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| **Confined Space Rescue** | Related Policies: SCBA, Accountability |
| *This policy is for internal use only and does not enlarge an employee’s civil liability in any way. The policy should not be construed as creating a higher duty of care, in an evidentiary sense, with respect to third party civil claims against employees. A violation of this policy, if proven, can only form the basis of a complaint by this department for non-judicial administrative action in accordance with the laws governing employee discipline.* |
| Applicable KY Statutes:Applicable KY Regulations: 803 KAR 2:200 |
| OSHA: 29 CFR 1910.146 |
| NFPA Standard: 1500, 1006, 1670, 1983  |
| Date Implemented: | Review Date: |

1. **Policy:** The fire department will respond with what equipment and resources are available to incidents involving confined spaces. The department will not provide confined space rescue and emergency services as described in 29 CFR 1910.146(k) to any person, business, or entity, unless and until a signed agreement is entered into with said person, business, or entity.
2. **Purpose:** To establish guidelines for conducting confined space rescue operations that complies with NFPA and OSHA standards, and in particular 29 CFR 1910.146.
3. **Definitions**

**Confined Space:** A space that is:

1. Large enough and so configured that a person can bodily enter; and
2. Has limited or restricted means of entry or exit; and
3. Is not designed for continuous human occupancy

**NOTE:** The OSHA definition of confined space is limited to those confined spaces found in general industry.­ The fire department definition includes any space meeting this definition.

**Permit Required Confined Space:** A confined space that has one or more of the following characteristics:

1. Contains or has known potential to contain a hazardous atmosphere;
2. Contains material with the potential for engulfing an entrant;
3. Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls, or a floor which slopes downward and tapers to a smaller cross section; or­
4. Contains any other recognized serious safety or health hazard

**Entry Permit:** as defined by OSHA, is "The written or printed document that is provided by the employer to allow and control entry­ into­ a permit space." The Confined Space Rescue Incident Commander's Checklist shall constitute the "Entry Permit" for the Fire Department.

**Hot Work:** Any work involving riveting, welding, cutting, burning or heating. ­

**Retrieval system:** The equipment (including a life-safety rope, full-body harness (Class III); wristlets (if appropriate) and a lifting device or anchor) used for the non-entry, rescue of persons from confined spaces.

**Emergency entry** means entry into a confined space necessitated by a sudden and unexpected condition requiring immediate action.

**Toxic air contaminants** means those substances listed in Subpart Z of 29 CFR 1910 as adopted by 803 KAR 2:320; and, whenever a substance is not listed in Subpart Z, those substances with exposure limits listed in the National Institute for Occupational Safety and Health (NIOSH), 1980 "Registry of Toxic Effects of Chemical Substances."

**Lower explosive limit** (LEL) means the minimum concentration of gas or vapor below which propagation of flame does not occur on contact with a source of ignition.

**Zero mechanical state** (ZMS) means the mechanical state of a machine or equipment in which:

1. Every power source that can produce a machine or equipment member movement has been locked/tagged out as outlined in National Fire Protection Association Pamphlet (NFPA) 70-E-1981, Part II, Chapter 4, or American National Standard Z244.1-1982;
2. Pressurized fluid (air, oil, or other) power lockoffs (shutoff valves), if used, will block pressure from the power source and will reduce pressure on the machine or equipment side port of that valve by venting to atmosphere or draining to tank;
3. All accumulators and air surge tanks are reduced to atmospheric pressure or are treated as power sources to be locked/tagged out, as outlined in National Fire Protection Association Pamphlet (NFPA) 70-E-1981, Part II, Chapter 4, or American National Standard Z244.1-1982;
4. The mechanical potential energy of all portions of the machine or equipment is at its lowest practical value so that the opening of the pipe(s), tube(s), hose(s), or actuation of any valve or lever will not produce a movement which could cause injury;
5. Pressurized fluid (air, oil, or other) trapped in the machine or equipment lines, cylinders, or other components is not capable of producing a machine motion upon actuation of any valve or lever;
6. The kinetic energy of the machine or equipment members is at its lowest practical value;
7. Loose or freely movable machine or equipment members are secured against accidental movement; and
8. A work piece or material support, retained or controlled by the machine or equipment, shall be considered as part of the machine or equipment if the work piece or material can move or can cause machine or equipment
9. **Response**
10. **Dispatch**
11. Whenever there is a report of a person trapped, or in need of medical attention, in a confined space, the following complement of companies shall be dispatched:

**Editor’s Note:** Each department should specify their response requirements. A minimum of twelve people are recommended for a relatively simple entry. Assuming four person staffing the response might be: One engine company, one ladder company, one rescue company (heavy rescue or squad), and a chief officer. In addition site specific concerns may require the dispatch of a hazmat team where known hazmats are present.

