



E. I. DU PONT DE NEMOURS & COMPANY
INCORPORATED
NIAGARA FALLS, N. Y.

INDUSTRIAL CHEMICALS DEPARTMENT
RESEARCH & DEVELOPMENT DIVISION

HABUCKLEY, FIBER Waynes
WBBlakey, FIBER Waynes
JEBowers, FIBER Camden
PJGeoghegan, FIBER CR W
JMLoether-DLSettle
RWGerlach
RJRichards
TPTurnbull
VGSabara
PJMcParland
MIPaoli
LDMacAdam
ALLavery

file
C-01007

October 21, 1974

TO: H. L. ADAM
Employee Relations
Wilmington

J. F. MORGAN
Central Research
Haskell
Wilmington

FROM: P. V. BEEBE *PVB*

VC1 STANDARD - EFFECTIVE 1/1/75

The A-20C group has carefully reviewed the new VC1 Standard. This review was supplemented with information gained from a recent ORC meeting with OSHA officials in Washington (L. D. MacAdam will issue trip report). Objectives of our reviews were to: 1) develop a basic understanding of the standard, 2) specify what we believe is intended by the standard, and 3) define actions needed to comply. You are asked to critically review our summary of the standard and action elements for adequacy (attached). Recognizing that this is only the first step, I propose that we hold a meeting at Niagara in November to finalize our plans for complying with the standard and to reach agreement on the key assumptions. Any comments or assistance you can provide before then would be helpful.

RECEIVED

OCT 23 1974

BVB:js
Attach

HASKELL LABORATORY

ACTIONS TO COMPLY WITH 1910.93c VINYL CHLORIDE

<u>ACTION ELEMENT</u>	<u>RESPONSIBILITY</u>
1. Select atmospheric monitoring and measurement method that meets accuracy requirements and define procedures for implementation in Pilot Plant.	GABARA
2. Confirm operability of continuous analyzer and define sequence of actions required versus VCl levels.	PAOLI
3. Develop proposal for monitoring program and gain agreement with S & F and <u>Haskell</u> .	GABARA/MacADAM/PAOLI
4. Monitor Building 411 laboratory to determine VCl exposure level and decide whether this needs to be designated as a regulated area.	GABARA
5. Define respiratory equipment meeting the standards specified. Based on information on concentration limits, and service life, designate the renewal program. Formalize procedures for operating manual.	LAVERY
6. Identify operations and conditions that constitute a "hazardous operation" and develop procedures to implement, e.g. isolation and identification of contaminated area.	MacADAM
7. Provide a written emergency plan to cover "Emergencies" and "hazardous operations".	MacADAM
8. Establish format for specifying regulated area, monitoring records, authorized personnel roster, and notification of personnel in event of VCl exposure. Gain necessary approvals.	MacADAM
9. Compile list of authorized persons and determine procedure for temporary authorization to enter Pilot Plant.	MacADAM
10. Update the current training program to comply with new standards. Document the program and review with operators.	MacADAM
11. Acquire signs and labels meeting size and identification requirements for regulated area, areas containing "hazardous operations", and storage and waste containers.	LAVERY
12. Document work background on all A-20C personnel to determine medical examination frequency.	LAVERY

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NIAGARA REVIEW OF 1910.93c VINYL CHLORIDE

(10/15 - 10/18)

SUBHEADING

COMMENTS

(a) SCOPE AND APPLICATION

- | | |
|-----|--|
| (1) | None |
| (2) | In the sense of Flame Retardant Fibers, we assume the Standard applies to A-20C polymer (or A-20B) in <u>all</u> stages up to packed fiber. Question: is packed fiber considered to be the fabricated product? |
| (3) | None |

(b) DEFINITIONS

- | | |
|-----|--|
| (1) | None |
| (2) | None |
| (3) | None |
| (4) | None |
| (5) | Emergency is loosely defined as a massive release of VCl. We interpret this to mean those situations such as a rupture of storage and feed vessels, where large amounts of VCl can be lost. This part of the Standard appears to allow interpretation, i. e. performance versus specification language. |
| (6) | See comment (a-2) above. Note stipulation on further processing at temperatures which could result in release of VCl. Can we guarantee that no VCl is released during Turbo-processing or fabric drying? |
| (7) | Pilot Plant operations and conditions that constitute a "hazardous operation" will be specifically identified to permit appropriate action by operations. Hazardous operations will include routine procedures such as reactor dismantlement as well as any unusual situation that leads to atmospheric concentrations above the permissible exposure limit. |

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SUBHEADING
COMMENTS

(b) DEFINITIONS (Continued)

(8) None.

