

**UNION
CARBIDE**

INTERNAL CORRESPONDENCE

CHEMICALS AND PLASTICS

SOUTH CHARLESTON PLANT

P. O. BOX 8004, SOUTH CHARLESTON, W. VA. 25003

To (Name) Attached Distribution List
Division
Location

Date November 26, 1975

Originating Dept. R. N. Wheeler, Jr.

Answering letter date

Copy to

Subject OSHA Vinyl Chloride Standard
Monitoring of Personnel Exposures

The OSHA Vinyl Chloride Standard's requirements for monitoring personnel exposures do not appear to be fully understood by many of those affected by it. The primary objective of the OSHA Standard is to protect employees from excessive exposure to vinyl chloride; therefore, all aspects of the Standard must be considered in that light. For example, it is not illegal to have a vinyl chloride concentration in air of even 100 ppm but it is illegal to permit an employee to breath that concentration for fifteen minutes.

Confusion has arisen in the areas of the monitoring program and the method of monitoring. The OSHA Standard states simply with regard to a monitoring program the following:

(d) Monitoring. (1) A program of initial monitoring and measurement shall be undertaken in each establishment to determine if there is any employee exposed, without regard to the use of respirators, in excess of the action level.

In the discussion section of the Standard under monitoring it states:

(4) Monitoring. The final standard, like the proposal, requires that individual employee exposure levels be determined. This may be accomplished by personal or area monitoring.

The OSHA Program Directive #200-35 under a discussion of monitoring says any monitoring program is acceptable as long as it gives valid determinations of employee exposures and includes all employees, without regard to the use of respirators. It further states that the exposure of each employee must be represented even though he may not be personally monitored.

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Based on the foregoing, the employees monitoring program may be based on personal sampling or it may be based on area sampling.

If personal sampling is used then it may be on a job basis, i. e. one transfer operator wears a personal sampler for eight hours each month while the results from that monitoring apply to all persons working as transfer operator during that month.

They don't really understand the variation in personal exposure.

If area monitoring is used the results must be converted to an estimate of exposure for each job via time factors which relate sample results to job exposure and then to individual worker exposure. Area monitoring results that are not mathematically converted to personal exposures have no status.

The only half way reliable way to do this would be to have punch card registers near each monitor/hood.
The method of monitoring is unspecified in the OSHA Standard and in the OSHA Program Directive. As a further clarification, OSHA people in Washington have stated that they view a regular series of spot analyses generated by an automatic chromatograph as a continuous determination. The only reference to a method of monitoring is contained in the OSHA Program Directive which states:

"Employers may use any method or procedure they desire as long as the accuracy is equivalent to or greater than that of NIOSH/OSHA."

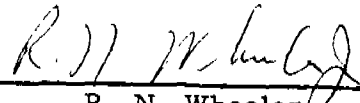
The Program Directive then states that the CSHO will monitor for vinyl chloride following the OSHA Sampling Data Sheet 7a. Determinations will be made using the method provided in the "NIOSH Manual of Analytical Methods." After having carefully insisted the employer use a method with an accuracy equivalent to or greater than that of NIOSH/OSHA, the OSHA Field Directive allows adjustment of the results to compensate for short sampling periods and permissible error in determining compliance. On this basis the permissible exposure is not 1 ppm but 1.5 ppm if you have a good, precise monitoring method.

Based on the preceding quotes and discussion, Mr. J. W. Whittlesey and I feel strongly that the following conclusions should be noted:

1. Personal sampling, when used, need only be done on a job basis. All men working that job are assigned those results.
2. The automatic chromatographs with the mini-computer programmed for calculation of job exposures are acceptable for monitoring under the Standard. *And when OSHA comes up with 10 ppm and the computer simulated job reads 0.9 ppm - then what? Will OSHA back down?*
3. Area monitoring results not converted to personal exposure results are not acceptable evidence of standard compliance or non-compliance.

4. Monitoring records should be carefully planned so that monitoring results for a given man can be determined at any time during the thirty-year storage period.

*This means we need a permanent record of
computer output*


R. N. Wheeler

RNW:pm

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C O N F I D E N T I A L



INTERNAL CORRESPONDENCE

CHEMICALS AND PLASTICS

BOX 11, TEXA TEXA

TO NAME Mr. R. W. Sesler
 COMPANY
 LOCATION TEXAS CITY PLANT

DATE December 4, 1975

COPY TO Mr. D. L. Engle
 Mr. J. B. Leverton
 Mr. W. P. Nickles
 Mr. R. E. Peele
 VCM Ad Hoc Committee

SUBJECT (a) Continuous Monitoring in
 Lieu of Personnel Monitoring
 (b) Deregulating Areas

- Ref: (1) OSHA Standard 29 CFR 1910.93q,
 Federal Register, Vol. 29,
 No. 194, pg. 35890,
 Friday, October 4, 1975.
 (2) OSHA Program Directive 200-35
 On Inspections and Citations
 For Vinyl Chloride.
 (3) Letter dated 12-1-75
 By M. E. Eisenhour on
 VCM OSHA Standard Status
 Review.
 (4) Letter dated 11-18-75 by
 L. J. Kunke re VCM Exposure/
 Regulated Area.

