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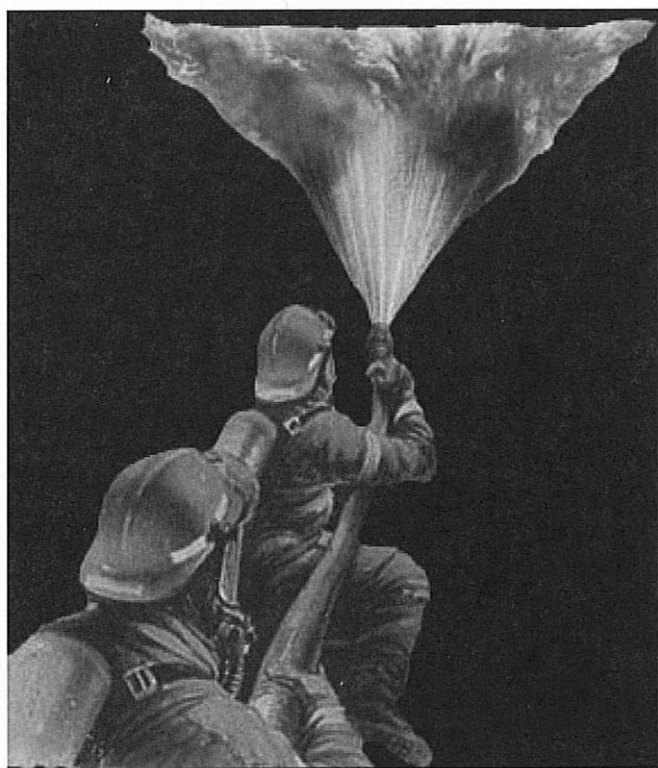
Technical Bulletin

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Two-In, Two-Out and the OSHA Respiratory Protection Standard

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The new respiratory protection standard adopted by the Occupational Safety and Health Administration (OSHA) is in full effect in Tennessee. These regulations are commonly called the "two-in, two-out" rule. However, these standards are much more comprehensive than just one regulation. In fact, two-in, two-out is only part of the total respiratory protection program. It doesn't just affect fire department personnel, but also the entire emergency response community and many others who may be required to wear respirators to perform their job.



The old standard was adopted in 1971 and has been in effect until replaced by this new standard in 1998. The new regulation's purpose is to set minimal levels of protection for personnel who must operate in an environment that may contain atmospheric inhalation hazards.

As mentioned previously, the two-in, two-out rule is just one part of the total respiratory protection program mandated by OSHA. The total program includes when and how employees should wear respirators, selection of respirators, medical evaluations, testing to ensure the respirator properly fits the wearer, immediately dangerous to life or health (IDLH) atmospheres, interior structural firefighting, maintenance and care of respirators, breathing air quality, record keeping, program evaluation, and use, training, and information. As you can see from this list, two-in, two-out is just the hem of the proverbial garment. But since two-in, two-out is the most talked-about provision (although certainly not the most controversial) we will address this portion of the respiratory protections rules first.

The two-in, two-out rule should not be looked on as a curse, but as an opportunity. As with every opportunity, if you're not flexible, there will be some loud cracking sounds as you bend to comply. Rule No. 1 of the two-in, two-out analysis is: This rule establishes the minimum fire-ground (or on-site) staffing for interior fire attack 4-in an IDLH atmosphere. This rule *does not* set a minimum crew size for apparatus – or

Saves Lives & Protect Property

station-manning. You can buy a firetruck for everybody in the fire department, or you can let one person drive the fire apparatus and everybody else follow in a bus. This rule does not tell you how many people have to be on each engine or truck company, nor does it tell you how many firefighters have to be at each fire station. This rule *does* tell you that at least four firefighters must be assembled on the fire-ground before attacking an interior fire in an IDLH atmosphere.

No. 1 Priority – Save Lives

Fire departments have had the motto, “Save Lives and Protect Property” for centuries. The No. 1 priority at the scene of a structure fire is rescue. For all practical purposes, the two-in, two-out rule is waived in rescue situations when immediate action is necessary to save lives. The rule recognizes that if firefighters know someone can be saved from a burning building, no regulation – or danger – will keep them from making a rescue attempt. That’s the nature of the men and women who make up the fire service. Therefore, the two-in, two-out rule does not prevent firefighters from carrying out their first priority: saving lives.

