

Confined Spaces

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Topic: Safety and Health

**Approved for Public Release;
Further Dissemination Unlimited**

Confined Spaces

1.0 PURPOSE

This Level 2 Requirements Document (RD) conveys the requirements necessary to implement a Confined Spaces program for confined spaces and confined space entries conducted by Hanford Mission Support Contract (MSC) Team employees, in accordance with applicable Occupational Safety and Health Administration (OSHA) 29 CFR 1910 and 29 CFR 1926 requirements, and 10 CFR 851 (DOE) requirements.

2.0 SCOPE

Though 29 CFR 1910.146, *Permit Required Confined Spaces*, does not apply to OSHA-defined construction activities and the OSHA construction industry standards do not have an equivalent regulation, this MSC Confined Spaces RD applies to confined space entries conducted by MSC TEAM employees and/or entries that take place within MSC facilities or as part of MSC operations, construction or otherwise.

Confined spaces which have no apparent "owner" or responsible person/organization and/or not associated with a specific building or facility will be defined as "orphaned confined spaces". An example of an "orphaned confined space" would be an out-of-service sewer access port located on an undeveloped tract of land that is not currently associated with nor within an MSC facility's/project's bounds and where no work activities are planned or are taking place.

"Orphaned confined spaces" become the responsibility of the organization or party that enters them, plans to enter then or otherwise has personnel affected by the hazards (nearby workers who could be at risk for unintentional entry).

29 CFR 1910.146 requires employers, including telecommunications and electrical power generation/transmission/distribution, to determine if their workplaces contain spaces that meet the definition of permit-required confined spaces (PRCS). Therefore the general requirements that confined spaces be identified and hazards to entrants controlled apply to MSC operations.

Where permit-required confined space hazard control and worker awareness are adequately addressed by following the provisions of 29 CFR 1910.268, *Telecommunications* and/or 29 CFR 1910.269, *Electrical Power Generation, Transmission, and Distribution*, those standards shall apply in lieu of 29 CFR 1910.146.

If, however, work outside the scope of telecommunications and electrical power generation, transmission or distribution is performed in PRCS(s) normally covered by those regulations and/or the PRCS hazards are not fully addressed by 29 CFR 1910.268 and/or 29 CFR 1910.269, the provisions of this RD and those of 29 CFR 1910.146 shall apply.

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When **all** of the following conditions are met, then sections 3.5 through 3.10 of this RD do not apply:

1. The employer can demonstrate that the only hazard in a PRCS is an actual or potential hazardous atmosphere;
2. The employer can demonstrate that continuous forced air ventilation alone is sufficient to maintain the PRCS safe for entry;
3. The employer can develop monitoring and inspection data that supports the demonstration that continuous forced air ventilation alone is sufficient to maintain the PRCS safe for entry;
4. The demonstration data is documented and made available to each employee who enters the PRCS (or the employee's authorized representative);
5. Provisions of 29 CFR 1910.146(c)(5)(ii) (http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=9797) are followed for each entry;

Entries into PRCSs done to collect the monitoring and inspection data necessary to demonstrate condition #2, above, are subject to applicable provisions of this RD.

This RD does **not** address the policies or internal procedures of the Hanford Fire Department (HFD) in their role as the designated emergency rescue service.

3.0 REQUIREMENTS

NOTE: For the tables in this section under the requirement "type" column, "V" means verbatim and "I" means interpreted.

3.1 Identification of Confined Spaces

#	REQUIREMENT	TYPE V or I	SOURCE
1.	Line management shall ensure that each facility and work area identifies confined spaces, which must have all the following characteristics: <ol style="list-style-type: none"> a. Large enough and so configured that an employee can bodily enter and perform assigned work; and b. Limited or restricted means for entry or exit; and c. Not designed for continuous employee occupancy. 	I	10 CFR 851.23 (3); 10 CFR 851, App A, items 1 and 6; 29 CFR 1910.146
2.	Line management shall ensure that an initial hazard evaluation is performed and documented to assess potential and existing hazards inherent in the confined space.	I	10 CFR 851.23 (3); 10 CFR 851, App A, items 1 and 6

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3.	<p>Line management shall ensure that a <i>Confined Space Hazard Identification Form</i> (CSHIF) (Site Form A-6001-798) is completed and maintained as the hazard evaluation documentation for each identified confined space such that a current inventory of existing PRCS and non-permit confined space (NPCS) is available for each facility/operation.</p> <p>NOTE: <i>The fact that entry into a confined space is not anticipated or planned in the future does not negate this requirement unless a specific variance to this requirement has been approved. (See current approved variances for possible justification language.)</i></p>	I	10 CFR 851.23 (3); 10 CFR 851, App A, items 1 and 6, Items 9 & 18
4.	Identified confined spaces shall be assigned to a facility manager as an operational landlord with responsibilities for the space classification, labeling, inventory, and related recordkeeping requirements.	I	10 CFR 851.23 (3); 10 CFR 851, App A, items 1 and 6; 29 CFR 1910.146
5.	<p>For "orphaned confined spaces", confined space hazard identification/classification activities, including the completion of a <i>Confined Space Hazard Identification Form</i>, are not required until:</p> <ul style="list-style-type: none"> • entry is being planned or conducted; and/or • work activities on or near the confined space could result in inadvertent entry into the space. <p>At either of those times, completion of the confined space hazard identification/evaluation activities becomes the management responsibility of the organization conducting the entry or performing the work activities.</p>	I	10 CFR 851.23 (3); 10 CFR 851, App A, items 1 and 6; 29 CFR 1910.146
6.	Construction managers shall assume ownership and classification responsibilities for temporary or newly created confined spaces during construction activities. These confined spaces shall be classified, according to requirements in Section 3.2 , prior to entry as part of the hazard evaluation and work planning process.	I	10 CFR 851.23 (3); 10 CFR 851, App A, items 1 and 6; 29 CFR 1910.146
7.	Upon termination of the construction phase, construction managers shall turn the confined space over to the facility manager who will then act as the operational landlord for that space. When ownership is transferred, the construction manager shall provide details of the space configuration and characteristics to the assigned operational landlord.	I	10 CFR 851.23 (3); 10 CFR 851, App A, items 1 and 6

