

UNION CARBIDE CORPORATION

CHEMICALS AND PLASTICS

P. O. BOX 8004, SOUTH CHARLESTON, W. VA. 25303

SOUTH CHARLESTON PLANT

July 5, 1974

Mr. Julius Jimeno
Hearing Management Officer
Docket OSH-36
Room 200
Occupational Safety and Health Administration
United States Department of Labor
1226 M Street, N. W.
Washington, D. C. 20210

Dear Mr. Jimeno:

Attached are three copies of an additional appendix to
be attached to the

TESTIMONY OF RICHARD J. HUGHES
Vice President of Union Carbide Corporation
Before
Department of Labor
Occupational Safety and Health Administration
Vinyl Chloride Occupational Exposure Standard

Very truly yours,

R. N. Wheeler, Jr.

RNWJr/ra

Attachments

UCC 092711

APPENDIX TO TESTIMONY
TO
RICHARD J. HUGHES
VICE PRESIDENT, UNION CARBIDE CORPORATION

- A. PROPOSED STANDARD 1910.93q VINYL CHLORIDE
LEVEL OF EXPOSURE - METHOD OF ANALYSIS

- B. PROPOSED STANDARD 1910.93q VINYL CHLORIDE
(m) TRANSPORTATION LOADING AND UNLOADING

- C. VINYL CHLORIDE MONOMER THRESHOLD ODOR
CONCENTRATION IN AIR

- D. VINYL CHLORIDE RESIN OPERATIONS

UNION CARBIDE CORPORATION
JOB CLASSIFICATIONS AND EXPOSURE
MONITORING

UCC 092712

PROPOSED STANDARD
1910.93q VINYL CHLORIDE
LEVEL OF EXPOSURE - METHOD OF ANALYSIS

The proposed standard for employee exposure is set at 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 1 ppm $\pm$ 50%. This specification has been loosely interpreted as permitting exposure levels up to 1 ppm.

The specification on the method of analysis and the interpretation of the permissible level of exposure resulting therefrom are imprecise. Incorporation of this specification into the permanent standard would result in confusion and ultimately endless litigation on the meaning of the results.

A more precise specification of the method of analysis would be as follows:

The proposed standard for employee exposure is set at no-detectable level as determined by a method capable of detecting 1 ppm with a reproducibility of $\pm$ 0.5 ppm at the 95% confidence level as defined by ASTM Standard, E 180-67.

Even with the more precise specification of the method of analysis proposed, the results of single samples could vary considerably from the desired results. Assuming no errors in sampling, the employer would have to control the absolute concentration of vinyl chloride in the work space air at less than

UCC 092713

2.

0.3 ppm to run no risk of an OSHA citation for non-compliance. From the enforcement standpoint, the work space air could have as much as 3 ppm or more before there would be no risk of not getting a non-compliance citation. To reduce the 0.3 to 3.0 ppm range of questionable compliance, the only alternatives are to specify a more precise method of analysis or to analyze more than one sample for each determination.

For more details concerning the variability of the method of analysis and its specification, see the attached letters.

If the Department of Labor clearly intends to enforce the no-detectable level, they are misleading industry when they infer in testimony that this is roughly 1 ppm. Similarly, if they intend to limit employee vinyl chloride exposure to 1 ppm, then this should be made plain and the method of analysis chosen to suit the situation.

RNWheelerJr/ra

July 5, 1974

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INTERNAL CORRESPONDENCE

CHEMICALS AND PLASTICS

P. O. BOX 8361, SOUTH CHARLESTON, WEST VIRGINIA 25303

(Name)	Mr. R. N. Wheeler	Date	June 3, 1974
Division	South Charleston, Bldg. 189	Originating Dept.	Research and Development
Copies to	Mr. R. L. Anderson, 511 Mr. T. W. Carmody, NYO-31 Mr. R. E. Graebert, 511 Mr. H. R. Guest, 511 Mr. C. D. Hendrix, 511 Mr. A. W. Lutz, NYO-28 Dr. A. B. Steele, NYO-28 Mr. R. W. Wesson, NYO-32 Mr. J. W. Whittlesey, NYO-46 Dr. N. L. Zutty, NYO-32	Subject	Proposed Standard for Exposure to Vinyl Chloride

Dear Mr. Wheeler:

In accordance with your telephone request of May 28, I have reviewed the wording of the proposed permanent OSHA standard for vinyl chloride with respect to the statement of background information quoted below.

