

1. Title (Typed slide)

2. Type Slide

Today 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.

3. Type Slide

Vinyl chloride monomer became regulated under the Occupational Safety and Health Act in April, 1975. These regulations apply to the manufacture, reaction, transportation, storage, handling, or use of VCM or PVC.

4. Type Slide

Because of the technological advances over the last year, these regulations do not apply to the handling or use of products made from PVC, such as Compound, Dry Blend etc.

5. Tank Farm/ Super Type

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.

6. Frostbite Limb

You should avoid situations where VCM could be smelled or touched. Liquid VCM could cause your skin to become severely frostbitten.

7. Gas leak cartoon

You are likely to come in contact with VCM only through leaks or spills.

8. Type slide or Reynolds . VCM has been labeled as a hazardous material. Breathing in high concentrations can cause dizziness or create a narcotic effect.
9. Type Slide VCM has a flash point of minus -108 degrees. Farenheit and has explosive limits that make it three times as flammable as gasoline.
10. New Slide (Fire) VCM releases highly toxic and irritating fumes of hydrogen chloride gas when it burns. Inhalation of sufficient quantities can cause severe lung damage or death.
11. New Slide (Nurse) Conoco, through the Medical Division, is continually monitoring the health of its employees by regularly testing blood samples. These samples are drawn twice per year.
12. Type slide Disclosures over the past years have indicated that exposure to EXCESSIVE concentrations of VCM over LONG periods of time could cause cancer of the liver.
13. New slide In the history of the manufacture of VCM and PVC, there have been 48 deaths recorded worldwide from angiosarcoma, the rare liver cancer linked to VCM.
14. Type slide The data to substantiate the link between liver cancer and VCM was released to the public in January, 1974 when B.F. Goodrich reported that the death of two employees may have been occupationally related to VCM.

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|---------------------|---|
| 15. Type slide | It is believed that the victims had been exposed to large concentrations of VCM over a number of years. |
| 16. New slide | Twenty-One 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 | Several years before the discovery of angiosarcoma, a finger bone disease, acroostosteolysis, known to us as AOL, was discovered and linked to the manual cleaning of PVC reactors. |
| 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. |
| 20. Type slide | The condition is reversable by removing the employee from exposure to liquid VCM. |
| 21. New typed slide | Conoco Chemicals is very concerned about the safety of its employees and therefore has done everything possible to reduce employee exposure to VCM. |

22. Type slide
- With your help, we have achieved the maximum permissible exposure limit of one part per million averaged over an eight hour period plantwide.
23. Type slide
- Certain parts of our plants will, however, continue to be designated as regulated areas because VCM concentrations occasionally exceed the maximum permissible exposure limit.
24. Sign
- Signs which say REGULATED AREA - CANCER SUSPECT AGENT AREA - AUTHORIZED PERSONNEL ONLY - are posted at each entrance . . .
25. Split shot
- There are two remaining regulated areas in our plant. They are Large Reactors and certain parts of the VCM Tankfarm .
26. Sign In Area
- Before entering a regulated area, EVERYONE must sign the regulated area log for that area.
27. Type slide
- Regulated areas are restricted to authorized personnel who have work assignments in those areas. All other personnel must stay out.
28. New slide
- The VCM health regulation also requires that appropriate respiratory protection be made available in plants manufacturing PVC or VCM.
29. New slide
- NIOSH has approved an organic vapor cannister type gas mask for use in environments of up to 25 ppm of VCM, however a 10 ppm maximum is used in our plant for this cannister respirator.

- Cannisters must be replaced after a total of four hours use or at the end of your shift, whichever comes first.
30. New slide
Full face/ half/Scott Air Pak You will continue to be required to use respirators connected to our fresh air supply or a Scott Air Pak when:
31. Old 33 slide Opening and entering reactors, recovery knock-out tank, blow down tank, receiver or any vessel which has contained VCM. . .
32. Type slide (old 45) Take down and clean out of recovery lines. . . .
33. Old 40 slide Changing VCM filters after recovery . . .
34. Old 41 slide Sampling the large reactors . . .
35. Old 43 slide Connecting or disconnecting VC railcars or working in the VCM compressor shed
36. Type slide (old 49) Any job in an area where the concentration of VCM is greater than 10 ppm requires fresh air protection. .
37. Type slide (old 50) Remember: Between 1 ppm and 10 ppm, use an approved cannister 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.
38. New Shot The company has no objections to beards.

39. New shot

However, you should know for your safety if a beard interferes with your achieving a tight seal on the face mask of your respirator, the beard should be trimmed or removed.

40. New shot

Employees with beards will be requested to demonstrate by test to their Supervisor that they can maintain a good face seal.

41. Type slide (old 54)

Minor mechanical failure such as leaky valves and seals could result in VCM concentrations in excess of the permissible limits, which are: 15 minutes at 5 ppm and an 8 hr. average of 1 ppm or less.