Dear Bob:

Review of references (1) and (2) above have been made. Attached for your information are outlines of pertinent statements with regard to subjects (a) and (b) above.

Continuous monitoring, in my opinion, may be used to satisfy the requirement of monitoring provided certain criteria are met. The four items noted on page 2 of attachments are deficiencies current in our program. Correcting these deficiencies, if possible at all, probably would be more troublesome and more costly (initial investment) than our current program of personnel monitoring. The latter is the method used by inspectors to determine compliance. I recommend that, for the present, the continuous monitoring systems be used as warning devices to prevent personnel exposure as initially planned.

Buildings 121 and 122 could technically be deregulated, in my opinion, provided the following are verified:

- (1) In addition to personnel monitoring data quoted by Jim Kunke, ALL continuous monitoring data for these buildings since startup August 18, 1975 are within

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permissible limits of 1 ppm TWA and 5 ppm for
any sample.

- (2) Personnel exposures in these buildings and any others in which they work have been derived by actual time-location studies and shown to be statistically within permissible limits.

Even if both are true, I question the wisdom of this action. The purpose is to limit the risk of exposure and to provide epidemiological data. Monitoring would still be required above the action level. The Area Director notification would no doubt trigger an in-depth inspection.

Your comments are welcome.

Very truly yours,



D. E. Deese
Industrial Hygiene Director

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Attachments

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MONITORING PROGRAM

29 CFR 1910.93q (d) (2) (ii) and (i)

October 4, 1975 Standard

- Any employee exposures without regard to the use of respirators.
- "Individual employee exposure levels".
- Sufficient number of measurements so the results are statistically valid.
- Confidence level of 95 percent.

<u>Range (ppm)</u>	<u>Percent</u>
0.25 - 0.5	± 50
0.51 - 1.0	± 35
1.1 - Up	± 25

- Excess of A.L.-----a program for determining exposures for EACH such employee.
- Frequency: (1) > Permissible Limit - Monthly,
i.e., > 1 ppm TWA or 5 ppm per any 15 minutes.
(2) > Action Level - Quarterly,
i.e., > 0.5 ppm TWA.
- May be discontinued for ANY employee only when two consecutive monitorings -- not less than five working days apart -- at or below A.L.

Directive 200-35

- "Any monitoring program will be acceptable as long as it gives VALID determinations of Employee Exposures and INCLUDES ALL employees without regard to the use of respirators."
- Selection and number depend on: (1) Number per shift, (2) duties, (3) area and operation, (4) work practices.
- "Each employee must be represented, even though he may not be personally monitored."

$$\text{Compute TWA} = \frac{C_a T_a + C_b T_b + \dots + C_n T_n}{8}$$

Where C = Concentration of VCM.

T = Duration in hours.

CONTINUOUS MONITORING

Directive 200-35

- If used to satisfy requirement of monitoring:
 - (1) Report results only monthly or quarterly as specified.
 - (2) Include entire monitoring results.
 - (3) May report in summary form that indicates the total extent of exposure.
 - (4) Notify in writing and deliver individually.
 - (5) Regular program of reduction and control can be cited after once delivered.
 - (6) Must notify verbally and immediately any time exposure exceeds P.E.L. or 1 ppm and/or 5 ppm.
 - (a) Must immediately afford respiratory protection or remove from area.
 - (b) Must notify immediately any time exposure reaches level where there shall be a change in respiratory protection (CFR 1910.93q (g) (4)).
 - (c) Employee electing not to wear a respirator must be notified immediately when level is above 25 ppm and the appropriate respirator utilized at once.

NOTE:

- (1) Requires concentration, location, duration, documentation of each person above A.L. at all times.
- (2) Requires statistically valid quality control.
- (3) Requires quantitation of concentration from 0.25 ppm to 3600 ppm.
- (4) Requires immediate knowledge of exposure levels of each employee.

D. E. Deese
December 4, 1975

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REGULATED AREA

October 4, 1974 Standard

- Purpose -- "to limit the risk of exposure to as few employees as possible."
- Access limited to "authorized persons" (employees or non-employees).
- Daily rosters must be maintained 30 years.
- Based on epidemiological considerations.
- Shall be established where:
 - (1) Vinyl Chloride or PVC is manufactured, reacted, repackaged, stored, handled, or used; and
 - (2) Vinyl Chloride concentrations are in excess of the permissible exposure limit: (a) 1 ppm TWA, (b) 5 ppm for any 15 minutes, (3) no liquid vinyl chloride contact.
- Report to OSHA Area Director
 - (1) Not later than one month after establishment.
 - (2) Any changes ... within 15 days.
 - (3) Address and location.
 - (4) Number of employees in each during normal operation, including maintenance.

Directive 200-35

- "If the monitoring results show that the level of vinyl chloride in a workplace is in excess of 1 ppm TWA for eight hours or 5 ppm averaged over any period not exceeding 15 minutes, that work area shall be regulated."
- "Illegible names and/or numbers on the daily roster sheet will be considered as failure to keep a bonafide log. Shall be kept at least 30 years."

D. E. Deese
December 4, 1975

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