GUIDANCE FOR CARBON DIOXIDE TIME DELAYS

INTRODUCTION

Due to the personnel hazard involved in the use of carbon dioxide systems, an adequate time delay must be provided to allow people in or near the protected area to exit. Time delays accompanied by audible and visable alarms allow people to evacuate. In total flooding carbon dioxide systems, personnel must evacuate before the agent starts to fill the enclosure. In local application systems, it is only necessary for people to move far enough away from the protected area so they are not affected by agent discharge or by fire.

POSITION

Beginning with the 2005 edition of NFPA 12, pneumatic time delays and pneumatic predischarge alarms have been mandatory on all carbon dioxide systems that potentially present a life safety hazard. The system should be arranged so the pre-discharge alarm is activated at the start of the time delay period. Electrical time delays and audible and visual notification devices may be provided to supplement the pneumatic devices, but are not considered a substitute.

DISCUSSION

The 2005 edition of NFPA 12 added significant requirements to reduce the likelihood of exposure to carbon dioxide. For normally occupied spaces, new total flood carbon dioxide systems are not permitted. Existing total flood systems protecting normally occupied spaces can remain in service, but pneumatic time delays and pneumatic predischarge alarms must be added to the systems. Previously, these functions were typically controlled electronically by the control panel. There have been instances where the carbon dioxide system activated independent of the control panel, and no electronic time delays or audible alarms were activated. This exposed the enclosure occupants to a potentially life-threatening concentration of carbon dioxide. The pneumatic time delays and predischarge alarms are considered to be more fool-proof, as no carbon dioxide can be discharged without the alarm activating and sufficient time delay for occupants to evacuate the enclosure.

For large local application carbon dioxide systems that can expose personnel to potentially hazardous concentrations of carbon dioxide, pneumatic time delays and pneumatic predischarge alarms should be provided to allow for personnel to move to a safe location.

The requirements for the addition of pneumatic time delays and pneumatic predischarge alarms apply to all carbon dioxide systems that may expose personnel. All existing systems must be upgraded and there is no grandfathering of older systems. NFPA 12 provided a time period for existing systems to be upgraded, but as of December 31, 2008, the pneumatic devices should be installed on all systems.