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8.	Line management shall ensure that <i>Confined Space Hazard Identification Forms</i> are reviewed and updated at a frequency that ensures completeness and accuracy.	I	10 CFR 851.23 (3); 10 CFR 851, App A, items 1 and 6; 29 CFR 1910.146
9.	Completed <i>Confined Space Hazard Identification Forms</i> shall be stored in the project-specific sub-folders which have been created in the "Confined Space" folder in the "Industrial Hygiene" section of the Integrated Data Management System (IDMS).	I	10 CFR 851.23 (3); 10 CFR 851, App A, items 1 and 6; 29 CFR 1910.146

3.2 Classification of Confined Spaces

1.	<p>Line management shall ensure that each identified confined space is classified as either a PRCS or NPCCS, and that the classification is based on the following characteristics:</p> <ul style="list-style-type: none"> • A PRCS is a confined space that has one or more of the following characteristics: <ol style="list-style-type: none"> 1. Contains or has potential to contain a hazardous atmosphere; and/or 2. Contains a material that has the potential for engulfing an entrant; and/or 3. Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a small cross section; and/or 4. Contains other recognized serious safety or health hazards. • A NPCCS is a confined space that does <i>not</i> contain or, with respect to atmospheric hazards, have the potential to contain hazards capable of causing death or serious physical harm. 	I	10 CFR 851.23 (3); 10 CFR 851, App A, items 1 and 6; 29 CFR 1910.146
2.	<p>Line management shall ensure that the following definition of hazardous atmosphere is strictly adhered to for the purposes of confined space classification. A "hazardous atmosphere" means an atmosphere that may expose employees to the risk of death, incapacitation, impairment of ability to self rescue (that is, escape unaided from a PRCS), injury, or acute illness from one or more of the following causes:</p> <ul style="list-style-type: none"> • Atmospheric oxygen concentration less than 19.5 percent or greater than 23.5 percent. • Flammable gases, vapors or mists present in concentrations greater than 10 percent of their lower 	I	10 CFR 851.23 (3); 10 CFR 851, App A, items 1 and 6; 29 CFR 1910.146

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	<p>flammability limit (LFL).</p> <ul style="list-style-type: none"> • Airborne combustible dust at concentrations greater than or equal to its LFL. • Toxic, corrosive, or asphyxiant substances present in airborne concentrations that exceed or have a reasonable potential to exceed the applicable permissible exposure limit (PEL) or American Conference of Governmental Industrial Hygienists (ACGIH) threshold limit value (TLV) and where the concentration(s) is (are) capable of causing death, incapacitation, impairment of ability to self-rescue, injury, or acute illness due to its health effects. • Other atmospheric conditions that are immediately dangerous to life and health. 		
3.	Line management shall request assistance from the facility Safety and Health (S&H) professional and personnel knowledgeable about the confined space hazards and facility operations to perform the hazard evaluation and/or classify the confined space	I	10 CFR 851.23 (3); 10 CFR 851, App A, items 1 and 6
4.	Line management shall ensure confined space classifications are documented on a Confined Space Hazard Identification Form (Site Form A-6001-798).	I	10 CFR 851.23 (3); 10 CFR 851, App A, items 1 and 6
5.	Line management shall ensure that confined spaces that don't have an initial hazard evaluation are managed as PRCSS until hazard evaluations are performed and documented.	I	10 CFR 851.23 (3); 10 CFR 851, App A, items 1 and 6; 29 CFR 1910.146

3.3 Posting/Labeling of Confined Spaces

1.	Line management shall ensure that PRCSS are labeled or posted with a clearly legible danger sign at potential entry points, stating DANGER - PERMIT REQUIRED CONFINED SPACE, DO NOT ENTER, or other similar language.	I	10 CFR 851.23 (3); 10 CFR 851, App A, items 1 and 6; 29 CFR 1910.146
2.	Line management shall ensure that, when/where PRCSS dimensions or configuration do not permit conventional attachment of signs or labels or when facility operational status and/or in-place access controls can be demonstrated to prohibit unplanned access to PRCSS, other means which can be documented as being at least as effective as signs/labels are used to inform employees of the location and hazard(s) of PRCSS(s).	I	10 CFR 851.23 (3); 10 CFR 851, App A, items 1 and 6; 29 CFR 1910.146

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3.	Posting/labeling of "orphaned confined spaces" (as defined in the "scope" section of this RD, above) is not required unless/until: <ul style="list-style-type: none"> • entry is being planned or conducted; and/or • work activities on or near the confined space could result in inadvertent entry into the space. 	I	10 CFR 851.23 (3); 10 CFR 851, App A, items 1 and 6; 29 CFR 1910.146
4.	Line/Construction managers shall ensure that posting of PRCS related to construction activities shall remain in place until completion of the construction phase, at which point the facility takes over ownership of the PRCS or the space no longer meets the definition of a PRCS. <i>NOTE: A PRCS with more than one entry point may be labeled with a single sign providing that the sign is visible from all access points. If the sign is not visible from all access points, additional signs would be required. See Section 3.4 for information regarding labeling/posting of NPCS(s).</i>	I	10 CFR 851.23 (3); 10 CFR 851, App A, items 1 and 6; 29 CFR 1910.146

3.4 NPCS Pre-entry Hazard Evaluation Requirements

1.	Line management shall ensure that prior to entry into a NPCS, hazard evaluations are performed to verify that the planned work activities or changes to the space will not introduce hazards that would necessitate re-classification of the NPCS to a PRCS.	I	10 CFR 851.23 (3); 10 CFR 851, App A, items 1 and 6
2.	Line management shall ensure that, when reclassification of NPCS to PRCS is necessary, the changes or conditions are documented on the Confined Space Hazard Identification form for the specific confined space.	I	10 CFR 851.23 (3); 10 CFR 851, App A, items 1 and 6
3.	Line management shall ensure engineering controls, administrative controls, posting/labeling, or other effective means used to prevent inadvertent entry into non-permit confined spaces are documented.	I	10 CFR 851.23 (3); 10 CFR 851, App A, items 1 and 6; 29 CFR 1910.146
4.	Line management shall ensure that hazards associated with work activities in NPCSs are managed appropriately and in accordance with other applicable OSHA standards.	I	10 CFR 851.23 (3); 10 CFR 851, App A, items 1 and 6; 29 CFR 1910.146; 29 CFR 1926.800