1. In the event that a company is dispatched to an emergency medical incident, and upon arriving on scene discovers that the victim or victims are in a confined space, a FULL CONFINED SPACE RESCUE RESPONSE shall be requested.
2. **Primary Assessment.** The first arriving company shall assume command and conduct a primary assessment as follows:
3. Secure the job foreman or a witness to determine what happened
4. Secure the Confined Space Entry Permit if available
5. Determine the location, number and condition of victims
6. Determine if the confined space is a permit required confined space.
7. Determine whether the operation will be a rescue or a recovery operation
8. **SECONDARY ASSESSMENT**. The Incident Commander shall con­duct a secondary assessment as follows:
9. Identify the type of confined space
10. Conduct a hazardous materials size up
11. Identify the hazards associated with the confined space
12. Atmospheric hazards: Toxic air contaminants, flammable, oxygen deficient/enriched
13. Mechanical hazards: Moving parts, Pressurized systems, Piping hazards
14. Energized electrical hazards
15. Engulfment Hazards
16. Structural stability
17. Environmental hazards: temperature extremes
18. Identify the type of work going on in the confined space and determine any other hazards associated with the work
19. Obtain a site plan if available or diagram a site plan.
20. Determine if there is an adequate number of trained personnel on scene to perform the rescue/ recovery
21. **Operations**
22. Entry into confined spaces that do not constitute permit required confined spaces, and that does not pose any hazards to personnel, shall be allowed for purposes of rescue or EMS.
23. Where personnel cannot determine if a confined space is permit required or not, it shall be assumed that the confined space is permit required.
24. Entry into permit required confined spaces shall only be permitted in accordance with the requirements set forth below.
25. Entry into permit required confined spaces shall not be permitted without an adequate number of properly trained personnel. A minimum of twelve personnel shall be assembled on scene, eight of whom shall be technical level trained for confined space operations. Where hazardous materials are involved, a minimum of four of the confined space technician level trained personnel shall also be hazardous materials technician level trained.
26. **Initial Operations at Permit Required Confined Spaces**
27. Command shall divide the incident into manageable divisions and/or groups, and shall appoint or at least consider appointing the following positions:
28. Hazard Control Group
29. Operations
30. Entry Group
31. Hazmat/Decon Group
32. EMS/Rehab Group
33. Staging Area Manager
34. Safety Officer
35. Liaison Officer
36. Public Information Officer
37. Accountability Officer
38. Isolate the scene, establish a perimeter, control entrance and egress to the confined space.
39. Eliminate work activities in the area where operations are being conduction, such as hot work.
40. Conduct atmospheric monitoring outside the space first, then inside the space using remote measuring devices.
41. Establish ventilation to the general area if necessary. Positive pressure ventilation is preferable whenever possible. Ventilation should be maintained for the duration of the operation.
42. Every effort shall be made to bring the atmosphere into conformance with the following guidelines: 10% of LEL (maximum) 19.5% to 23.5% oxygen level.
43. **Lock Out -Tag Out**
44. Utilities, including electricity, gas and water into the confined space should be shut down.
45. Mechanical devices and equipment capable of causing injury shall be placed at zero mechanical state, and/or in the mechanical state that prevents the devices and equipment from causing injury.
46. Any product that is in or is flowing into the confined space must be secured and shut off if possible. All possible sources of product must be secured, particularly fill valves. It may be necessary to drain the space of any product prior to entry.
47. Manufacturing or processing equipment in the confined space may need to be shut down prior to entry. The job foreman or other authorized person from the facility should be consulted.
48. Whenever utilities, product, or equipment in the confined space is shut off, at least one member equipped with a portable radio shall be assigned to remain at ***each shut down*** ***point*** to ensure that the utilities, processes, machinery and valves remain off while the rescue operation is underway. Fire Department "LockOut" locks and tags shall also be affixed to all switches, machinery and valves that are shut down to ensure that they are not turned on or opened. ***Members assigned to Lock Out -Tag Out duty shall remain at the shut down point until relieved or ordered to leave by the Incident Commander***. Under no circumstances should locks and/or tags alone be relied upon to ensure the safety of personnel.
49. **Entry Team Selection**
50. Properly trained personnel shall be selected to make the entry into a permit required confined space. A minimum of two persons should be assigned to make entry, with a minimum of a two person back up team.
51. All personnel on the entry and back up teams shall be confined space rescue trained at the technician level, and shall have vital signs taken and recorded prior to entry absent an imminent life threatening situation where a savable life is in danger, and time does not permit.
52. Command shall ensure that for every person making entry into the confined space, there is at least one rescuer appropriately dressed and ready as a back-up in the event an emergency entry is required.
53. All entry and back-up personnel should be properly trained in confined space rescue procedures and any other disciplines necessary given the specifics of the operation (hazmat, high angle rope, machinery rescue, etc.), and be physically capable of carrying out the rescue/recovery.
54. The proper level of personal protective equipment shall be worn by all entry and back-up personnel.
55. SCBA shall be worn by all personnel entering any confined space unless the safety of the atmosphere can be established by testing and continuous monitoring.
56. All entry personnel shall utilize a Class III harness and a retrieval system that meet the requirements of NFPA 1983.
