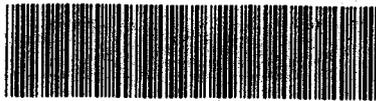


Union Carbide Corporation  
Health, Safety and Environmental Technology  
South Charleston, West Virginia 25303



8EHQ-98-14216

September 8, 1998

Mr. Jon Gorin  
United States Environmental Protection Agency  
Region II, Emergency and Remedial Response Division  
290 Broadway (19th Floor)  
New York, NY 10007-1866

RE: Preliminary Testing Results on the SAN Trimer<sup>(1)</sup>

Dear Mr. Gorin

As a follow-up to our letter to you of June 25, 1998, Union Carbide Corporation herewith submits a summary of additional in vitro and in vivo genotoxicity tests conducted on SAN Trimer<sup>(1)</sup>.

Union Carbide recently submitted preliminary information about the results from a bacterial reverse gene mutation test (Ames assay) conducted on an impurity of the manufacture of styrene-acrylonitrile polymer, which is herein referred to as SAN Trimer. We reported that all five strains of *Salmonella typhimurium* tested with SAN trimer in the presence of metabolic activation showed no increase in the number of revertant colonies per plate compared to their respective negative controls. However, without metabolic activation, three of the strains showed dose-related increase in the number of revertant colonies. At the highest dose tested that was not cytotoxic, the increases over the respective negative controls were TA98 (7 times); TA100 (2.1 times); and TA1537 (29 times). A recently completed independent repeat assay produced similar results. All five bacterial strains tested with SAN trimer in the presence of metabolic activation again showed no increase in the number of revertant colonies per plate compared to their respective negative controls. However, without metabolic activation, three of the strains showed dose-related increase in the number of revertant colonies. At the highest dose tested that was not cytotoxic, the increases over the respective negative controls were TA98 (15 times); TA100(3 times); and TA1537 (5 times).

In addition, preliminary results from three other genotoxicity tests are available:

Mammalian cell forward gene mutation test

No increase in mutation frequency over the respective negative controls was observed in Chinese hamster ovary cells treated with up to 400 µg/ml SAN trimer with or without metabolic activation. Similarly, no increase in mutation frequency was seen in the independent repeat assay.

In vitro cytogenetics test

There was a statistically significant increase in the frequency of structural chromosomal aberrations in Chinese hamster ovary cells treated with SAN trimer. In the absence of metabolic activation, 60% of the cells treated with 400 µg/ml had chromosomal aberrations versus 0% in the negative control; and in the presence of metabolic activation, 44% of the cells treated with 440 µg/ml had chromosomal aberrations versus 0.5% in the negative control. These effects occurred only in cells with markedly inhibited mitotic indices. Furthermore, the aberrations were primarily chromosome-type rather than chromatid-type. These suggest that the clastogenic response seen in this test may be associated with a cytotoxic rather than a bone fide genetic mechanism. The chromosomes could be breaking up as the cells were going through apoptosis as a result of the toxic insult.



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September 8, 1998 letter to Jon Gorin

*In vivo* cytogenetics test

Male and female Sprague-Dawley rats were given a single gavage dose of SAN trimer. Bone marrow cells were examined microscopically for structural and numerical chromosome aberrations and for micronucleus. No statistically significant increases in the percentage of aberrant cells or the number of micronuclei were observed in male rats treated with up to 500 mg/kg and in female rats treated up to 650 mg/kg relative to untreated controls.

A copy of this letter is being sent to the EPA TSCA 8(e) FYI Coordinator in Washington as a follow-up to the information sent on June 25, 1998.

Sincerely,



C. A. Wilger  
Reich Farm Project Coordinator

- (1) SAN Trimer is a mixture of two chemicals: 4-cyano-1,2,3,4-tetrahydro- $\alpha$ -methyl-1-naphthaleneacetonitrile (THNA; CASRN 57964-39-3); and 4-cyano-1,2,3,4-tetrahydro-1-naphthalene-propionitrile (THNP); CASRN 57964-40-6).

cc: TSCA Document Processing Center (7407)  
ATTN: TSCA 8(e) FYI Coordinator  
U. S. Environmental Protection Agency  
401 M Street, SW  
Washington, DC 20460