

SANTA ROSA FIRE DEPARTMENT

FIRE PREVENTION BUREAU INSPECTION CHECKLIST

July 1, 2010



CO2 Extinguishing System

Address:		Permit #:
Inspector:	Date:	Status:
Inspector:	Date:	Status:
A-Approved, R-Re-inspection Required		

This Checklist outlines general requirements. Information contained herein applies to typical instances and may not address all circumstances.

FILE REVIEW

- Review plans, plan notes and F.D. plan review condition letter.
- Review Permits Plus notes and fees prior to final.

CODE REFERENCES

National Fire Protection Association (NFPA) 12

2007 California Fire Code (CFC), Chapter 9

REQUIRED INSPECTIONS:

- 1) System function test per NFPA 12
- 2) Fire Alarm function testing - NFPA 72, Chapter 10.

Inspections shall be scheduled a minimum of 48 hours in advance. Directions for scheduling are found at: <http://ci.santa-rosa.ca.us/news/Pages/AutomatedFireInspectionRequestSystem.aspx>

Note: Referenced code numbers represent an NFPA code section unless otherwise specified.

PLANS

- | | Y | N | |
|----|--------------------------|--------------------------|--|
| 1. | <input type="checkbox"/> | <input type="checkbox"/> | Approved plans and calculations shall be on site at time of inspection - <i>NFPA 12 - 4.4.2.1.</i> |
| 2. | <input type="checkbox"/> | <input type="checkbox"/> | <i>NFPA 12 4.4.2.14</i> The system owner shall maintain an instruction and maintenance manual, full set of system drawings and calculations on site. |

TESTING OF SYSTEMS:

NOTE: The discharge of carbon dioxide in fire-extinguishing concentration creates serious hazards to personnel, such as suffocation and reduced visibility during and after discharge period.

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Verify the following:

- | | Y | N | |
|-----|--------------------------|--------------------------|--|
| 3. | <input type="checkbox"/> | <input type="checkbox"/> | Local Applications: Full discharge required - <i>NFPA 12 4.4.4.1</i> |
| 4. | <input type="checkbox"/> | <input type="checkbox"/> | <i>NFPA 12 4.4.4.2</i> Total Flooding: Full discharge required. |
| 5. | <input type="checkbox"/> | <input type="checkbox"/> | <i>NFPA 12 4.4.3.2.</i> Only listed and approved equipment and devices are installed. |
| 6. | <input type="checkbox"/> | <input type="checkbox"/> | <i>NFPA 12 4.4.3.3.1.2</i> Locations of alarms and manual emergency releases are installed per the approved plan. |
| 7. | <input type="checkbox"/> | <input type="checkbox"/> | System activates from manual pull station. |
| 8. | <input type="checkbox"/> | <input type="checkbox"/> | <i>NFPA 12 - 4.5.4.8.2</i> The manual pull station is positioned not more than 48" from the finished floor. |
| 9. | <input type="checkbox"/> | <input type="checkbox"/> | Audible and visual signals function upon system discharge. |
| 10. | <input type="checkbox"/> | <input type="checkbox"/> | Automatic detection and automatic actuation devices activate the system as designed. |
| 11. | <input type="checkbox"/> | <input type="checkbox"/> | Carbon dioxide cylinders are in place and properly secured. |
| 12. | <input type="checkbox"/> | <input type="checkbox"/> | <i>NFPA 12 4.5.6.1</i> Pneumatic pre-discharge alarm and pneumatic time delay devices actuate upon operation of system, if required. |
| 13. | <input type="checkbox"/> | <input type="checkbox"/> | <i>NFPA 12 4.3.1.1</i> Consideration shall be given to the possibility of carbon dioxide drifting and settling into adjacent places outside the protected area. |
| 14. | <input type="checkbox"/> | <input type="checkbox"/> | <i>NFPA 12 Annex A A.4.3</i> Exit doors out of the protected space shall be outward swinging, self-closing doors, if doors are latched, provisions for panic hardware is required. |

SIGNS

- | | | | |
|-----|--------------------------|--------------------------|---|
| 15. | <input type="checkbox"/> | <input type="checkbox"/> | Signage in Figure 4.3.2.3.1 shall be used in each protected space. (See attached sign list below). |
| 16. | <input type="checkbox"/> | <input type="checkbox"/> | Signage in Figure 4.3.2.3.2 shall be used at every entrance to protected space. (See attached sign list.) |
| 17. | <input type="checkbox"/> | <input type="checkbox"/> | Signage in Figure 4.3.2.3.4 shall be used in every nearby space where carbon dioxide could accumulate to hazardous levels. (See attached sign list) |
| 18. | <input type="checkbox"/> | <input type="checkbox"/> | Signage in Figure 4.3.2.3.2.5 shall be used outside each entrance to carbon dioxide storage rooms. (See attached sign list.) |
| 19. | <input type="checkbox"/> | <input type="checkbox"/> | Signage in Figure 4.3.2.3.6.2 shall be used at each manual actuation station. (See attached design list.) |

