

Monsanto

FROM NAME & LOCATION

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*File: VCM Safety
Liver Cancer etc*

May 15, 1975

SUBJECT

REFERENCE

TO

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Attached is a copy of a clipping from a recent issue of C&E News about National Cancer Institute tests that indicate that trichloroethylene induces tumors in mice. More information will be forthcoming in the near future. Meanwhile it would seem that the prudent thing to do is to check all laboratory procedures to be sure personnel are not exposed unduly to trichloroethylene, in particular to breathing of its vapors. I believe that we use trichloroethylene with dry ice for attaining and maintaining low temperatures in some labs. It is safer than dry ice-acetone from the standpoint of flammability. I do not believe that we need to discontinue this use of trichloroethylene (Fox and Gilmore concur).

All chlorinated solvents need to be handled with due caution. The existing upper limit for human exposure to trichloroethylene vapors in air is 100 ppm for an 8 hr. period. When trichloroethylene is used as the cooling medium with dry ice in closed systems there would seem to be little exposure. When it is used in an open Dewar flask there is still probably little exposure as long as it is cold. However, when through using such a Dewar flask, and when the contents are allowed to warm to room temperature, exposure to trichloroethylene vapors can be minimized by placing the flask in a hood until it is to be used again. If trichloroethylene is spilled on the hands, they should be washed immediately with soap and water. If trichloroethylene is spilled on a bench top or on the floor, appropriate precautions should be used in cleaning it up (proper gas mask, rubber gloves, etc.) and to protect other people from breathing the vapors (evacuate the lab if necessary).

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chase and storage program, would take the lead in developing the new helium policy.

To ensure future supplies of helium, the report recommends that privately owned helium be used in the near term, rather than selling off present government reserves, and that the government allow privately owned helium to be stored in government fields. The report also recommends that an effort be made to obtain more precise estimates of helium resources and that periodic, comprehensive supply and demand analyses be undertaken.

Current demand for helium is about 0.7 billion cu ft per year for use in welding, leak detection, cryogenics, and many aerospace operations. Demand for these uses is expected to increase slowly to about 1.4 billion cu ft annually in the year 2000. The report predicts a greatly increased demand for helium in the next century when it will be needed as a coolant for nuclear fusion power plants, for superconducting energy storage systems, and for superconducting electric transmission systems. The report estimates that by the year 2030 these systems could need a cumulative total of between 100 billion and 180 billion cu ft of helium. But it warns that much of the known reserves could be dissipated by the year 2000, jeopardizing the development of the new energy technologies.

Helium now is extracted from natural gas. About 280 billion cu ft of helium still exists in proved recoverable reserves, the report estimates. But it says that by 1990 about 15 billion cu ft will have been used beneficially and 200 billion cu ft will have been wasted in the atmosphere. Only about 65 billion cu ft, including stored federal reserves, will remain. An additional 35 billion cu ft will remain in "probable" nondepleting reserves. □

Trichloroethylene is possible carcinogen

Another chlorinated hydrocarbon widely used in industry—trichloroethylene—may be in trouble. An unusual "memorandum of alert" has been issued, warning producers, users, and regulatory agencies that preliminary evaluation of National Cancer Institute tests indicates that trichloroethylene induces tumors in mice, predominantly hepatocellular carcinomas (liver cancer).

NCI emphasizes that this is only an alert, representing "a state of concern." It is based on preliminary

data and "no definite conclusions as to the carcinogenicity of the substance may be reached until all of the data from histopathology examinations have been received and evaluated." However, Dr. Norbert Page, chief of NCI's Carcinogen Bioassay and Program Resources Branch, tells C&EN that because of wide exposure to the chemical "we feel we do have a moral obligation to get out the results on this even if final results are not yet in."

PPG Industries, the largest producer, questions NCI's test procedures on two grounds. Very high dose levels were used—"the equivalent of a man drinking a six-ounce glass of trichloroethylene every day, which of course has no relationship to actual exposures." And the mice were fed the chemical, whereas the major exposure hazard is inhalation. However, Page rebuts both criticisms, explaining that the compound is readily absorbed into the lungs and rapidly enters the bloodstream, so that the method of administration would not affect results.

The U.S. produced 434 million lb of trichloroethylene in 1974. PPG and Dow Chemical make some 70%, with Diamond Shamrock, Hooker, and Ethyl Corp. making smaller amounts. Perhaps 95% is used for vapor degreasing of metal parts in industrial metal fabricating plants. However, NCI notes, it also is used in textile mills, food extractions—such as decaffeinating coffee—and as an anesthetic.

The five producers will meet under Manufacturing Chemists Association auspices on May 12 to discuss the situation and consider industry-sponsored research. And NCI hopes to issue a final report by the end of the month. □

What price toxic substances control?

The controversy over the costs to the chemical industry of complying with S. 776, the Toxic Substances Control Act, is escalating. And so are the cost estimates. Last week, in a letter to a Senate subcommittee on the environment, Environmental Protection Agency Administrator Russell E. Train said that the costs would run about \$80 million to \$140 million per year, rather than the \$45 million he quoted in testimony before the subcommittee in March.

He attributes the higher figures to the "highly speculative costs associated with premarket screen-

ing and regulatory actions." Further, he points out, 10 to 20% of the \$80 million to \$140 million would be offset "on a national basis by the introduction of substitute products for the chemicals that are affected by regulations."

Train's new estimates are spurred by a recent letter from Dow Chemical to the subcommittee, in which the company criticizes the \$45 million figure, pointing out that compliance with the act would cost the industry about \$2 billion per year. However, Train says in his letter that Dow has overestimated in all areas.

For instance, Dow is working on the assumption that every new chemical would have to be premarket tested and reported. Train disagrees. Actually, he counters, general testing at a cost of \$10,000 to \$20,000 per chemical would be "very limited" and required of only 135 new and 180 existing chemicals per year. And more extensive testing at a cost of \$200,000 to \$400,000 per chemical would be confined to only about 15 new and 20 existing chemicals per year.

Train also criticizes Dow estimates that on an industrywide basis the premarket testing provision would delay the marketing and production of the equivalent of about 120 new products each year. The company says that the delay costs to industry would be about \$150 million per year, and that at the time of delay, each product would represent an R&D investment of \$5 million. But, according to Train, "relatively few chemicals that will be delayed [because of] test requirements will involve a \$5 million R&D investment at the time required testing begins." Hence, he says, the \$150 million is "considerably overestimated." □

Train: costs are overestimated