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DOW CHEMICAL U.S.A.

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POST OFFICE BOX 1706
MIDLAND, MICHIGAN 48640

Mr. David R. Bell
Office of Standards Development
Room 500
1726 M Street, N.W.
Washington, D. C. 20010

DRAFT ENVIRONMENTAL IMPACT STATEMENT ON PROPOSED REGULATION OF VINYL CHLORIDE

Dear Mr. Bell:

OSHA is certainly faced with a most complex and difficult area of decision making in establishing a new occupational health standard for vinyl chloride. Preparation of an adequate environmental impact statement is thus a compounded difficulty. Even so, the draft environmental impact statement is a gross over-simplification of a most complex area of technology and decision making. Extensive data were submitted at the June and July public hearing on the Proposed Standard for Vinyl Chloride. We sincerely suggest that the final environmental impact statement represent a more balanced perspective of the new data presented in these hearings.

We have several suggestions relating to the gaps in data and in quantification of judgments in assessing risk and technical feasibility. We also feel that the consideration of alternative standards needs more reasoned judgment of benefit/risk considerations, weighing of technical feasibility, and articulation of the risk for each alternative.

A. Gaps in Data and Quantification of Judgment

Hazards of Vinyl Chloride and PVC - The data cited to illustrate the hazard of vinyl chloride are the results of animal experiments and the known cases of angiosarcoma of the liver which have been associated with only certain plants producing vinyl chloride and PVC. Most other reports of adverse effects have been associated with operations where exposures are acknowledged to have been very high - in the thousands ppm range. The data from the Tabershaw-Cooper epidemiological study of the total industry, although available in early May, 1974 are not cited.

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We also note that considerable data have been presented in the June/July public hearing indicating that a number of plants have been operating in a manner that has resulted in no known cases of angiosarcoma of the liver. We believe that a careful judgmental weighing of the epidemiological data must be made in establishing a standard. We base our conclusion on the hearing record which indicates that test animals, particularly mice, are more susceptible to diseases caused by vinyl chloride exposure than are humans. It may be worthy of note that in Professor Maltoni's studies the rats that developed angiosarcoma of the liver and elsewhere (at 50 ppm) were 135 weeks on the experiment - or about 148 weeks old. This equates to a human well over 100 years old. Data on metabolism of vinyl chloride in the rat is also relevant to the decision making because it suggests a reasonable explanation for a dose-response relationship.

Occupational Exposure to Vinyl Chloride - The EIS indicates that at present "a reliable model designed to predict the expected number of cases" of angiosarcoma cannot be formulated. With this statement, the assessment of health hazards is dismissed in the EIS. The statement implies that judgments of hazard will have to be made. We concur. It therefore seems that the EIS should reflect at least semi-quantitative estimates of risk at various exposure levels.

We suggest that the final EIS reflect more accurately the trend in exposure levels that has occurred during the last twenty years. Semi-quantitative data on the trend of decreased exposure have been presented in the public hearing. To us, this trend seems highly relevant to the assessment of the degree of hazard faced by workers today compared to the hazards of approximately 20 years ago.

The Proposed No-Detectable Level of Exposure - The EIS attempts, by strong inference, to imply that assignment of the level of exposure in the proposed standard is not a judgmental decision. The level of exposure selected in the proposed standard, no detectable level, as determined by a sampling and analytical method capable of detecting vinyl chloride at concentrations of 1 ppm with an accuracy of $\pm$ 50 percent, is cited as the recommendation of NIOSH. Presumably, this recommendation was based on a judgmental assessment of the feasibility of analytical methodology. Further, to decide that the limit of analytical method feasibility will provide a reasonably safe workplace is another judgmental decision. We strongly believe, as

will be cited in part B of this communication, that there are better criteria of judgment for permissible exposure levels.

The proposed standard "is intended to assure, so far as possible, a safe and healthful work environment." It seems to us that judgments should be made of the possible benefits and risks of the other alternatives, like zero exposure, the ETS, and some intermediate level(s) of environmental concentration. These will be difficult judgments, but certainly experience of plants at estimated environmental concentrations over 20 to 30 years of operating experience are now available to OSHA.

Probable Impact of the Proposed Standard - The impact of the adverse consequences of the proposed standard seems to be grossly over-simplified. Recent news reports indicate that compliance with the ETS is already decreasing productivity in the PVC industry; rated capacities have been decreased by as much as 7 to 25% (Chem. Mktg. Reporter, July 1, 1974). The statements in the EIS relating to "small increase in costs" and "ability to absorb such costs" is in stark contrast to the preponderance of testimony presented in the public hearing.