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3.5 PRCS Pre-entry Hazard Evaluation Requirements

1.	Line management shall ensure that the initial confined space hazard evaluation (<i>Confined Space Hazard Identification Form</i>) is reviewed prior to entry into the PRCS.	I	10 CFR 851.23 (3); 10 CFR 851, App A, items 1 and 6; 29 CFR 1910.146
2.	Line management shall ensure that hazards are evaluated prior to entry in the PRCS and that new hazards or hazards posed by the planned work activity are evaluated and documented on the <i>Confined Space Hazard Identification Form</i> , as necessary.	I	10 CFR 851.23 (3); 10 CFR 851, App A, items 1 and 6; 29 CFR 1910.146
3.	Line management shall utilize support from the facility S&H professional to identify and evaluate PRCS hazards.	I	10 CFR 851.23 (3); 10 CFR 851, App A, items 1 and 6
4.	<p>Line management shall ensure that a PRCS is temporarily reclassified to a non-permit confined space only if all the following conditions are met:</p> <ol style="list-style-type: none"> a. Changed conditions in the PRCS to be re-classified pose no actual or potential atmospheric hazard (see Section 3.2). As needed, perform and document atmospheric testing to verify that the PRCS to be re-classified poses no actual or potential atmospheric hazards. b. Other hazards in the PRCS to be re-classified that originally caused the space to be classified as a PRCS have been eliminated and remain eliminated during entry operations. c. Hazard evaluations for the purposes of reclassification which require entry into the PRCS prior to reclassification being approved, shall be conducted as PRCS entries. d. The planned work introduces no hazards into the reclassified PRCS that would trigger designation as a PRCS. e. The basis for PRCS space re-classification is documented on the <i>Confined Space Hazard Identification Form</i>, approved by facility S&H and communicated to affected employees. Radiological Control approval is also required when the confined space (CS) contains radiological hazards. <p>NOTE: <i>It is not necessary to complete a Confined Space Entry Permit (Site Form A-6000-895) to document temporary PRCS re-classifications.</i></p>	I	10 CFR 851.23 (3); 10 CFR 851, App A, items 1 and 6; 29 CFR 1910.146

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3.6 PRCS Entry Requirements

1.	Line management or, as appropriate, construction management shall, prior to entry, initiate and complete a <i>Confined Space Entry Permit</i> (Site Form A-6000-895) in accordance with Section 3.7 .	I	10 CFR 851.23 (3); 10 CFR 851, App A, items 1 and 6; 29 CFR 1910.146
2.	Line management or, as appropriate, construction management shall authorize entry into a PRCS only after the entry supervisor has obtained each permit-required signature on the <i>Confined Space Entry Permit</i> and verified that pre-entry activities and requirements have been completed.	I	10 CFR 851.23 (3); 10 CFR 851, App A, items 1 and 6
3.	Line management or, as appropriate, construction management shall ensure that qualified and trained entry team members are designated to perform duties described in Appendix A , and as follows: <ul style="list-style-type: none"> a. Designate an entry supervisor to authorize, oversee, and terminate entry operations. b. Assign at least one attendant to remain outside the permit space for the duration of the entry. c. If a single attendant is assigned to monitor multiple spaces, determine and document on the permit the means or procedure to ensure that the attendant can respond to an emergency affecting one or more of the spaces without compromising other assigned duties. 	I	10 CFR 851.23 (3); 10 CFR 851, App A, items 1 and 6; 29 CFR 1910.146
4.	Line management or, as appropriate, construction management shall ensure that all entries into a PRCS are recorded on the <i>Confined Space Entry Log</i> (Site Form A-6000-895.2) and that the <i>Confined Space Entry Log</i> is attached to the appropriate <i>Confined Space Entry Permit</i> and maintained with the Permit as part of that record for record review purposes.	I	10 CFR 851.23 (3); 10 CFR 851, App A, items 1 and 6; 29 CFR 1910.146
5.	When a PRCS contains actual/potential atmospheric hazards, line management or, as appropriate, construction management, shall ensure that initial testing and evaluation of atmospheric hazards is performed before entry and as often as necessary during entry to ensure entry conditions remain acceptable. See section 3.8 of this RD for further requirements related to PRCS atmospheric monitoring.	I	10 CFR 851.23 (3); 10 CFR 851, App A, items 1 and 6; 29 CFR 1910.146

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6.	Line management or, as appropriate, construction management, shall use support from the facility S&H professional to recommend controls, prescribe personal protective equipment, and determine atmospheric monitoring requirements for chemical and physical hazards. Support from Radiological Control personnel shall be used to prescribe controls for radiological hazards.	I	10 CFR 851.23 (3); 10 CFR 851, App A, items 1 and 6; 29 CFR 1910.146
7.	Line management or, as appropriate, construction management shall ensure that appropriate controls, work practices and equipment are identified, documented in the <i>Confined Space Entry Permit</i> , and implemented to eliminate or control identified hazards.	I	10 CFR 851.23 (3); 10 CFR 851, App A, items 1 and 6; 29 CFR 1910.146
8.	Line management or, as appropriate, construction management shall ensure that rescue equipment, harnesses, lifelines, lifting devices, supplemental lighting, communication devices, personal protective equipment, ladders, ventilation equipment or other special equipment as specified on the <i>Confined Space Entry Permit</i> is provided onsite prior to the commencement of the entry into the PRCS.	I	10 CFR 851.23 (3); 10 CFR 851, App A, items 1 and 6; 29 CFR 1910.146
9.	Line management or, as appropriate, construction management shall provide for entrant rescue and retrieval, considering both size and configuration of the space and the physical size of entrants and rescue personnel.	I	10 CFR 851.23 (3); 10 CFR 851, App A, items 1 and 6; 29 CFR 1910.146
10.	Line management or, as appropriate, construction management shall ensure that a pre-entry briefing is provided to the entry team and support personnel to review requirements of the permit.	I	10 CFR 851.23 (3); 10 CFR 851, App A, items 1 and 6; 29 CFR 1910.146

