ppm. Dow presented actual data showing time weighted averages as high as 385 and excursions up to 4000 ppm in the very early years.

As a contrast to these early conditions, our data, and that of most other PVC producers show that exposure levels on a time weighted average are now below 50 ppm in all except a few instances.

I hope this information will be useful to you. If we can assist further, please call on us.

Yours very truly,

TENNECO CHEMICALS, INC.


W. P. Anderson