- A. Level of exposure. The proposed standard for employee exposure is set at 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 1 ppm $\pm$ 50 percent.

It is the consensus of Messrs. Robert L. Anderson, Charles D. Hendrix and myself that the statement as written above leads to varied interpretations with little chance of resolving the differences in viewpoint.

It could be argued that an analysis of 1.5 ppm or less would show compliance.

It could also be argued that an analysis of 0.5 ppm or more would show lack of compliance.

There are two main reasons for diverging interpretations. One is that the description of the method to be used is not precise. The other is that the statement of 1 ppm $\pm$ 50% refers to the method, not the permissible limit. A permissible limit of "none detectable", is virtually undefinable, even when coupled with a definition of the method to be used.

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In order to minimize varying interpretations, the 1 ppm sensitivity and the reproducibility of the method could be worded as follows:

"The proposed standard for employee exposure is set at no detectable level, as determined by a method capable of detecting 1 ppm with a reproducibility (2) of ± 0.5 ppm at the 95% confidence level (2), as defined by ASTM Standard E 180-67."

The above statement would provide a valid technical basis for a mutual understanding of the requirements of the method to be used. Even with the improved definition of the method, it would still be true that for all practical purposes a concentration level of 0.3 ppm or less would be required in order to assure an analysis showing compliance. (At 0.3 ppm the reproducibility of the method would be expected to be about ± 0.15 ppm).

Similarly a concentration of 3.0 ppm or more would be required in order to give an analysis conclusively showing non-compliance. (At 3.0 ppm the reproducibility of the method would be expected to be about ± 1.5 ppm.)

These relationships can be illustrated by the attached diagram, which shows the three zones of reproducibility associated with the use of the specified method.


N. H. Ketcham

- (1) Federal Register, Vol. 39 No. 92, May 10, 1974, page 16896.
- (2) "Reproducibility" and "Confidence Level" are defined in ASTM Standard E 180-67, Reapproved in 1972. These definitions are in paragraphs A 2.14 and A 2.12, respectively. Part F of E 180 illustrates the use of these terms in precision statements.

NHK/ml

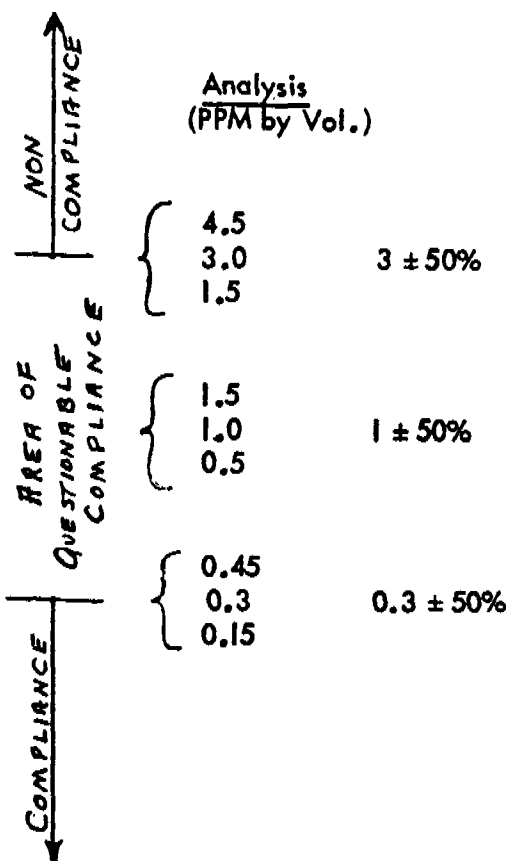
Attachments

UCC 092716

Reproducibility of the method
when analyzing a known con-
centration of 3.0 ppm

Reproducibility of the method
at the "detectable concentra-
tion" of 1 ppm

Reproducibility of the method
when analyzing a known con-
centration of 0.3 ppm



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