3.7 PRCS Permit System

1.	Line management or, as appropriate, construction management shall ensure that entries into PRCS are administratively controlled by the specific <i>Confined Space Entry Permit</i> for the PRCS to be entered. The permit system includes the hazard assessment, entry permit and supporting documentation.	I	10 CFR 851.23 (3); 10 CFR 851, App A, items 1 and 6; 29 CFR 1910.146
2.	Line management or, as appropriate, construction management shall ensure that PRCS <i>Confined Space Entry Permits</i> apply to a specific operation, location, work package, and time period. The duration of the permit may not exceed the time required to complete the assigned task or job as identified on the permit. If planned work will continue for more than one work shift, the permit may be approved for subsequent re-entries, provided:	I	10 CFR 851.23 (3); 10 CFR 851, App A, items 1 and 6;; 29 CFR 1910.146

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	<ul style="list-style-type: none"> • No new hazards are identified or introduced into the space. • There are no changes in work scope or permit prescribed work controls. • Pre-entry testing is performed and acceptable entry conditions exist. • Re-entries are authorized and documented on the permit. 		
3.	Line management or, as appropriate, construction management shall ensure that confined space entries/egresses are documented on the Confined Space Entry Permit , or an equivalent attendance roster which can be attached to the <i>Confined Space Entry Permit</i> , and become part of that record. Entry is restricted to those listed on the log, unless they are entering as members of the rescue team.	I	10 CFR 851.23 (3); 10 CFR 851, App A, items 1 and 6; 29 CFR 1910.146
4.	Line management or, as appropriate, construction management shall, when entry was performed by a subcontractor, conduct and document a post-entry debriefing with contractor personnel to determine if unanticipated hazards were encountered and to evaluate the follow-up actions. The documentation for such meetings shall be attached to the <i>Confined Space Entry Permit</i> and shall become a part of that record for record review purposes.	I	10 CFR 851.23 (3); 10 CFR 851, App A, items 1 and 6; 29 CFR 1910.146

3.8 Atmospheric Testing for PRCS

1.	When a PRCS contains actual/potential atmospheric hazards, line management or, as appropriate, construction management, shall ensure that initial atmospheric monitoring is performed prior to entry and as often as necessary during entry to ensure entry conditions remain acceptable and meet the performance / frequency specifications on the <i>Confined Space Entry Permit</i> .	I	10 CFR 851.23 (3); 10 CFR 851, App A, items 1 and 6; 29 CFR 1910.146
2.	Line management or, as appropriate, construction management, shall ensure that atmospheric testing equipment, equipment calibration data and monitoring results are documented and recorded on or attached to the <i>Confined Space Entry Permit</i> , as per the requirements of Section 3.8.6 , below.	I	10 CFR 851.23 (3); 10 CFR 851, App A, items 1 and 6; 29 CFR 1910.146

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3.	PRCS atmospheric testing shall be performed by facility S&H or other qualified personnel who can demonstrate proficiency in the use of atmospheric testing equipment to be used for the entry, proficiency in the interpretation of atmospheric testing data and awareness of atmospheric monitoring protocols and strategies for PRCS entries. The facility S&H professional shall determine the conditions under which persons other than themselves can monitor.	I	10 CFR 851.23 (3); 10 CFR 851, App A, items 1 and 6; 29 CFR 1910.146
4.	Line management or, as appropriate, construction management shall ensure that atmospheric testing equipment used for PRCS entries is calibrated, maintained, and operated in accordance with the manufacturer's guidance and/or requirements and that appropriate maintenance and calibration records are maintained. Facility S&H shall be consulted for guidance on these issues.	I	10 CFR 851.23 (3); 10 CFR 851, App A, items 1 and 6; 29 CFR 1910.146
5.	If the PRCS space configuration limits effective atmospheric testing (as may occur with large spaces or spaces which cannot be isolated, such as sewer system entries), line management or, as appropriate, construction management shall provide entrants with personal monitoring devices and ensure that the entrants are trained to use it. Pre-entry testing to the extent possible shall be conducted before authorizing entry, and instruct employees to continuously monitor conditions in the areas where they are working.	I	10 CFR 851.23 (3); 10 CFR 851, App A, items 1 and 6; 29 CFR 1910.146
6.	<p>Atmospheric monitoring data which show the composition of an atmosphere to which an employee is actually exposed (even if wearing a respirator) (e.g. personal monitoring devices and area monitoring where subsequent entries will take place under the same or very similar conditions) are considered exposure records under 29 CFR 1910.1020(c)(5). As such the data must be recorded on the appropriate Industrial Hygiene (IH) monitoring form:</p> <ul style="list-style-type: none"> • Site Form A-6001-760, <i>Industrial Hygiene Direct Reading Instrument Survey</i>; and/or • Site Form A-6001-758, <i>Industrial Hygiene Air Sample Survey</i>; and/or • Other appropriate IH survey/monitoring form. <p>NOTE: <i>Atmospheric monitoring data collected by qualified persons other than the facility S&H professional should be reviewed by the facility S&H professional.</i></p> <p>NOTE 1: <i>When atmospheric monitoring is performed by a</i></p>	I	10 CFR 851.23 (3); 10 CFR 851, App A, items 1 and 6; 29 CFR 1910.146; 29 CFR 1910.20

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	<p><i>qualified person who is not a MSC Industrial Hygienist, the project/facility IH should be consulted prior to the monitoring to ensure that the proper IH forms are used to record the data and to initiate the Integrated Data Management System (IDMS) workflow to archive the data.</i></p> <p>NOTE 2: <i>The PRCS Permit number and CS Identification number, when available, should be noted in the IH monitoring form to establish an archival link between the monitoring data and the specific PRCS entry.</i></p>		
7.	Copies of completed and in-progress, as appropriate, IH monitoring forms shall be attached to the PRCS Entry Permit to ensure that the permit content meets 29CFR 1910.146 requirements and is available to PRCS entrants, attendants and other affected employees.	I	10 CFR 851.23 (3); 10 CFR 851, App A, items 1 and 6; 29 CFR 1910.146; 29 CFR 1910.20

