

Feb. 4, 1966

Mr. Theodore R. Torkelson, Dow Chem. Co., Midland, Mich.

I would very much appreciate your comments on
those of D. Lester.

H E Stokinger

R&S 131905

RUTGERS • THE STATE UNIVERSITY

OFFICE OF ACADEMIC STUDIES

NEW BRUNSWICK, NEW JERSEY 08903

February 1, 1966

Dr. Herbert Stokinger
U. S. Public Health Service
1014 Broadway
Cincinnati, Ohio 45202

Dear Dr. Stokinger:

I should like to offer comments about proposed revisions of the Threshold Limit Values for three compounds which are to be acted upon at the next meeting of the ACGIH.

The compounds are 1,1-dichloroethane (CH_3CHCl_2), 1,2-dichloroethylene (ClCH=CHCl) and vinyl chloride ($\text{CH}_2=\text{CHCl}$). It is proposed to raise the TLV from 100 and 250 ppm to 500 ppm for the first two compounds and lower the TLV from 500 ppm to 50 ppm for vinyl chloride.

To the best of my knowledge, there are no more recent data on the toxicology of vinyl chloride than that enclosed in the enclosed paper; based on this most recent evidence, I can see no reason to lower the TLV for vinyl chloride. To the contrary the proposal to raise the TLV for the other compounds argues strongly for the retention of the 500 ppm TLV for vinyl chloride. Both 1,1-dichloroethane and 1,2-dichloroethylene may be expected to have a greater toxicity than vinyl chloride by virtue of their higher chlorine content and their considerably more elevated boiling points; the ventilation coefficients ($\text{liters}/\text{m}^3/\text{air}$) for these compounds may be expected, quite reasonably, to be much higher than for vinyl chloride, so that at any concentration in the inspired air the resultant concentration in the circulating

R&S 131906

blood will be less (by a wide margin) for vinyl chloride than for either of the other compounds. If, for these compounds, similar concentrations in the blood also may be expected to give similar effects, then these effects will be less for vinyl chloride at equal concentrations of these materials in the inspired air. That this is actually the case is borne out by the fact that the toxicity of both 1,1-dichloroethane and 1,2-dichloroethylene are reportedly greater than for vinyl chloride (see F. A. Patty, Vol. 2, Toxicology 1952): concentrations of the order of 15,000 ppm for 4-8 hours are lethal; chronic exposure to 1600-1800 ppm of the cis isomer of 1,2-dichloroethylene leads to loss of appetite, decrease of body weight and pathological changes in lungs, liver and kidneys. On the other hand, exposure to 50,000 ppm of vinyl chloride for 8 hours per day for 19 days gave no indication of lethality, nor did exposure to 100,000 ppm for 16 hours result in death; no toxicity was noted when a 92 day, 8 hour per day exposure to 20,000 ppm was made.

Thus, both the acute and the chronic features of the toxicology of the dichloro- compounds indicate a greater toxicity than for vinyl chloride. What justification can there be, therefore, for reversing the 1965 TLV's?

The present limits for the three compounds seem best in agreement with the evidences; these limits are in the order of the boiling points of the compounds, they are consonant with the chlorine loading and, above all, they take account of what is known of their toxicology.

Dr. Herbert Stokinger

-3-

February 1, 1966

Under these circumstances, I am persuaded that the suggested revisions are inappropriate and should not be made.

With best personal regards, I am,

Cordially yours,

David Lester,

DL/rjk
Enclosure

R&S 131908