

VCM HEALTH TRAINING PROGRAM
(Aberdeen Plant Training Script)

March 1, 1976

1. Title

2. Type Slide

Today, as a part of our continuing communications effort, we want to talk to you again about ways to further reduce your exposure to vinyl chloride monomer (VCM), the raw material we use here in the manufacture of polyvinyl chloride (PVC) plastic resin. These steps will assure that you have ample protection against exposure to VCM.

3. Type slide

The OSHA VCM regulations went into effect on April 1, 1975. They apply to the manufacture, reaction, transportation, storage, handling or use of VCM or PVC.

4. Type slide

They do not apply to the handling or use of products made from PVC.

5. Tank Farm/
Type Super

VCM, stored in these tanks, is a colorless sweet-smelling gas at normal temperatures and a liquid under pressure. It is handled as both in our plant.

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6. Gas Leak Cartoon You are likely to come in contact with it only through leaks or spills.
7. Frostbitten limb However, you should NEVER touch liquid VCM because it will cause severe frostbite burns to your skin.
8. Type super on green gas VCM gas is harmful if inhaled. Breathing in high concentrations can cause you to pass out.
9. Type super build VCM has a flash point of minus-108 degrees Farenheit and has explosive limits that make it three times as flammable as gasoline.
10. VC fire with type super VCM releases irritating and toxic hydrogen chloride gas when burning. Inhalation of sufficient quantities can cause severe lung damage or death.
11. Microscope/girl We have been cooperating in a program to investigate the health hazards of VCM.
12. Type slide Disclosures over the past two years have indicated that exposure to EXCESSIVE concentrations of VCM over LONG periods of time could cause cancer of the liver.
13. Type slide In the history of the manufacture of VCM and PVC and associated industries there have been 30 deaths recorded world-wide from angiosarcoma, the rare liver cancer linked to VCM.

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14. Type slide The data to substantiate the link between liver cancer and VCM was made known in January, 1974 when B. F. Goodrich reported that the deaths of two employees may have been occupationally related to VCM.
15. Type slide It is believed that the victims had been exposed to large concentrations of VCM over a number of years.
16. Graph/type Fourteen of the deaths were reported in the United States where there are an estimated 6,500 people in PVC/VCM manufacturing and about 97,000 in plastics and resin fabrication.
17. Type slide To date there have been no cases of angiosarcoma in any of Conoco's plants.
18. Type slide In addition a finger bone condition known as
Acro-Osteo-Lysis
acroosteolysis - or - AOL - was first detected in reactor cleaners who were exposed to high concentrations.
19. Type slide AOL is characterized by any combination of:
- a sensation or feeling that hands are cold,
 - very small areas of damage to finger bones
- that are detected by X-ray examination,
- and a thickening and drying of the skin of the hands and forearms.

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20. Type slide The condition is curable by removing the person from exposure to liquid VCM.
21. Type slide We want our people to be safe and we have always taken every precaution to insure that safety. Therefore we have done everything possible to reduce employee exposures in compliance with OSHA's regulations pertaining to VCM exposure.
22. Type slide We have achieved the permissible exposure limit of one part per million averaged over an eight-hour period throughout most of our plant.
23. Type slide However, certain parts of our plant will continue to be designated as regulated areas because VCM concentrations occasionally exceed the standard in those areas.
24. Sign Signs which say CANCER-SUSPECT AGENT AREA-AUTHORIZED PERSONNEL ONLY are posted at the entrances to the regulated areas such as...
25. Large Reactor Area ...the reactor area...
26. VCM Tank Farm Area ...and certain parts of the VCM tank farm area.

