

INTEROFFICE MEMORANDUM

Oregon Occupational Safety and Health Division

August 1, 1996

TO: All Industrial Hygienists

FROM: Health Technical

SUBJECT: Asphyxiation in pits hazard alert

Attached is a Hazard Information Bulletin from federal OSHA regarding asphyxiation in pits and confined spaces. This was published after an employee entered a pit that housed the control valves for a waterfall display in a shopping mall. The employee could not exit the space before losing consciousness. A second employee attempted to rescue the employee, but also could not exit because of the onset of weakness. A security guard and a passerby attempted to rescue the two employees, but stopped because the onset of dizziness. Rescue was performed by the fire department.

This alert serves as a reminder that confined spaces can be found anywhere, and not just in what are traditionally considered confined spaces.

Section Hazard Information Bulletin - Asphyxiation Hazard in Pits: Potential Confined Space Problem.

- RECORD TYPE : Hazard Information Bulletin
 - SUBJECT : Asphyxiation Hazard in Pits: Potential Confined Space Problem.
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June 13, 1996

MEMORANDUM FOR: REGIONAL ADMINISTRATORS

FROM: STEPHEN MALLINGER Acting Director Directorate of Technical Support

SUBJECT: Hazard Information Bulletin(1) Asphyxiation Hazard in Pits: Potential Confined Space Problem.

FOOTNOTE(1) The Directorate of Technical Support issues Hazard Information Bulletins (HIBs) in accordance with OSHA Instruction CPL 2.65 to provide relevant information regarding unrecognized or misunderstood health hazards, inadequacies of materials, devices, techniques, and safety engineering controls. HIBs are initiated based on information provided by the field staff, studies, reports and concerns expressed by safety and health professionals, employers, and the public. Information is compiled based on a thorough evaluation of available facts, literature and in coordination with appropriate parties. HIBs are used as an outreach tool for accident prevention.

The Syracuse, New York Area Office brought to our attention the potential existence of asphyxiation hazards in pits that house the control valves for waterfall and water fountain displays in shopping malls. The purpose of this bulletin is to alert the reader that these pits may be permit-required confined spaces which are regulated by 29 CFR 1910.146.

An employee entered a fountain pit through a 3 foot by 3 foot opening. He descended 7 feet via a fixed ladder to the bottom of the pit to adjust the valves which controlled the fountain's water flow. The employee was unable to exit the space because he lost consciousness. A partner attempted to rescue him but was also unable to exit the pit because of the onset of weakness. He was, however, able to call security for assistance. A security guard and a passerby also attempted to enter the pit, but quickly abandoned the rescue due to the rapid onset of dizziness.

The fire department was called in to perform the rescue operation. Both employees were rescued, treated, observed, and released. The oxygen levels in that particular pit at the time the employees entered is unknown.

It is our understanding that the oxygen level was within the acceptable range when it was measured at the conclusion of the rescue. A similar pit at the same site, 60 feet away from the one described above, had an oxygen level of 13 percent. Three out of four pits located in the mall had oxygen level readings of less than 19.5 percent. The evaluation of the last two pits yielded readings of 17.5 and 18.9 percent, respectively. Detector tube readings indicated levels of carbon dioxide in excess of 11,500 parts per million (ppm). The PEL for carbon dioxide is 5000 ppm. No flammable gases were found during the evaluation.

This incident is not an isolated one; it is similar to two cases investigated by the National Institute for Occupational Safety and Health's (NIOSH) Fatality Assessment and Control Evaluation (FACE) program. Both cases (FACE 86-37 and FACE 91-17) involved employees entering control valve pits and subsequently being overcome by an oxygen deficient environment.

The condition described above could exist in any pit in shopping malls, especially if the pits are not routinely opened. We believe that pits of this type may contain sewer traps as well as other contributing factors (corroded machinery, rotting vegetation) that may aid in the depletion or displacement of oxygen. The accumulation of carbon dioxide in pits containing sewer traps is a common hazard in these types of spaces.

Generally, pits of this kind are confined spaces. When employers evaluate these spaces as they must under 29 CFR 1910.146, it is likely that many of the pits will be found to be permit- required confined spaces, especially those that are infrequently opened. The standard 1910.146(c) thru (k) outlines the procedures that must be followed when dealing with this type of hazard in confined spaces. Compliance and consultation personnel should be aware that such conditions as described above exist. Additionally, they should be aware of the recommended procedures for eliminating the hazards.

Please distribute this bulletin to all Area Offices, State Plan States, Consultation Projects and appropriate local labor and industrial associations. Copies of this HIB may be used for outreach purposes.