HAZARDS TO PERSONNEL

- | | | | |
|-----|--------------------------|--------------------------|--|
| 20. | <input type="checkbox"/> | <input type="checkbox"/> | In any use of carbon dioxide, consideration shall be given to the possibility that personnel could be trapped in or enter into an atmosphere made hazardous by a carbon dioxide discharge - <i>NFPA 12 4.3.1.3</i> |
| 21. | <input type="checkbox"/> | <input type="checkbox"/> | <i>NFPA 12 4.3.1.3.1</i> That safeguards shall be provided to ensure prompt evacuation, to prevent entry into such atmospheres as described in 4.3.1.3, and to provide means for prompt rescue of any trapped personnel. |

EVACUATION PROCEDURES

- | Y | N | |
|------------------------------|--------------------------|---|
| 22. <input type="checkbox"/> | <input type="checkbox"/> | All persons who can at any time enter a space protected by carbon dioxide shall be warned of the hazards involved and provided with safe evacuation procedures - <i>NFPA 12 4.3.3.1</i> . |
| 23. <input type="checkbox"/> | <input type="checkbox"/> | <i>NFPA 12 4.3.2.1</i> Visual and audible devices shall be located at the entrance to each occupiable space protected by carbon dioxide system and at the entrance to each space where carbon dioxide could migrate, creating a hazard to personnel. |
| 24. <input type="checkbox"/> | <input type="checkbox"/> | <i>NFPA 12 4.3.3.1.1</i> Provisions have been made to prohibit entry of unprotected personnel to spaces made unsafe by a carbon dioxide discharge until the space is vented and appropriate tests of the atmosphere have verified that it is safe for unprotect persons to enter. |
| 25. <input type="checkbox"/> | <input type="checkbox"/> | <i>NFPA 12 4.3.3.1.1</i> Persons who are not properly trained in the use of and equipped with self-contained breathing apparatus (SCBA) shall not remain in spaces where the concentration exceeds 4 percent. |
| 26. <input type="checkbox"/> | <input type="checkbox"/> | <i>NFPA 12 4.3.3.1.1-(1)</i> Provisions shall be made to include one or more of the following:

Addition of a distinctive odor to the discharge carbon dioxide, the detection of which serves as an indication to persons that carbon dioxide gas is present |
| 27. <input type="checkbox"/> | <input type="checkbox"/> | Verify - Personnel shall be trained to recognize the odor and evacuate spaces wherein the odor is detected.

Provisions of the automatic fire alarms at the entry to and within such spaces, which alarms are activated by carbon dioxide detectors or oxygen detectors.

Establishment and enforcement of confined space entry procedures for such areas. |
| 28. <input type="checkbox"/> | <input type="checkbox"/> | <i>NFPA 12 4.3.3.1.2</i> The visual alarms required by 4.3.3.1.1 shall be permitted to serve this purpose (items 1, 2, & 3 , above) if they are left operating until the space is ventilated and the safety of the atmosphere for entry by unprotected persons has been verified. |
| 29. <input type="checkbox"/> | <input type="checkbox"/> | <i>NFPA 12 4.5.6.1</i> A pneumatic pre-discharge alarm and pneumatic time delay shall be provided for the following:

1) All total flooding systems protecting normally occupied and occupiable enclosures.

2) Local application systems protecting normally occupied and occupiable enclosures where the discharge will expose personnel to hazardous concentrations of carbon dioxide. |

Note: NFPA 12 Section 4.5.6.1.3

Exceptions: For occupiable hazard areas where the provision of a time delay could result in unacceptable risk to personnel or unavoidable damage to critical pieces of equipment, time delays need not be provided.

TEST AND MAINTENANCE PROCEDURES

- | | | |
|------------------------------|--------------------------|---|
| 30. <input type="checkbox"/> | <input type="checkbox"/> | A manufacturer's test and maintenance procedure shall be provided to the owner's for testing and maintenance of the system - <i>NFPA 12 4.8.3.1</i> |
| 31. <input type="checkbox"/> | <input type="checkbox"/> | Testing and maintenance shall be provided for the initial testing of the equipment as well as for periodic test inspection and maintenance of the system. |

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32. **Y** **N** Testing and maintenance shall be verified by competent personnel at least annually using available documentation required.

33. That the completed and tested system is properly tagged with a State Fire Marshal's Verification of Service tag, signed and dated by the Service Company representative providing the service and maintenance.