No. 2 Priority – Save Property

The second priority is to save property. It is the generally held position by fire chiefs, firefighters, and elected officials that *no* building is worth the life of a firefighter.

Minimal Safety Levels

The two-in, two-out rule establishes the minimal safety level that must be established before conducting interior firefighting. That minimum safety level requires four trained and equipped firefighters to be assembled on the fire-ground *before* entering an IDLH atmosphere. Once the four firefighters are present, a team of at least two firefighters may enter the building equipped with self-contained breathing apparatus, commonly referred to as air packs. These air packs must be positive pressure units with a rated duration of at least 30 minutes and certified by the National Institute of Safety and Health. The two firefighters who enter the building must remain in direct contact with one another. To qualify as direct contact, the firefighters must stay within hearing or seeing distance of each other at all times. Radios may not be substituted for voice or visual contact. However, radios can



and should be used for communications on the fire-ground, including communications between the interior fire attack team and the exterior firefighters or the command post.

The other two must remain outside the structure to account for, or keep track of, the interior team(s) and to perform a rapid rescue of the firefighters in the building. The outside team must be properly equipped and trained for structural firefighting and rescue. This requirement assures that they have training, clothing, and equipment to protect themselves and, if necessary, safely and effectively rescue firefighters from inside the structure. The two who remain outside may be engaged in other activities when the interior attack team is inside the building. However, any task that they perform while in the standby rescue status must not interfere with the responsibility to account for those individuals in the hazard area. The standby firefighters can only take on duties they can abandon without placing any employee at additional risk if they need to make a rescue. One of the two outside firefighters must be assigned the role of accountability. The other one may take on other roles such as incident commander or equipment operator.

When the standby team needs to rescue interior firefighters, the incident commander (even if he or she is one of the rescuers) must report the situation to dispatch operations, any other on-site personnel, and any incoming units. The department must then provide additional assistance and response to the scene as it deems appropriate. Such incidents should be thoroughly investigated by fire personnel, and a written report should be submitted to the chief.

Respiratory Protection Program

Standard Operational Guidelines

Fire departments are required to develop and implement standard operational guidelines that address fire-ground operations. These guidelines, when followed, are used to demonstrate compliance with the two-in, two-out rule. Fire department training programs must ensure that firefighters understand and implement appropriate action that complies with the department's guidelines. Fire personnel must amend any existing policies or operational standards to address these regulations. Any individual firefighter who does not follow these safety rules should face appropriate departmental action.

So what about all those other features of this regulation? Let's take a more complete look at the requirements that went into effect last fall.

According to the standard, fire departments must adopt a written respiratory protection program. It should include at least the following eight sections:

- selecting respirators, also called "air packs" or self-contained breathing apparatus (SCBAs);
- medical evaluations for SCBA wearers;
- using SCBAs during operations;
- cleaning, maintaining, and inspecting SCBAs;
- assuring good air quality;
- maintaining and certifying SCBAs;
- a training curriculum for SCBA-users; and
- a program evaluation process.

Each fire department must designate a respiratory protection administrator who will have the authority and responsibility to run the program, make improvements, meet the fire department's goals and objectives, and comply with the OSHA standard.

Now we'll examine each of the eight elements listed above.

Selecting respirators

There are many types of respirators. But only one will work in the uncontrolled environments faced by firefighters — the positive pressure SCBA.

Your SCBAs must comply with OSHA's minimum standards, which say the units must be: (1) certified by the National Institute of Safety and Health and used in

compliance with the certification's conditions; (2) a full-face, positive pressure, demand style; and certified for a minimum 30-minute service life.

If the SCBA is not certified by NIOSH, you can't use it. However, a NIOSH standard is not as stringent as the NFPA-1981 Standard on Open-Circuit Breathing Apparatus. So, if you really want the highest possible standard for your firefighters, you must specify that the SCBAs are NIOSH-certified **and** comply with NFPA-1981.

Medical evaluations

All personnel who might wear an air pack must have an annual medical evaluation. A doctor can examine all firefighters subject to wearing SCBAs or you can use the respirator medical evaluation questionnaire in Appendix C of the OSHA regulations. The questionnaire must be administered by a state-licensed health care professional (PLHCP). This person could be a physician, a nurse practitioner, or a physician's assistant. The questionnaire is designed to find firefighters who need more follow-up by the PLHCP. The health care practitioner may ask those firefighters any questions or conduct any diagnostic tests to see if they should wear an SCBA. If the test-giver is not a physician and medical conditions arise outside the scope of the PLHCP's license, a physician may have to become involved.