3.9 Applying Hazard Controls

1.	Line management or, as appropriate, construction management shall ensure that controls are assigned that are commensurate with the risk and dependent on the hazard(s) and whether the hazard will be eliminated prior to entry or controlled prior to and during entry.	I	10 CFR 851.23 (3); 10 CFR 851, App A, items 1 and 6; 29 CFR 1910.146
2.	Line management or, as appropriate, construction management shall ensure that hazard control/reduction is achieved, whenever feasible, by the following: <ul style="list-style-type: none"> • Redesigning tasks so that personnel entry into confined spaces is unnecessary; • Using accepted engineering control measures; • Applying administrative controls and work practices; and/or • Prescribing personal protective equipment. 	I	10 CFR 851.23 (3); 10 CFR 851, App A, items 1 and 6; 29 CFR 1910.146
3.	Line management or, as appropriate, construction management shall ensure recommendations for controls or work practices are prescribed with consideration of additional hazards introduced by the control itself.	I	10 CFR 851.23 (3); 10 CFR 851, App A, items 1 and 6; 29 CFR 1910.146
4.	Line management or, as appropriate, construction management shall ensure that prescribed protective measures do not interfere with the ventilation requirements for the space, means of ingress or egress for the occupants, or rescue methods.	I	10 CFR 851.23 (3); 10 CFR 851, App A, items 1 and 6; 29 CFR 1910.146
5.	Line management or, as appropriate, construction management should apply the hazard controls and work practices in Appendix B , as applicable, with input from facility S&H.	I	10 CFR 851.23 (3); 10 CFR 851, App A, items 1 and 6; 29 CFR 1910.146

NOTE: Before each use, check MSC Docs Online to ensure this copy is current.

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3.10 Emergency Response and Rescue for PRCS

1.	Line management or, as appropriate, construction management shall plan for effective retrieval/rescue of PRCS entrants by ensuring that emergency and rescue planning, procedures and escape routes are designed for the characteristics of the PRCS and that effective response times are considered in determining rescue measures.	I	10 CFR 851.23 (3); 10 CFR 851, App A, items 1 and 6; 29 CFR 1910.146
2.	Line management or, as appropriate, construction management shall ensure that attendants have at least one of the following at the work location: telephone, two-way radio, cellular phone, or other suitable means of summoning the HFD.	I	10 CFR 851.23 (3); 10 CFR 851, App A, items 1 and 6; 29 CFR 1910.146
3.	If the HFD is requested to provide standby services at the worksite, line management or, as appropriate, construction management shall ensure that 24 hours notice to HFD is given.	I	10 CFR 851.23 (3); 10 CFR 851, App A, items 1 and 6; 29 CFR 1910.146
4.	Line management or, as appropriate, construction management shall ensure determination of appropriate retrieval systems for non-entry rescue from a PRCS or what methods will be utilized to summon the HFD. Retrieval systems will be documented on the <u>Confined Space Entry Permit</u> . If the use of retrieval equipment increases the overall risk of entry, or would not contribute to the rescue of the entrants, then alternate rescue methods must be defined, documented on the <u>Confined Space Entry Permit</u> , and communicated to employees.	I	10 CFR 851.23 (3); 10 CFR 851, App A, items 1 and 6; 29 CFR 1910.146
5.	When required by the <u>Confined Space Entry Permit</u> , each authorized PRCS entrant shall use a full body harness with retrieval line attached at the center of the entrant's back near shoulder level, or above the entrant's head. The other end of the retrieval line shall be attached to a mechanical device or fixed point outside the PRCS such that the rescue can begin as soon as the rescuer becomes aware the rescue is necessary. NOTE: <i>Wristlets may be used in lieu of the full body harness if it can be demonstrated that the use of the full body harness is not feasible or creates a greater hazard, and that the use of wristlets is the most effective and safe alternative.</i>	I	10 CFR 851.23 (3); 10 CFR 851, App A, items 1 and 6; 29 CFR 1910.146

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6.	A mechanical device shall be dedicated to retrieve personnel from vertical type PRCSs more than five feet deep.	I	10 CFR 851.23 (3); 10 CFR 851, App A, items 1 and 6; 29 CFR 1910.146
7.	Line management or, as appropriate, construction management shall ensure the PRCS entry attendant and authorized entrants are trained in the proper use of the retrieval equipment.	I	10 CFR 851.23 (3); 10 CFR 851, App A, items 1 and 6; 29 CFR 1910.146
8.	Required harnesses, retrieval lines, and mechanical lifting devices shall be inspected and immediately available at the work location during permit space entries. Equipment that is damaged will be tagged out of service and returned to the supervisor to prevent inadvertent use.	I	10 CFR 851.23 (3); 10 CFR 851, App A, items 1 and 6; 29 CFR 1910.146
9.	The HFD shall be summoned under one or more of the following circumstances: <ul style="list-style-type: none"> • Rescuers are required to enter the PRCS. • The rescue involves retrieval of an injured person. • The attendant needs help in retrieving PRCS occupants. • Medical assistance is required. 	I	10 CFR 851.23 (3); 10 CFR 851, App A, items 1 and 6; 29 CFR 1910.146

3.11 Training/Qualifications

1.	Line management or, as appropriate, construction management shall ensure that PRCS attendants, entrants, supervisors, atmospheric testing personnel, radiological control personnel and other entry team members are provided initial confined space training before performing their assigned duties for PRCS entries. NOTE: <i>Course #020130, Confined Space Entry, satisfies this requirement.</i>	I	10 CFR 851.23 (3); 10 CFR 851, App A, items 1 and 6; 29 CFR 1910.146
2.	Line management or, as appropriate, construction management shall ensure that, in addition to the initial confined space training course required for each entry team member, the designated atmospheric testing person is trained on the proper use and application of the instrumentation to be used.	I	10 CFR 851.23 (3); 10 CFR 851, App A, items 1 and 6; 29 CFR 1910.146
3.	MSC Training shall provide confined space training that meets the objectives of 29 CFR 1910.146 and this program, and includes the PRCS Entry Team responsibilities specified in Appendix A .	I	10 CFR 851.23 (3); 10 CFR 851, App A, items 1 and 6; 29 CFR 1910.146