SIGNAGE EXAMPLES LISTED BELOW:

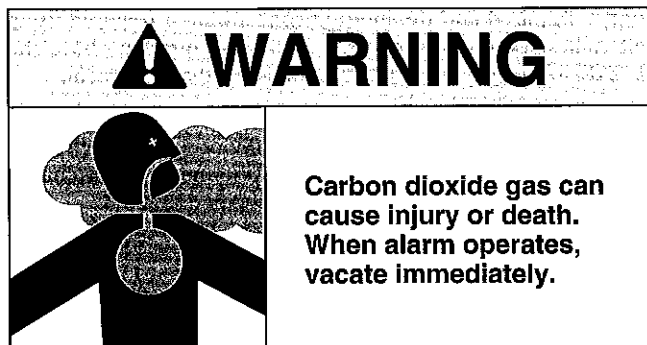


FIGURE 4.3.2.3.1 Sign in Every Protected Space.

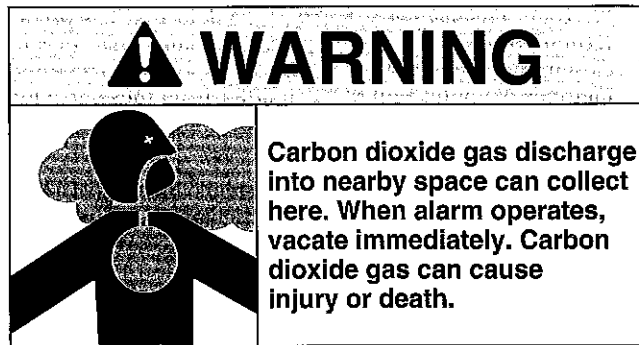


FIGURE 4.3.2.3.4 Sign in Every Nearby Space Where Carbon Dioxide Could Accumulate to Hazardous Levels.

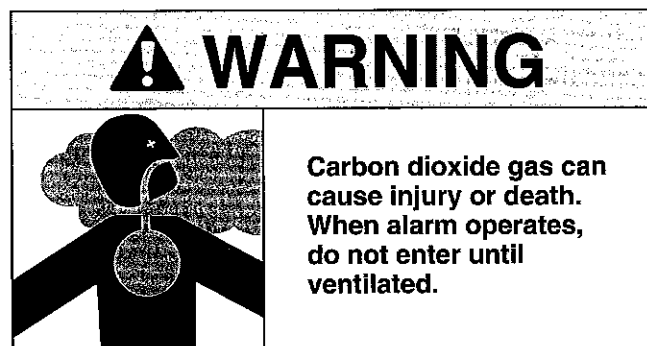


FIGURE 4.3.2.3.2 Sign at Every Entrance to Protected Space.

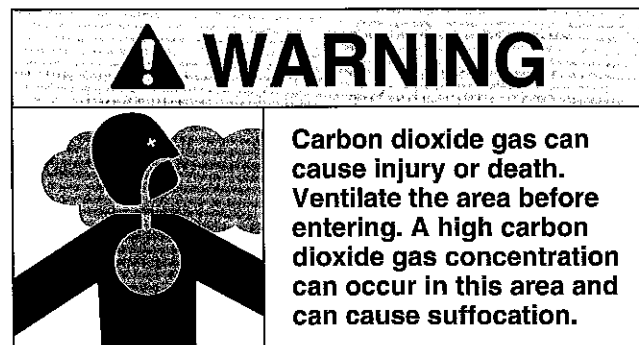


FIGURE 4.3.2.3.5 Sign Outside Each Entrance to Carbon Dioxide Storage Rooms.

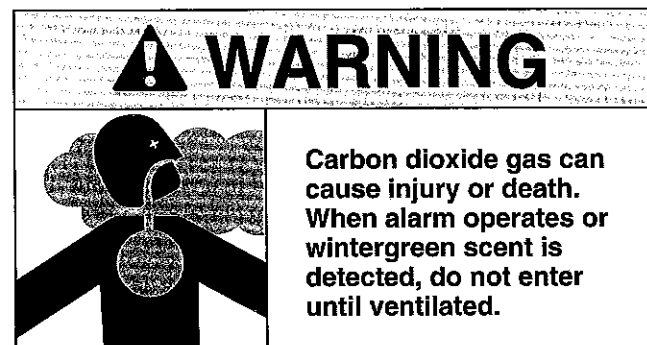


FIGURE 4.3.2.3.3 Sign at Every Entrance to Protected Space for Systems Provided with a Wintergreen Odorizer.

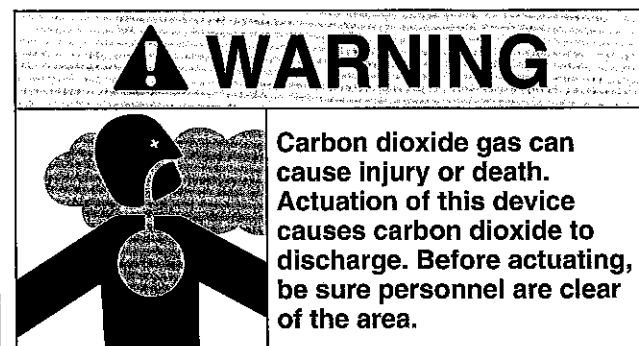


FIGURE 4.3.2.3.6.2 Sign at Each Manual Actuation Station.