(9) "Polyvinyl chloride" is assumed to mean A-20C polymer in all stages up to packed fiber.

(10) None

(c) PERMISSIBLE EXPOSURE LIMIT None

(d) MONITORING Twice daily atmospheric analysis via MSA tubes and gas chromatography has been a continuing program in the Pilot Plant since startup in February, 1974. However, our current methods for analyzing VCl are not sufficiently accurate to monitor at the "action level" of 0.5 ppm or even at the "permissible exposure limit" of 1 ppm. An acceptable method (discussed below) will be very expensive to implement if used as often as is our current practice. We will develop a proposal for monitoring the Pilot Plant by next month. It is essential that all parties be in agreement with this proposal before year-end.

(1) This will be done for both the Pilot Plant and Building 411 Technical Laboratory.

(2) We will establish a program for determining exposures for each employee in the Pilot Plant. Our intention is to show that this program will not be required in the Technical Laboratory.

(i) The Government requires at least monthly monitoring where any employee is exposed in excess of 1 ppm. In cases of fabricators where VCl level will likely be < 0.5 ppm or PVC manufacturers where VCl level will likely exceed 1 ppm on a routine basis, once/month monitoring probably serves the Government purposes.

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SUBHEADING
COMMENTS

(d) MONITORING (Continued)

- (i) However, in the A-200 operation where we will adopt an operating philosophy of maintaining VCl levels at < 1 ppm, once/month monitoring is clearly not adequate. The real difficulty of implementing this part of the Standard is establishing a monitoring program which will meet our goals.
- (ii) None
- (iii) None
- (3) We assume this includes those circumstances involving "hazardous operation". It has been our practice to require proper protective equipment until we can confirm negligible VCl in the atmosphere. The only change we will make in current procedures is to use a more accurate method of measuring VCl.
- (4) At this time we do not have the capability of measuring VCl in air at the accuracy of $\pm 50\%$ from 0.25 through 0.5 ppm required by the Standard. The Miran IR analyzer can measure down to 0.7 ppm but our experience with the portable unit has been that it is subject to electrical noise at low ranges in our area. Our intent is to use the continuous analyzer to monitor process equipment at some pre-set higher level to alert operations to potential hazards which could result in buildup of VCl. It is improbable that these readings could ever be correlated with the very low "action levels" of 0.5 ppm.
- At the ORC meeting we obtained a copy of an analytical method for measuring VCl in air (P & CAM #178). In this method: 1) air is drawn through a charcoal tube to trap VCl, 2) VCl is desorbed in CS₂, 3) desorbed sample is injected in gas chromatograph and

SUBHEADING
COMMENTS

(d) MONITORING (Continued)

(4)

4) area of peak is compared with Standard. We have a personnel monitoring device which can be used to draw in a known volume of air and we have essentially all the equipment needed to carry out the analysis. Note that this method is extremely time consuming and additional analytical resources may be required.

This method was issued on 9/3/74 and yet precision is designated as unknown. We assume that the Government will issue revisions before the compliance date.

(5)

None

(e) REGULATED AREA

(1)

The Pilot Plant facility will be designated as a regulated area. The decision to classify Bldg. 411 Laboratory as a regulated area is pending the results of current monitoring programs.

(2)

A list of those persons authorized to enter the A-20C Pilot Plant area will be compiled and formalized in writing. The list will be posted in the area and only those persons listed will be permitted to enter the Pilot Plant without escort. Authorized personnel will sign a daily roster upon entering the area. Persons not included on the "authorized person" list must 1) receive permission to enter, 2) be escorted by an authorized person, and 3) sign the daily roster.