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27. Signing log Before entering a regulated area EVERYONE must log in on the regulated area log for that area.
28. Type However, regulated areas will be restricted to authorized personnel who have work assignments in those areas. All other personnel must stay out.
29. Montage of respirators The VCM health regulation also requires that appropriate respirators be made available in plants manufacturing PVC or VCM.
30. Type slide Between April 1, 1975 and April 1, 1976 you had the option of wearing or not wearing a respirator in environments of 25 ppm or less.
31. Type slide As of April 1, 1976 you will be required to wear a respirator in environments of 1 ppm or above.
32. Gas mask on man (NY'-OSH)
 NIOSH has okayed an organic vapor respirator of the canister gas mask type for use in environments of up to 25 ppm ^{OF} or VCM.
33. Respirator/type super The canister respirator should not be used in concentrations greater than 10 ppm. The canister should be replaced after a total of four hours use or at the end of your shift, whichever comes first.

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34. Respirator on man We have these canister respirators available for employees who need protection in environments where concentrations of VCM might be more than 1 ppm but less than 10 ppm.
35. Type slide Our air sampling system to date indicates that you are exposed to less than 1 ppm VCM in most areas of the plant.
36. Montage full/face mask/Scott Air Pak However, you will continue to be required to use respirators connected to our fresh air supply or a Scott Air Pak when:
37. Entering Large Reactor Entering any reactor or recovery knock-out, blow-down tank or receiver.
38. Illustration Opening large reactor manheads.
39. Illustration At reactor manway while rinsing out the reactor.
40. Illustration Venting down or changing filters in any VC line.
41. Illustration Sampling the large reactors.
42. Illustration Draining water from VCM receivers behind V-11.
43. Illustration Hook-up and disconnecting VC railcars.
44. Type Opening and cleaning condensers.

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- 45. Type build Take down and clean out of recovery lines.
- 46. Type build Entering a dryer day collector for any reason.
- 47. Illustration ...Dry blend sampling...
- 48. Illustration ...Charging blenders...
- 49. Type slide Any job in an area where the concentration of
VCM is greater than 10 ppm requires fresh air
protection.
- 50. Type slide Remember: Between 1 ppm and 10 ppm, use a canister
gas mask. Between 10 ppm and 1,000 ppm, use an
air-line respirator. Above 1,000 ppm or in unknown
concentrations, use a Scott Air Pak.
- 51. C/U bearded face The Company has no objection to beards.
- 52. Type slide However, for your safety, if a beard interferes with
your getting a tight seal on the face mask of your
respirator, the beard will have to be trimmed or
removed.
- 53. Demonstrating to
Supervisor Employees with beards will be requested to demonstrate
by test to their Supervisor that they can maintain a
good face seal.

54. Type slide Minor mechanical failure, such as leaky valves and seals, could result in VCM concentrations in excess of the permissible limits, which are: 1 ppm over any 8 hour period, or over 5 ppm in any 15 minute period.
55. Type slide You will be alerted to this by our continuous monitoring system or our organic vapor analyzing survey.
56. Panel in
Control room Our continuous monitoring system graphically records the concentrations on the G.C. panel in the control room.
57. Operator using
Radio The operator will notify you of concentrations above the permissible limits in your area either by two-way radio or over the plant's PA system.
58. Montage of two If the job you are doing requires that you remain in an area where the VCM concentration is in excess of the permissible limits, you must wear the appropriate respiratory protection.
59. Type slide If you are not required to stay, you must remain away from the area until you have been notified that the VCM concentration is below the permissible limits.
60. Illustration Indications of VCM leaks are icing on or a hissing sound from processing equipment which contains VCM like valves, flanges, packing and the like.

61. Coveralls/gloves displayed When necessary you will be issued protective coveralls and gloves.
62. Cleaning reactor They must be worn -- along with your respiratory protection -- when unloading tank cars.
63. Illustration ...cleaning out Sweco screeners...
64. Type ...or doing any job where your skin might come in contact with PVC which would normally contain VCM.
65. Discarding coveralls Disposable protective clothing should be discarded after each shift, so you won't contaminate your locker.
66. Type We will issue the necessary VCM protective equipment to everyone, including non-employees. Non-employees will be required to use the protective equipment just as you do and to follow the same safety procedures regarding VCM.
67. Type slide To minimize your exposure to VCM and to check our progress in reducing VCM concentrations in the air, we have been sampling the air on a regular basis by...
68. Man/Dosimeter ...personnel dosimeters...
69. Using century ...and the century organic vapor analyzer.