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4.	MSC Training shall maintain a list of personnel, training dates, and associated training records for those who have successfully completed confined space training. Ensure training documentation is available to employees and line management, on request.	I	10 CFR 851.23 (3); 10 CFR 851, App A, items 1 and 6; 29 CFR 1910.146
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3.12 Project/Facility S&H & Radiological Support

1.	The project/facility S&H professionals shall assist management in the initial identification and hazard evaluation of confined spaces.	I	10 CFR 851.23 (3); 10 CFR 851, App A, items 1 and 6; 29 CFR 1910.146
2.	The project/facility S&H professionals shall recommend control measures for chemical and physical hazards in PRCS.	I	10 CFR 851.23 (3); 10 CFR 851, App A, items 1 and 6; 29 CFR 1910.146
3.	When radiological hazards are present in a PRCS, the project/facility S&H professionals shall collaborate with Radiological Control personnel to ensure control measures are appropriate for all types of hazards.	I	10 CFR 851.23 (3); 10 CFR 851, App A, items 1 and 6; 29 CFR 1910.146
4.	Project/facility Radiological Control personnel shall identify and evaluate radiological hazards associated with confined spaces entries.	I	10 CFR 851.23 (3); 10 CFR 851, App A, items 1 and 6; 29 CFR 1910.146
5.	Project/facility Radiological Control personnel shall specify hazard controls relative to radiological hazards. They shall select protective clothing and respiratory protection for radiological hazards and ensure controls and work practices specified on radiological work permits are integrated with the requirements specified on the PRCS <i>Confined Space Entry Permit</i> .	I	10 CFR 851.23 (3); 10 CFR 851, App A, items 1 and 6; 29 CFR 1910.146

3.13 Program and Records Review

1.	Line management or, as appropriate, construction management shall maintain the following records as part of the facility documentation: <ul style="list-style-type: none"> • A fully completed <i>Confined Space Hazard Identification Form</i> for each identified confined space; • A project/facility listing of PRCSs; • Original, completed <i>Confined Space Entry Permits</i> shall reside and be retained with the work documentation (e.g. work packages) for the work activity during which the PRCS was entered. 	I	10 CFR 851.23 (3); 10 CFR 851, App A, items 1 and 6; 29 CFR 1910.146
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2.	Line management or, as appropriate, construction management shall conduct a review of canceled permits and related documentation annually to evaluate the effectiveness of this RD and facility- or PRCS-specific procedures or practices. The evaluation shall be documented and shall identify corrective measures, and an implementation schedule for identified corrective measures, to ensure protection of the entry team.	I	10 CFR 851.23 (3); 10 CFR 851, App A, items 1 and 6; 29 CFR 1910.146
3.	Line management or, as appropriate, construction management shall forward a copy of each review done pursuant to Section 3.13.1, to the MSC S&H Confined Space Interpretive Authority to be used for possible program improvements and for issue tracking and trending purposes.	I	10 CFR 851.23 (3); 10 CFR 851, App A, items 1 and 6; 29 CFR 1910.146

3.14 Subcontractor and Multi-employer PRCS Requirements

1.	<p>When Mission Support Alliance (MSA) subcontractor employees are required to enter a PRCS under the responsibility of an MSA line/construction manager and/or when MSA is the work authorizing organization or facility owner of a multi-employer PRCS entry, MSA line/construction management ensure that the following requirements are met:</p> <ul style="list-style-type: none"> • PRCS entries are coordinated among affected entrants in a multi-employer PRCS entry; • Entry into a multi-employer PRCS is authorized and conducted by a single Confined Space Entry Permit signed by a representative from each affected employer; • Personnel who are involved in the PRCS entry shall attend a single pre-job briefing coordinated by a representative of the PRCS work authorizing organization and/or facility owner; • Personnel involved in the PRCS pre-entry briefing will be informed at that meeting of the following: <ul style="list-style-type: none"> • Identification of hazards and conditions that formed the basis for classifying the particular confined space as a PRCS; • Precautions or procedures that the host employer has implemented for the protection of employees in or near the PRCS; • The means to be used to coordinate multi-employer entry operations; 	I	10 CFR 851.23 (3); 10 CFR 851, App A, items 1 and 6; 29 CFR 1910.146
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	<ul style="list-style-type: none">• The contents of the completed <u>Confined Space Entry Permit</u>; and• The expectation that conditions specified on the <i>Confined Space Entry Permit</i> will be observed by affected employees.• Subcontractor/employer employees shall submit documentation of confined space training required by 29 CFR 1910.146 (g); and• A debriefing shall be conducted and documented with the subcontractor and/or employers at the conclusion of entry operations pursuant to <u>Section 3.7.4</u>.		
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4.0 FORMS

Confined Space Entry Permit ([A-6000-895](#))

Confined Space Entry Log ([A-6000-895.2](#))

Confined Space Hazard Identification Form ([A-6001-798](#))

Hotwork Permit ([A-6000-895.1](#))

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5.0 RECORD IDENTIFICATION

Performance of this process generates the following records. Records are maintained in accordance with [MSC-PRO-10588](#), *Records Management Processes*.

