

Quiz for Module 3: **Developing a Site CO₂ Management Program**

Name (please print) _____

Date _____

1. When developing a carbon dioxide Facility Review Process it should contain the following (please circle all that apply):
 - a. CO₂ evaluation anywhere where the air is windy
 - b. You should use a hand held CO₂ monitor
 - c. If you can only take a single survey, it should be under the most representative normal process conditions
 - d. You should conduct multiple surveys
 - e. Do repeat walk-throughs during various weather conditions

2. When providing specific comprehensive worker CO₂ training, you should consider which of the following (please circle all that apply):
 - a. The audience should include all workers outside of office areas
 - b. Workers need education on all portable CO₂ monitors in use in the facility
 - c. Workers need to be especially aware of low wind CO₂ exposure sites
 - d. The chemical hazard communication program should include labeling, adverse health effects, worker training, exposure monitoring and (M)SDS for CO₂.

3. CO₂ is heavier than air? True or false

4. Locations where process-generated CO₂ can collect include which of the following (circle all that apply):
 - a. Buildings where fermentation tanks are housed
 - b. Confined areas including diked areas around any tank
 - c. Low-lying areas near process drains
 - d. Where CO₂ is collected and discharged

5. Adverse cognitive effects from CO₂ have been observed as low as what concentration in air: (choose the best answer)
 - a. 5,000 ppm over 8 hours
 - b. 2,500 ppm over 2.5 hours
 - c. 500 ppm over 60 minutes
 - d. 1,000 ppm over 2.5 hours
6. The OSHA Hierarchy of Controls mandates that engineering controls, such as ventilation systems and process designed safety, must be installed/used whenever feasible. Cost is not allowed to be a factor in this decision. True False
7. When designing a ventilation system for a confined space that has excessive CO₂, if possible, you should design the ventilation system to exhaust starting from:
 - a. The lowest level of the equipment's space
 - b. The highest point, since CO₂ generally rises to the top of the equipment space
 - c. The farthest point from the source of the CO₂ emissions
8. For the ethanol manufacturing industries, it is not necessary to monitor the atmosphere for CO₂ when oxygen levels are routinely or continuously monitored, for example, in confined spaces. True or False
9. To prevent unsafe levels of CO₂ within the work area, consider which of the following:
 - a. Place remote sensors in the middle of a building to best represent readings of CO₂ levels in the general work area.
 - b. If remote sensors used for CO₂ monitoring are rugged enough, preventive maintenance is really not necessary
 - c. Ensure mechanical ventilation is provided in areas where CO₂ can collect
 - d. B and C
 - e. A and B

10. CO₂ in the atmosphere is at a concentration of:
 - a. 20.9 % (209,000 ppm)
 - b. 0.8% (8,000 ppm)
 - c. 0.04% (400 ppm)
 - d. 7% (70,000 ppm)

11. Electronic monitors are the fastest, the most reliable and the most accurate of the available CO₂ sampling techniques. True or False

12. Examples of administrative controls, including the following:
 - a. Written work procedures use for employee training
 - b. Leather gloves
 - c. warning signs
 - d. training programs such as Hazard Communication and Confined
 - e. Space Entry
 - f. limited assignments to the hazard area (limited work hours per day)
 - g. use of respiratory protection
 - h. automatically activated forced draft ventilation when a sensor reaches a pre-set high point

Answer sheet

- 1. B, D, E**
- 2. A, B, C, D**
- 3. True**
- 4. A, B, C, D**
- 5. D**
- 6. True**
- 7. A**
- 8. False**
- 9. C**
- 10. C**
- 11. True**
- 12. A, C, D, F**