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70. Lab Tech Analyzing Dosimeter samples are analyzed for VCM content in our lab.
71. Man/interior of analyzer (MAT') We also have the Honeywell gas chromatograph (GC) fixed-point monitoring system.
72. Sensors Sensors like these will collect air samples in more than thirty (30) areas throughout our plant.
73. Strip Chart Panel ...which the GC will continuously monitor and alarm VCM concentrations in excess of 1.0 ppm.
74. Monitoring Panel An individual on each shift who works at each monitor alarm station will be made responsible for immediately notifying affected employees of levels above the permissible exposure level.
75. Type All people in the high level area who are not equipped with appropriate respiratory protection must leave the area immediately after notification.
76. Tabulating Data Air sampling data is tabulated and recorded.
77. Type slide You may see the results of our air sampling analysis by asking your Supervisor or Department Head.
78. Type slide You will be trained in the emergency procedures to follow in the event of an unforeseeable major VCM gas release or fire.

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79. Type slide These procedures are fully detailed in the emergency and disaster plan for our plant.
80. Type slide Your training in these emergency procedures will continue on a regular basis through the year.
81. Type slide We will continue our medical surveillance of all employees as required by the OSHA VCM regulations.
82. Blood Sampling This will include administering the liver profile blood test every six months -- this is the best diagnostic test available to detect symptoms of angiosarcoma.
83. Illustration ...along with other blood work and urinalysis studies.
84. Man taking physical/art You will also be given, at the Company's expense, a periodic complete physical examination including chest X-ray and pulmonary function tests...
85. Build on #84 ...with your complete medical, work, and cancer background histories.
86. Requirements type Additionally the OSHA standard requires that we...
87. Bag with label/
Tank car label ...legibly and appropriately label containers of PVC and VCM, and containers of PVC waste from reactors, or other waste contaminated with VCM...

88. Records Type ...that we keep required monitoring and measuring records, medical records and authorized personnel rosters. Of course, you can see records relating to your exposure by asking your Supervisor, and your doctor will be furnished with any medical records if you so request in writing.
89. Type slide ...and that we make reports to the OSHA area director regarding regulated areas and number of employees working in them, and monthly or quarterly reports as appropriate, notifying you of an overexposure to VCM above the prescribed limits.
90. Type slide You may see a copy of the entire standard by asking your Supervisor or Department Head.
91. Review type Okay, let's briefly review some of the major points we have just covered.
92. Repeat #8 Remember the hazards of VCM. It's harmful if inhaled. Breathing in high concentrations can cause you to pass out.
93. Repeat #9 It has a flash point of minus 108 degrees Farenheit and has explosive limits that make it three times as flammable as gasoline.

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94. Frostbitten limb Contact with liquid VCM can cause severe frostbite burns to your skin.
95. Repeat #12 Exposure to EXCESSIVE concentrations of VCM over LONG periods of time could cause cancer of the liver.
96. Montage of Respirators You will be provided the appropriate respiratory protection for use in VCM environments which are above the permissible exposure levels.
97. Opening Reactor/
type You will continue to be required to use an air-supplied respirator when doing jobs where the potential for VCM exposure is greater than 10 ppm exists.
98. Repeat tank car
loading You will also be required to wear protective clothing when doing any job where your skin might come in contact with liquid VCM.
99. Repeat Graph
Strip Chart To minimize your exposure to VCM and to check our progress in reducing VCM concentrations in the air we are continuously sampling and monitoring the quality of plant air.
100. Type slide Know what to do in the event of a major VCM gas release or fire.

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101. Repeat #85

And finally, our medical surveillance program
is for your protection.

102.

As you can see, there are very few changes in our
approach to complying with the OSHA VCM regulation
which went into effect in 1975. We want you to
know that if you do your part in using the equipment
provided and in following the established procedures,
you will be amply protected against VCM exposure.
We are certain that you will continue to give your
complete cooperation in this effort.

103. Type

Now, we'll have a question and answer period.