Records Capture Table

Name of Document	Submittal Responsibility	Retention Responsibility
<i>Confined Space Entry Permit</i> (A-6000-895) (re: sections 3.1 and 3.2 of this RD)	Facility or construction management (see sections 3.7 and 3.13 , above).	Facility or construction management (see sections 3.7 and 3.13 , above).
<i>Confined Space Hazard Identification Form</i> (A-6001-798) (re: sections 3.6 and 3.7 of this RD)	Facility or construction management, as operational landlords (see sections 3.1 and 3.13 , above).	Facility or construction management, as operational landlords (see sections 3.1 and 3.13 , above).
<i>Hotwork Permit</i> (A-6000-895.1)	Line/construction supervision (as per MSC-RD-9900)	Line/construction supervision (as per MSC-RD-9900)
Maintenance and calibration records for test equipment (re: section 3.8.4 of this RD)	Industrial Hygiene Equipment Services (IHES)	IHES
Industrial Hygiene survey/monitoring forms used to record atmospheric monitoring data (re: section 3.8.6 of this RD)	Responsible Industrial Hygienist	Industrial Hygiene module in the Integrated Data Management System (IDMS)
Confined space entry training records including all documentation required by CFR 1910.146 (g). (re: section 3.11 of this RD)	Training course instructor/attendee	MSC-RD-9900, <i>Training records</i>
Confined space program evaluation records (re: section 3.13 of this RD)	Line management/ construction management	MSC S&H Confined Space Interpretive Authority
Records of documented debriefing required at conclusion of entry operations (re: sections 3.14.1 and 3.7.4 of this RD)	MSC line/ construction management	MSC line/ construction management (as an attachment to the <i>Confined Space Entry Permit</i>)
Completed <i>Confined Space Entry Log</i> , Site Form A-6000-895.2 (re: sections 3.6.4 and App. A of this RD)	Maintained by entry attendant (see Appendix A, <i>Entry Team Duties</i> , Attendant)	MSC line/ construction management (as an attachment to the <i>Confined Space Entry Permit</i>)

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6.0 REFERENCES

6.1 Source References

U.S. Department of Energy (DOE) 10 CFR 851 *Worker Safety and Health Program*,
Occupational Safety and Health Administration (OSHA)
Title 29, Code of Federal Regulations, Part 1910.146 (29 CFR 1910.146), *Permit-Required
Confined Spaces*
Title 29, Code of Federal Regulations, Part 1910.1020 (29 CFR 1910.1020), *Access to
Employee Exposure and Medical Records*
Title 29, Code of Federal Regulations, Part 1926, (29 CFR 1926) *Safety and Health
Regulations for Construction*, Section 800, *Underground Construction*

6.2 Working References

29 CFR 1910.268, *Telecommunications*
29 CFR 1910.269, *Electric Power, Generation, Transmission and Distribution*

[MSC-PRO-066](#), *Electrical Utilities Lock and Tag Program*

[MSC-PRO-081](#), *Lockout/Tagout*

[MSC-PRO-090](#), *Excavating, Trenching, and Shoring*

[MSC-PRO-095](#), *Scaffolding*

[MSC-PRO-120](#), *Respiratory Protection*

[MSC-PRO-409](#), *Exposure Monitoring, Reporting, and Exposure Records Management*

[MSC-PRO-10588](#), *Records Management Processes*

[MSC-RD-8801](#), *Fall Protection*

[MSC-RD-9900](#), *Hot Work Performance Requirements*

[MSC-RD-11183](#), *Personal Protection*

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APPENDIX A Entry Team Duties

Entry supervisor

- Recognize the hazards that may be encountered during entry and the mode, signs, symptoms and consequences of exposure.
- Prior to signing the permit to authorize entry verify completion of pre-entry activities, ensure sections of the permit have been completed, and obtain required signatures. Post the completed permit at the entrance of the confined space so authorized entrants may confirm pre-entry preparations have been completed.
- 24 hours prior to entry into a PRCS, notify the designated rescue team (Hanford Fire Department, as appropriate) of the planned entry, location of the space, anticipated hazards, and special considerations for rescue from the space. Verify availability of rescue service and ensure the means to summon them are operable.
- Perform a pre-job briefing with entry team members to review the work scope, hazards associated with the entry, and details of the permit requirements.
- If the duties of entry supervisor are transferred from one individual to another during the course of entry, ensure the name of the current entry supervisor is recorded on the permit.
- Ensure entry operations remain consistent with the terms of the entry permit and acceptable entry conditions are maintained.
- Take appropriate measures to remove unauthorized personnel who are in or near the space.
- Cancel the entry authorization and terminate entry whenever acceptable entry conditions are not present.
- When entry procedures are complete, close out entry operations and cancel the permit.
- Schedule and conduct a post-entry briefing, as per the requirements of [Section 3.7](#).
- Ensure problems encountered during an entry operation are documented on the permit.

NOTE: *Entry supervisors may also serve as standby attendant or entrant as long as that person is trained and equipped to perform each role.*

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Attendant

- Recognize the hazard(s) that may be encountered during entry and the mode, signs, symptoms and consequences of exposure.
- Do not perform other tasks that could prevent, limit or interfere with implementation of assigned duties as standby attendant.
- Remain stationed outside the PRCS during entry operations until relieved by another attendant, documenting changes of duty on the permit.
- Monitor conditions or changes that could occur in or around the confined space that could adversely affect the entrants.
- Order entrants to evacuate the space immediately, if one or more of the following conditions are observed:
 - A condition that is not allowed on the permit (e.g., interruption of ventilation);
 - Activation of an alarm on the atmospheric testing equipment;
 - Behavioral effects of hazard exposure or an uncontrolled hazard in the space;
 - A situation outside the space that could impact the safety of the entrants;
 - The attendant must leave the workstation and can not be replaced by another qualified attendant; or if the attendant can not safely and effectively perform required duties;
 - Hanford Fire Department is not available to perform a rescue.
- Perform non-entry rescue as specified on the permit. Ensure availability of rescue equipment. Summon emergency/rescue services, when required.
- Maintain an entry log (*Confined Space Entry Log*, Site Form [A-6000-895.2](#)) to identify and track the entry/egress of each authorized entrant.
- Restrict access to authorized entrants only, during entry operations. If there is an attempted unauthorized entry, then notify the entry supervisor.