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SUBHEADING

COMMENTS

(f) METHODS OF COMPLIANCE

Based on atmospheric samples taken twice daily, the Pilot Plant operation has performed near the "permissible exposure limit" since startup in February, 1974. The average exposure level for the August - September period was < 1 ppm VCl. We will determine whether current engineering controls and work practices coupled with installation of the continuous analyzer and improved ventilation by year end will permit consistent operation at exposure levels below the permissible limit. If this turns out to be the case, then we will not be required to formalize plans for future programs to reduce VCl level.

(g) RESPIRATORY PROTECTION

(1)

Respiratory protection requirements are clearly stated. What is lacking is a statement of the specific respirators which meet these requirements. This was pointed out in the ORC meeting and the OSHA officials replied that acceptable air purifying respirators would be designated by the compliance date. It remains to be seen whether these respirators will be available in time.

We do not agree that the use of respirators at VCl exposures of < 25 ppm during 1975 should be left to the discretion of the employee.

(2)

None

(3)

Respiratory protection must remain in use until monitoring shows personnel exposure to be below the permissible limit. Protection is required only in those areas which contain VCl concentrations above the permissible limit. These areas must be identified as contaminated areas requiring respiratory protection. Our intention is to limit respiratory protection to only two types: 1) canister and 2) air-supplied from the approved types. Having more

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SUBHEADING
COMMENTS

(g) RESPIRATORY PROTECTIONS

(Continued)

(3)

than two types would increase difficulty of ensuring that operators comply with the rules. Procedures spelling out when protection is required and what respiratory is required will be formalized.

We request that S & F provide a copy of 1910.134 for our use.

(4)

None

(5)

None

(6)

An inventory system will be employed to insure that all respiratory equipment is within the allowable service life. Our continuous analyzer will be alarmed to alert personnel of VCl concentrations in excess of allowable limit for canister type respirator.

(7)

None

(h) HAZARDOUS OPERATIONS

We currently require use of protective garments/respiratory protection under conditions of possible exposure to VCl.

(i) EMERGENCY SITUATIONS

An operational plan for handling emergency situations is currently being developed. The scope of this plan will be expanded to encompass procedural action required for all "hazardous operations", including those developed in Sections (g) and (h) of this Standard.

(j) TRAINING

The current training program in the Pilot Plant includes:

- Operating procedures are detailed and operators are given extensive training.
- Protective equipment including self contained breathing apparatus is provided and operators have been instructed in their use by the plant Safety Group.

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SUBHEADING

COMMENTS

(j) TRAINING (Continued)

- Operating personnel have been alerted and updated to the hazards of VCl.
- Operators are instructed in the use of atmospheric monitoring devices and participate in the Pilot Plant monitoring program.

The existing program will be reviewed and updated to comply with this section of the Standard. The complete program will be documented and reviewed with operators by year end.

(k) MEDICAL SURVEILLANCE

We have initiated a medical program for A-20C personnel and physical examinations meeting this standard were completed to establish a base line health profile. The Niagara Plant physician reviewed the examination results with individuals upon request; no problems related to VCl toxicity were uncovered. The next annual examination is scheduled for April, 1975.

(1) SIGNS AND LABELS

- (1) All entrances to the Pilot Plant facility will be identified with the specified sign.
- (2) Procedures detailing proper isolation/identification of areas containing "hazardous operations" will be formalized and posted.
- (3), (4) All drums/containers containing waste contaminated with VCl will be labelled as specified. A list of A-20C wastes meeting this classification will be compiled and posted. We will review with S & F the need to label container of A-20C filter cake and dried polymer which have been analyzed as being free of VCl monomer.
- (5) All cylinders of VCl and our VCl tank truck will be labelled as specified.
- (6) None

SUBHEADING
COMMENTS

(m) RECORDS

The format for atmospheric monitoring, medical, and authorized personnel records will be selected and reviewed with S & F to insure compliance with the Standard.

(n) REPORTS

We believe that information required in this section must receive Departmental Approval. We will develop draft formats with assistance of the Niagara Plant, S & F and Legal.

(o) EFFECTIVE DATES

We will comply with all aspects of the Standard by 1/1/75.

EVB
10/21/74

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