42. Old 60 slide

Some indicators of VCM leaks are small ice formations, condensed water or frost on pipes, and hissing sounds from processing equipment which contains VCM like valves, flanges, packing and the like.

43. New Shot

Our continuous monitoring system graphically records the concentrations of VCM throughout the plant on the G.C. panels located in Large Reactor Control Room, Dryer Control Room and Q.C. Lab.

44. Old Slide 57

The Lead Operator or Lead Technician will notify you of concentrations above the permissible limits of 1 ppm in your area either by two-way radio or the paging system.

45. New shot
(Repeat respirator)

^A
If the job you are doing requires you to remain in the area where VCM concentrations are above the permissible limits, you must wear the appropriate respiratory protection.

46. Type slide (old 59)

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.

47. New Shot

When necessary, you will be issued protective coveralls and gloves.

48. New shot

They must be worn along with your respiratory protection when: cleaning reactors. . . .

49. Old #62

Unloading VCM tank cars . . .

50. Old #63

Cleaning out sweco screens . . .

51. Old 64 Type

or while performing any job where your skin might come in contact with liquid VCM.

52. New shot

Disposable protective clothing should be discarded after each use.

53. Old #66

The necessary VCM protective equipment will be issued 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.

54. old #67

The OSHA VCM Standard requires us to sample the air in our work areas for VCM by Personnel Dosimetry and by fixed multi point monitors. We use this information to help us minimize your personal exposure and to monitor our progress in the reduction of VCM concentration in the plant.

55. New shot

Our dosimetry equipment consists of a pump and a gas bag . . . or

56. New shot

Pump and charcoal tube . . .

57. New shot

The dosimetry samples are analyzed for VCM content in our lab.

58. Reshoot - Teresa

These results are tabulated, recorded and made available at your request by asking your Supervisor or Department Head.

59. Old 71

Our four (4) Honeywell fixed point automated gas chromatograph monitoring systems sample air in all areas of our plant 24 hrs. per day, year around.

60. New Shot
(Sensors)

Sensors like these will collect air samples at more than forty (40) points throughout our plants..

61. Old 73

The gas chromatograph analyzes these samples and sets off an alarm when a concentration of VCM is higher than the permissible limit of 1 ppm.

62. Old 74 A person on each shift is designated to notify employees of high VCM levels in their areas.
63. Old 75 All people in the high level area who are not equipped with appropriate respiratory protection must leave the area immediately after notification.
64. Old 78 You will continue to be trained in the emergency procedures to be followed in the event of an unforeseeable major VCM gas release or fire.
65. New Shot S & H Manual. These procedures are fully detailed in the PVC Plant Safety and Health Manual for our plant.
66. Old 83 We will continue our medical surveillance of all employees which includes liver profile, blood work and urinalysis studies. These provide the best diagnostic test available to detect the symptoms of angiosarcoma.
67. Old 84 You will also be given, at the Company's expense, a periodic complete physical examination including chest X- ray and pulmonary funtion . . .
68. Old 85 . . . Along with your compelte medical and work background histories.

69. Old 87

We legibly and appropriately label containers of PVC, VCM, PVC waste from reactors and waste contaminated with VCM.

70. Old 88

Also, we are required to keep and maintain records of our personnel dosimetry, Honeywell readings, medical histories, and authorized personnel rosters. Also, your Doctor will be furnished any and all medical records you request in writing.

71. New shot
(Close-up record log)

We maintain records regarding regulated areas, number of employees working in those areas, and all exposures in excess of 1 ppm as determined by personnel dosimeters.

72. Old 90

Copies of the current OSHA VCM Standard can be obtained by asking your Supervisor, Department Head or any member of the Safety Department.

73. Old 91

Okay, let's briefly review some of the major points we have just covered.

74. Repeat #8 slide

Remember, VCM has been labeled as a hazardous material. When breathed in high concentrations, it could cause dizziness or create a narcotic effect.

75. Repeat #9

VCM has a flash point of minus -108 degrees Fahrenheit and has explosive limits which make it three times as flammable as gasoline.

76. Repeat #6 Contact with liquid VCM could cause your skin to become severely frostbitten.
77. Repeat #12 Exposure to EXCESSIVE amount of VCM over LONG periods of time could cause liver cancer.
78. Repeat #28 In each case, the appropriate respiratory protection will be provided for your use in VCM environments in excess of the permissible limits.
79. Old 97 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.
80. Repeat #35 You will also be required to wear protective clothing when performing any job in which your skin could come in contact with liquid VCM.
81. Repeat #61 To minimize your exposures 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.
82. Repeat S & H Shot #65 Know your emergency procedures as outlined in the Safety and Health Manual.
83. Repeat #68 and finally, our medical surveillance program is for your protection.

84. Plant Aerial

Through your efforts, we are complying with the amended OSHA VCM regulations that went into effect in 1976. We ask that you continue to give your cooperation in helping us comply with any further regulations.

85. Old #103

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