57. **Rescue Operations into a Permit Required Confined Space Shall Not Take Place Until the Following Matters Have Been Addressed:**
58. Continuous air monitoring is in place
59. Utilities, mechanical devices/moving parts and product have been secured, a zero mechanical state established, and confirmation of such is received from the member(s) assigned to Lock out -Tag out.
60. Level III accountability is established. Entry personnel and back up personnel shall be properly equipped, assembled and checked prior to entry.
61. An attendant shall be assigned to each entry site. The duties of the attendant are to:
62. account for personnel in the confined space
63. maintain communications with entry personnel
64. monitor progress and well being of entry personnel
65. summon backup personnel as necessary
66. issue evacuation orders if needed
67. Two separate communication systems between the entry team and the attendant shall be in place. These may include:
68. Voice communications
69. Hand Signal
70. Radio communications
71. Rope signals
72. Light Signals
73. A Safety Briefing shall be conducted with all entry and backup personnel prior to entry to review:
74. Incident action plan
75. Known/potential hazards
76. Communication/signals to be used
77. Emergency escape procedures
78. Other pertinent safety matters
79. The Incident Commander (or the I/C's delegate) shall complete the Confined Space Rescue - Incident Commander's Checklist.
80. **Evacuation of the Confined Space**
81. In the event that the confined space must be evacuated, the attendant will communicate the evacuation order to the entry team.
82. The attendant has the authority, (along with the Incident Commander, Operations Officer, Entry Group Officer and the Safety Officer), to order the evacuation of the confined space at any time.
83. The following events shall ***require*** the immediate evacuation of the confined space:
84. Whenever a prohibited condition exists, namely:
85. structural instability in/around the confined space
86. flooding of the confined space with water or product
87. drastic atmospheric changes in the confined space
88. an entrant shows physiological effects of exposure to some product in the confined space
89. an emergency outside the confined space exists
90. the attendant cannot safely and efficiently perform his duties
91. An entrant shall immediately inform the attendant, and evacuate the confined space together with other members of the entry team whenever:
92. The entrant recognizes any warning sign or symptom of exposure to a dangerous situation, or
93. The entrant detects a prohibited condition.
94. **Victim Management Within the Confined Space**
95. If possible and appropriate, the entry team should bring a supply of breathable air for the victim.
96. Pure oxygen shall not be used in a confined space that has a potentially flammable atmosphere.
97. Upon reaching the victim, entry personnel should do an immediate primary survey of the victim. If appropriate, treatment should be started immediately.
98. A quick but thorough secondary assessment of the victim /should be done. If time permits, entry personnel should attempt to treat serious injuries prior to removal.
99. If indicated, complete C-spine precautions should be taken.
100. If the victim is conscious, he/she should be encouraged to wear breathing apparatus when appropriate.
101. **Miscellaneous**
102. **Incident Related**
103. Permit required confined spaces shall not be entered unless and until the Confined Space Rescue - Incident Commander's Checklist has been completed.
104. The incident commander shall apply risk management principles to the decision to allow an entry into a permit required confined space.
105. If the permit required confined space has an atmosphere that is 10% or more of the LEL, entry personnel should only use intrinsically safe or explosion proof lighting, ventilation and communications equipment. Under such conditions standard departmental radios cannot be used, and an alternate communications method will be necessary. This may include use of a tag line for communications or a message relay person. Entry and backup team members should remove or turn off all electronic devices such as cellphones and pagers.
106. Entry personnel using SCBA shall enter no further than one half the amount of air in the cylinder, minus 1000 p/psi.
107. As a general rule, entry personnel should never allow the victim to get between themselves and the point of egress.
108. After the incident, a copy of the completed Confined Space Rescue - Incident Commander's Checklist shall be forwarded to the Fire Department Safety Officer for records retention.
109. **Administrative**
110. Any member who receives a request for the fire department to serve as a confined space rescue and emergency service for any person, business or entity shall inform the requester that they need to contact the office of the Fire Chief, and that any such approval must be given in writing.
111. No member other than the Fire Chief or the Fire Chief’s designee shall give approval to any person, business or entity to list the fire department as a confined space rescue and emergency service for purposes of complying with OSHA requirements.
112. **Training**
113. The fire department shall provide confined space rescue training so that all personnel acquire the understanding, knowledge and skills necessary for the safe performance of the duties they are assigned.
114. All personnel shall be trained to NFPA 1006, Confined Space Rescue Level I, (Operations Level).
115. All entry personnel shall be trained to NFPA 1006, Confined Space Rescue Level II (Technician Level).
116. All personnel shall practice making permit required confined space rescues at least once every 12 months, by means of simulated rescue operations in which they remove dummies, mannequins, or actual persons from actual permit spaces or from representative permit spaces
117. The fire department shall certify that the required training been completed. Certification shall include the employee’s name, signatures or initials of the trainers, and dates of training.

**Editor’s Note**: This SOP assumes the fire department has all personnel trained to Confined Space Rescue Operations level and a suitable number of personnel trained to Confined Space Rescue Technician level. This section on training should be edited to reflect each department’s actual practice.