



GOALS

This safety session will teach trainees that:

- Methylene chloride (MC) is a widely used industrial chemical.
- It poses serious health hazards unless it is used correctly.
- Following proper precautions makes it possible to work safely with MC.

Applicable Regulations: 29 CFR 1910.132, .134, .1000, .1052, and .1200



1. Many industries and processes use methylene chloride.

- It is most commonly used as a solvent for stripping paint, refinishing furniture, metal cleaning, and degreasing.
- It is an extracting agent in pharmaceuticals like antibiotics and vitamins.
- It is a blowing agent in polyurethane foams for beds and seat cushions.

2. Unfortunately, MC presents serious health hazards unless precautions are taken when it is used.

- Inhaling vapors over a long period of time can cause cancer.
- Even short-term inhalation can cause mental confusion, light-headedness, nausea, vomiting, and headache, and irritate eyes and the respiratory system.
- It is corrosive and can irritate or even burn the skin.
- Ingestion is also possible if workers eat in contaminated areas or do not practice proper hygiene like washing their hands before eating.

3. The Occupational Safety and Health Administration (OSHA) has set exposure limits to protect workers.

- The permissible exposure limit (PEL) for an individual's average exposure during an 8-hour period is 25 parts per million (ppm).
- The short-term (15-minute) exposure limit (STEL) is 125 ppm.
- The action level is just 12.5 ppm. Exposure to an average of this tiny amount of airborne MC over an 8-hour period triggers requirements for employers to monitor MC in the air, provide employees with medical testing, and take other precautions to protect health.

4. Employers can protect workers in several ways. They can:

- Set off regulated areas only authorized persons, assigned to specific duties and equipped with air-supplied respirators, can enter.
- Use engineering controls like local exhaust ventilation (LEV) systems, general ventilations systems, and special isolation devices or enclosures to remove or reduce the quantities of MC in the air.
- Establish work controls, such as keeping all MC tanks closed when not in use and setting up procedures to detect leaks and to clean up spills promptly and safely.
- Use administrative controls, like scheduling high-exposure operations when few employees are around.
- Provide emergency showers and eyewash stations in case a worker is accidentally splashed with MC.



- Substitute less harmful solvents for some applications.
- Provide proper training for workers who will be exposed to MC, including how to read and understand the safety data sheet (SDS).
- Provide proper personal protective equipment (PPE) and require its use.

5. Workers should also follow safety procedures to protect themselves.

- They should review the SDS and read the label before using MC. A supervisor will be happy to explain any information that is unclear.
- Workers should wear air-supplied respirators in regulated areas.
- They should always wear PPE to prevent skin contact.
- Wear two pairs of gloves when using stripping solution. The inner glove should be made of polyethylene (PE)/ethylene vinyl alcohol (EVOH), PE, or laminate to prevent MC penetration. The outer glove should be made of nitrile or neoprene to protect against puncture or rips. [Note: Because MC can readily penetrate nitrile and neoprene, wearing just the outer glove will not protect your skin from MC exposure.]
- Goggles and a face shield are needed when working with liquid MC.
- They should remove contaminated clothing and shower when they leave the work area.
- They should not take the clothing home where it can contaminate other laundry.
- Other good work practices include:
 - Washing hands before eating, smoking, or using the restroom;
 - Never eating, smoking, or drinking where MC is handled or stored; *and*
 - Rinsing their skin and eyes thoroughly in case of an accidental splash.
- Workers should not rely on MC's chloroform-like odor because people won't notice the smell unless the concentration is far above the PEL.
- They should report any leaks or spills immediately and take action to clean up the spill if they have been trained to do so.
- If they become dizzy, light-headed, or have other symptoms of MC exposure, they should immediately go to an area with fresh air.
- If symptoms persist, they should seek medical attention.



DISCUSSION POINTS:

Review the SDS for MC. Discuss the information in sufficient detail to make sure that workers understand how to protect themselves. Also, talk about any regulated areas in your workplace and about LEV or other protective systems at your site.



CONCLUSION:

Methylene chloride is a hazardous chemical, but following proper procedures allows us to work with it safely.



TEST YOUR KNOWLEDGE:

Have your employees take the Working Safely with Methylene Chloride quiz to see if they understand this important topic or whether they need to review the subject again soon.



WORKING SAFELY WITH METHYLENE CHLORIDE QUIZ

- 1. Methylene chloride (MC) is most commonly used as a solvent for stripping paint, refinishing furniture, metal cleaning, and degreasing.**
a. True b. False
- 2. MC's only health hazard comes from inhaling vapors over a long period of time, which can cause cancer.**
a. True b. False
- 3. The Occupational Safety and Health Administration (OSHA) has set the 8-hour permissible exposure limit (PEL) at 25 parts per million (ppm).**
a. True b. False
- 4. The action level is just 12.5 ppm and requires employers to monitor MC in the air, provide employees with medical testing, and take other precautions to protect health.**
a. True b. False
- 5. Any worker wearing an air-supplied respirator can enter a regulated area.**
a. True b. False
- 6. Scheduling high-exposure operations when few employees are around would be an example of an engineering control.**
a. True b. False
- 7. Workers should review the safety data sheet and read the label before using MC.**
a. True b. False
- 8. They should also wear proper gloves and clothing to prevent skin contact plus goggles and a face shield when working with liquid MC.**
a. True b. False
- 9. Other good work practices include:**
 - Washing hands before eating, smoking, or using the restroom
 - Never eating, smoking, or drinking where MC is handled or stored
 - Rinsing their skin and eyes thoroughly in case of an accidental splash
 - All of the above
- 10. If workers become dizzy, light-headed, or have other symptoms of MC exposure, they should immediately go to an area with fresh air—and, if symptoms persist, they should seek medical attention.**
a. True b. False

When you have completed this quiz, turn it in to your supervisor.

Name: _____

Date: _____



ANSWERS TO WORKING SAFELY WITH METHYLENE CHLORIDE QUIZ

1. a. True.
2. b. False. In addition, even short-term inhalation can cause mental confusion, light-headedness, nausea, vomiting, and headache, and irritate eyes and the respiratory system. MC is corrosive and can irritate or even burn the skin. Ingestion is also possible if workers eat in contaminated areas.
3. a. True.
4. a. True.
5. b. False. Only authorized persons, equipped with air-supplied respirators and assigned to specific duties, can enter regulated areas.
6. b. False. Installing a local exhaust ventilation (LEV) system would be an engineering control. Scheduling high-exposure operations when few employees are around would be an example of an administrative control.
7. a. True.
8. a. True.
9. d. All of the above.
10. a. True.