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Authorized entrants

- Recognize the potential hazards that may be encountered during entry, including the mode, signs and symptoms of exposure.
- Review the requirements of the *Confined Space Entry Permit* and sign the entry log for each entry/egress.
- Understand and implement required measures for work control as defined in the permit. Safely use required equipment necessary for safe conduct of work in the space.
- Communicate with the attendant in order to facilitate the monitoring of entrant status and conditions in the space.
- Alert the attendant and exit the space whenever a warning sign, symptom of exposure, or prohibited condition is identified.
- Exit the space when the order is given to evacuate, upon recognition of warning signs/symptoms, or when prohibited conditions are detected, or alarms activated.

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APPENDIX B Hazard Controls/Work Practices

Isolation/tagout

1. Evaluate energy sources/materials, including equipment not connected to an energy source but having unguarded movable parts. Consider outside sources that could introduce a hazardous substance into the confined space. If determined to be potentially hazardous to the entrants, then isolate in accordance with the applicable MSC *Lock and Tag* and *Hazardous Energy Control* programs (refer to [MSC-PRO-066](#), *Electrical Utilities Lock and Tag Program*, or [MSC-PRO-081](#), *Lockout/Tagout*). Examples of hazardous energy include electrical, mechanical, hydraulic, pneumatic, chemical and thermal energies, in addition to potential energies such as compressed gases, springs, or suspended objects.
2. Acceptable means of isolation include blanking or blinding; misaligning or removing sections of lines, pipes, or ducts; a double block and bleed system; lockout/tagout of sources of energy; or blocking or disconnecting mechanical linkages.
3. Electrical vault entry
 - Electrical current carrying conductors of over 300 volts in manhole type electrical vaults are de-energized and locked and tagged out prior to entry. (This does not apply to large spaces like cable spreader rooms, which present no electrical hazards).
 - Vaults smaller than six feet by six feet cannot be entered without de-energizing the conductors.
 - Vaults larger than six feet by six feet may be entered without de-energizing if:
 - a. There is written justification of the reason the conductors cannot be de-energized;
 - b. A work plan, including JHA has been prepared; and
 - c. A facility S&H professional **and** an electrically qualified employee have reviewed and approved the work plan and justification.

NOTE: *Confined spaces containing energized, but adequately protected conductors, does not necessarily constitute a PRCS.*

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Purging/flushing/ventilation

1. Prior to entry, ensure PRCS are emptied or otherwise purged of flammable, injurious, or incapacitating substances, as feasible.
2. If safe levels cannot be achieved, additional ventilation or other engineering controls are implemented to reduce contaminants to the lowest level feasible, and adequate personal protective equipment will be provided.
3. Pure oxygen is *never* introduced into the PRCS for purposes of ventilation or to improve the breathing air quality.
4. If flammable gases, vapors, or combustible dusts are present, the ventilating equipment is approved for use in the specific hazardous location.
5. Test the atmosphere prior to and during ventilation of the space to ensure acceptable entry conditions.
6. If the ventilation system shuts down, evacuate entrants from the space and do not re-enter until approved by facility S&H professional.
7. Continuous ventilation or local exhaust ventilation of the confined space is provided and maintained during welding, painting, and other operations that generate air contaminants. If ventilation is not possible or feasible, line management and the facility S&H professional develops alternate protective measures.
8. The ventilation arrangement for the space precludes the entry of atmospheric contaminants into the ventilation intake and the exhaust of contaminants into adjacent work areas.

Welding, cutting, and heating

Welding and cutting performed in a PRCS requires a separate *Hotwork Permit*, (Site Form [A-6000-895.1](#)). Ensure that fire hazards and flammable atmospheres have been controlled in accordance with [MSC-RD-9900](#), *Hot Work Performance Requirements*.

Fall protection and retrieval

1. Provisions for fall protection and retrieval are based on the hazard analysis and requirements of [MSC-RD-8801](#), *Fall Protection*. Components making up both systems consist of personal protective gear (harness), connecting devices (retracting lifelines, retrieval devices) and approved anchorages (tri-pod).
2. Emergency retrieval equipment is specifically intended to lift injured personnel from a vertical confined space.

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3. Material hoists are separate and approved for use as part of the anchorage system.
4. Fall protection (for falls over six feet) complies with [MSC-RD-8801](#).
5. Devices such as a combination retractable lifeline/retrieval device can meet both fall protection and emergency rescue functions.

Excavations and trenches

1. PRCS entry procedures may be applicable for certain excavations and trenches. Each situation must be evaluated separately to determine whether the requirements for PRCS entry apply to the anticipated work. The construction manager with assistance from the facility S&H professional makes this determination.
2. Conduct excavations and trenching in accordance with [MSC-PRO-090](#), *Excavating, Trenching, and Shoring*.

Personal Protective Equipment (PPE)

1. PPE selection, as determined by facility S&H professional, is appropriate for the conditions and configuration of the confined space, based upon results of the hazard evaluation, and in accordance with [MSC-RD-11183](#), *Personal Protection*.
2. Confined space entrants whose work requires respiratory protection are fit tested, trained, and medically cleared in accordance with [MSC-PRO-120](#), *Respiratory Protection*.

Equipment and Tools

1. Requirements for hand and portable, power actuated tools or equipment are specified in the applicable OSHA regulations.
2. In PRCSs, ground fault circuit interrupters are used with power tools that are not double insulated and whenever using extension cords and electrical lighting.
3. If flammable liquids, gases or vapors are present, only tools, lighting, communications equipment, and other electrical equipment that are approved for use in the specific hazardous location are used.
4. Ladders, scaffolding and staging are designed, placed, and used in accordance with the applicable OSHA regulations and [MSC-PRO-095](#), *Scaffolding*.

Confined Spaces

Illumination

1. Lighting used in spaces containing or having the potential to contain flammable vapors or explosive dusts are approved for use in hazardous atmospheres. This also applies to low voltage lighting such as droplights.
2. Install temporary lighting per National Electric Code (NEC) requirements.
3. Lighting is sufficient to ensure entrants are able to see clearly, avoid potential hazards, and exit the space quickly in an emergency.

External hazards

When entrance barriers are removed from "below grade" confined spaces, guard the opening with a railing, temporary cover or barrier to prevent persons or objects from falling into the space.