Substitution of other materials, wood, metal, or rubber, for polyvinyl chloride seems to be projected with undue optimism. Replacement of a five billion pound product simply cannot occur over night. Potential substitutes for relatively simple applications are already in short supply and it is questionable whether cited substitutes would meet product engineering property specifications - testing for performance frequently takes 1, 2, or more years. If substitute materials are to be considered as part of the decision making, it seems only reasonable that their technical feasibility be documented. Also, the availability of fabricating equipment and the time to develop and produce it are among the practical problems associated with any switch in basic materials.

The assertion is made that some substitute materials would be less consumptive of irreplaceable natural resources. This should be viewed in the context that U.S. PVC production consumes hydrocarbons equivalent to only about 0.4% of U.S. gasoline consumption. Further, whereas potential plastic substitutes for PVC are essentially hydrocarbon in origin, more than half of PVC derives from common salt.

The impact of decreased commercial availability of caustic (sodium hydroxide) has not been considered in the EIS. Approximately twenty percent of U.S. chlorine production is utilized in manufacture of vinyl chloride. Caustic is a co-product in chlorine production. Shutdown of PVC manufacture would result in loss of 20% of the U.S. caustic supply. Caustic is already in tight supply. Any decrease in caustic production will decrease pulp and paper and aluminum production and seriously threaten production levels of a larger number of essentials, such as soaps and detergents, petroleum refining, waste and water treatment, and food processing.

Technical Feasibility - The courts have recently held that occupational health standards must meet certain tests of technical feasibility. The EIS contains several references to the technical feasibility of various engineering controls and other production techniques. These appear to be qualitative appraisals and often suppositions, with no cited basis for evaluation of their validity. In contrast, the June/July public hearing record is filled with numerous references to lack of technical feasibility to meet the proposed standard. We feel that the discrepancies between the EIS statements and the public hearing statements must be resolved in the decision making.

We note that EPA has recently developed a definition of "available technology" as follows:

1. Technology which has been demonstrated and is currently known to be feasible.

2. Technology for which there will be a production capacity to produce the estimated number of parts required in reasonable time to allow for distribution and installation prior to the effective date of the regulation.

3. Technology that is compatable with all safety regulations and takes into account operational considerations, including maintenance, and other pollution control equipment. (Federal Register, 39, No. 129, page 24580, July 3, 1974).

Although this definition was developed in conjunction with proposed establishment of noise emission standards for railroad equipment, it's reasonableness and simplicity appear applicable to the present decision making. It seems to embrace the concept of technical feasibility. We urge that the EIS reflect objective evaluation of various proposals against the criteria enumerated above.

B. The Weighing of Alternative Standards - We strongly urge adopting of a more reasoned judgment of benefit/risk considerations, the weighing of technical feasibility, and the articulation of risk in evaluating the various alternative standards that might be promulgated by OSHA.

The alternative of "allowing zero exposure" which literally permits no exposure, is presented rather superficially. In reality, this is not a practical alternative. It is essentially the same as a ban.

Dow supports reduction of the ETS to levels which can be reasonably attained within the limits of technical feasibility. However, to state that the ETS is inadequate because of the animal data, without giving an assessment of how this equates to 20 to 35 years of industrial experience, seems an over-simplification.

The alternative of relying on personal protective equipment is dismissed on the basis of not meeting the test of acceptability under OSHA. We believe the record should show that such an alternative would have highly undesirable features and hazards as cited in the testimony at the public hearing. This seems most important since many believe that the proposed standard would, in reality, necessitate the continual wearing of respirators and other protective equipment by a large percentage of the vinyl chloride workers. These comments do not imply that appropriate protective equipment should not be used for certain jobs of short duration or emergency situations.

We strongly maintain that the alternative of setting a limit between one and 50 ppm vinyl chloride has been dismissed capriciously. This alternative was summarily dismissed on the basis that "the selection of a permissible level between 1 and 50 ppm would be judgmental." As indicated earlier, the proposed standard is based on a judgmental decision - that the feasible limit of detection equates to a reasonably safe workplace level. To select one alternative on a judgmental basis and to reject another alternative strictly on the basis that it would be judgmental is incongruous.

Dow, and others, presented factual data at the June/July public hearing showing that operations on the leading edge of technology generally maintain 8-hour time weighted average environmental concentrations of approximarely 10 ppm with short-term concentrations in excess of this value. Epidemiological data are also now available (hearing record) to evaluate the health effects of such operations. We urge that any environmental impact statement should reflect decision making based upon carefully weighted judgments of technical feasibility, risk to workers, and the societal benefits of vinyl chloride.

Sincerely,

Fred Hoerger

Fred Hoerger, Ph.D.
Operations Manager
Health and Environmental Research

cc: Council on Environmental Quality (5)
Dr. V. K. Rowe, Dow
D. A. Rausch, Dow

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