Using SCBAs

You need a written guideline telling firefighters when to wear their SCBAs. Fire personnel have argued for years about the location of the "hot zone" at incidents. However, you're probably there if you're close enough to see the action firsthand. The basic rule is to wear air packs at incidents, and this habit must be reinforced by everyone in the department — from the top commander down to the newest rookie.



Cleaning, maintaining, and inspecting SCBAs

Every fire department must have a written guideline on cleaning, inspecting, and maintaining SCBAs. Of course, this policy should require inspecting and

cleaning after each use, plus weekly, monthly, or quarterly overhauls. As use increases, so should maintenance.

Assuring good air quality

Making sure that the firefighter is breathing good-quality air from the SCBA falls into two basic categories: (1) the quality of air in the tank, and (2) assuring there is no leakage around the tightly fitting face-piece. The air quality in the tank depends on the tank itself and the compressor that filled it. OSHA bases "good air" on the 1989 edition of the Compressed Gas Association's quality standards. Test the air from your supply (in-house or contract) at least annually to see if it meets this standard. The second component is providing firefighters with masks that fit well and don't leak. (Firefighters must not have facial hair where the face-piece will touch the skin.) Conduct an actual fit-test at least once a year, if you change equipment, or if the firefighter's face becomes larger or smaller.

Maintaining and certifying SCBAs

This category is very easy to explain, but compliance can be expensive. Once a SCBA fails an inspection, you must either send it to an authorized repair shop or have your authorized and certified air pack technician make the repairs. The key word in these two requirements is "authorized." If you're not authorized to do the work, send it out for repairs. If you own more than 15 or 20 SCBAs, someone should become authorized so you can make the repairs locally.

Training curriculum

At a minimum, the curriculum should provide effective training to each SCBA-wearer. "Effective" means the instruction must be comprehensive, understandable, and held at least annually. This training should be provided **before** new employees or volunteers are allowed to respond to an actual emergency. Firefighters should know:

- why they have to wear a SCBA;
- how to put it on within the department's time limit;
- how to inspect the unit to see that it works;
- the equipment's limitations and capabilities, including what to do in emergencies if it malfunctions; and
- proper procedures for maintaining and storing an SCBA.

Program evaluation process

An individual in the fire department — not a committee, not someone from each station, not one person per shift — should be named administrator of the OSHA Respiratory Protection Standard to evaluate the fire department's compliance with the regulations. This person may recruit others to help. There should be a written policy on the use, purchase, maintenance, storage, and repair of SCBAs. A written copy of the evaluation should be sent to the fire chief or his designee at least annually. This evaluation should verify whether all firefighters who wear SCBAs have been trained, medically evaluated within one year, and fit-tested for the face-piece.



Note: The Respiratory Protection Standard is on the Internet. The definition section is paragraph (b) of the Respiratory Protection Standard (29 CFR 1910.134). If you want a copy of the standard, you can find it at www.osha-slc.gov/OshStd.

Interior Fire Attack – Sample Policy

- Purpose:** This policy is designed to provide added safety to firefighters when making interior structure fire attacks while continuing to provide for an effective fire attack team.
- Objective:** The policy objective is to provide an effective team of four firefighters on the scene of an emergency prior to the initiation of an interior fire attack except under circumstances where a rescue will be attempted.
- Scope:** This policy shall apply to all incidents where an Immediately Dangerous to Life or Health (IDLH) atmosphere exists.
- Responsibility:** It shall be the responsibility of the incident commander to enforce this policy.

Policy: Before entry into an IDLH atmosphere there shall be no less than four firefighters on the scene except in situations where a rescue will be attempted. (Rescue exceptions are covered in another paragraph of this SOG.) All four of the firefighters shall be fully suited in protective gear and air-packs before entry is made into the building. However, the two outside firefighters do not have to wear their SCBA face piece as long as they are not in a hazardous atmosphere. One of the two outside, standby firefighters shall be in such a position that he may observe the path of entry into the structure that was used by the two firefighters who make the interior fire attack and shall be responsible for accountability of firefighters. The other outside firefighter may be the pump panel monitor.

When the minimum two person interior fire attack team enters the structure, they shall have a properly operating two-way radio for communication with the outside firefighters. The interior fire attack team must stay in visual or physical contact with each other at all times when operating inside. The two outside firefighters shall each have two-way radios. The pump panel monitor may use the mounted radio in the vehicle if he can both hear and talk from the pump panel position.

In the event that a rescue of the initial interior fire attack crew should have to be attempted by the standby crew, the standby crew shall notify other responding units and dispatcher(s) that they are entering the building to effect a rescue of the initial interior fire attack crew. Upon the arrival of additional crew(s) they shall attempt to establish contact with the rescue crew and assist with the rescue efforts. One of the second-due arriving crew members shall take over at the pump panel of the first arriving company to ensure that water supplies are maintained to the interior crews in the event that this position had to be abandoned during the rescue efforts.

In the event that the incident commander knows that a rescue must be attempted and that a delayed rescue effort will subject the occupants to eminent life threats, the incident commander may choose to proceed with a rescue that may or may not be supported by an interior fire attack with the available crew on the scene, if in his judgement, any further delay may cause the death of the occupants. In this case, all on scene firefighters shall be in full protective clothing with air-packs on before the rescue is initiated. Before entry is made, the incident commander shall notify responding units and or dispatcher(s) of the decision to enter the building, to attempt rescue, without four firefighters on the scene.

Should the first arriving crew have less than four firefighters, and the ranking firefighter from the crew determines that this is not a rescue situation, they will wait for additional help to arrive. This first arriving crew shall proceed immediately to prepare for the interior fire attack by taking actions they deem appropriate to prepare for the interior fire attack when additional help arrives. These actions may include, but are not limited to, such things as donning air-packs, stretching a hose line to the entry point of the building, setting up any ladders or other equipment required for the attack, setting up positive pressure ventilation equipment. The two firefighters who are going to make the interior fire attack shall then proceed to a safe area near the entry point of the building from which the interior fire attack will be launched. These firefighters shall wait at this point until at least four firefighters are on the scene, then they may proceed with the interior fire attack.

Self Contained Breathing Apparatus

Sample Policy

- Purpose:** To ensure that all fire department personnel receive the maximum level of protection that their self contained breathing apparatus was designed to provide.
- Objective:** To ensure that all SCBA's are in proper working condition, that firefighters are trained in their use, and that they are worn at appropriate times to avoid respiratory contact with products of combustion, super-heated gases, toxic products, or other hazardous contaminants.
- Scope:** This policy applies to all fire department personnel who respond or report to emergency incidents.
- Responsibility:** This policy is to be enforced by incident commanders, sector commanders, and ranking firefighters.

Policy:

A. Care and Inspection

1. All SCBA's carried on apparatus shall be inspected, cleaned, and sanitized properly, following department procedures, every Monday and after each use.
2. No SCBA cylinder shall be returned to use with less than 1800 psi.
3. If any problems or defects are found in SCBA's they shall be removed from service immediately and reported to the station officer.

B. Training

1. Before any firefighter may enter a contaminated atmosphere, they shall have been trained in the donning and wearing of SCBA and have demonstrated the ability to pass the performance standard of the fire department.
2. The minimum standard for the donning and use of SCBA as established in the Training Standards of the Fire Department is applicable to all fire department personnel who respond or report to incidents. Each member of the department shall demonstrate these proficiencies annually to the satisfaction of the Training Officer or their designee.

C. Use

SCBA's shall be worn by all fire department personnel who are in the hot zone of an incident when one or more of the following conditions exist:

- The atmosphere is known to be hazardous.
- The atmosphere is suspected of being hazardous
- The atmosphere may become hazardous rapidly.
- The incident commander, sector commander, or company officers directs that SCBA's be worn.

D. Type of SCBA.

All SCBA's in use in the fire department shall meet the following minimum standards:

1. Have a full face piece.
2. Have air cylinders that meet DOT and NIOSH criteria.
3. Have a minimum service life of 30 minutes.
4. Have an audible alarm for low pressure.
5. Be positive pressure type units.
6. Be approved by NIOSH and meet NFPA - 1981 requirements that were in effect in this department in the year of their manufacture.

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