



TG05 SAFE ENTRY INTO A TANK CONTAINER

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A TANK CONTAINER

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This document is intended for industry professionals, persons who are appropriately trained in risk assessment and health and safety.

Users of this document should carry out their own risk assessment and ensure it is fit for their purpose and in accordance with legislation applicable in the country of use.

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SAFE ENTRY INTO A TANK CONTAINER

INTRODUCTION

This document provides guidance for ITCO member companies that engage in activities that require personnel to enter the interior of a tank for purposes such as inspection and maintenance.

The document focuses solely on the tank entry process. Refer to other sources for safety requirements concerning the many other tasks that might be undertaken.

Tank entry presents inherent risks which require to be managed by implementing a safe entry process.

Procedures should be reviewed to determine if a process change could be introduced that would allow tasks to be carried out without entering the tank - for example, by viewing the interior from the man-way or by the use of CCTV.

Nevertheless, when personnel are required to enter a tank, appropriate safety procedures should be in place to minimise the risk.

This ITCO guidance is focused on tank entry undertaken at the site of a Service Provider (Depot) and refers only to tank containers which are also commonly referred to as "ISO-tanks".

Most tank containers comply with the provisions of the "UN Portable Tank". However, for ease of reading this document, the text uses the abbreviated term "tank"

The guidance is intended for the use of tank container industry professionals; persons who have completed appropriate training in risk assessment and health and safety requirements.

National Legislation governs safe entry into a Permit Required Confined Space and takes precedence over this document. Always comply with appropriate legislation applicable to the country of use.

1. TANK ENTRY PROCEDURES

Entry into a confined space such as a tank, presents inherent risks.

Risks are managed by implementing safe entry procedures. The safe tank entry process should be thorough, practical and efficient.

The Service Provider should put procedures in place to identify stocks of tanks that have not undergone the safe entry process and prevent uncontrolled tank entry.

National Health and Safety Legislation defines a Confined Space and a Permit Required Confined Space. For example, OSHA (US Occupational Health and Safety Administration) define:

Confined Space

- Has adequate size and configuration for employee entry;
- Has limited means for access or egress;
- Is not designed for continuous employee occupancy.

Permit Required Confined Space

The term "Permit Required Confined Space" as defined by OSHA is a space that meets the definition of a Confined Space and has one or more of these characteristics:

- Contains or has the potential to contain a hazardous atmosphere;
- Contains a material that has the potential for engulfing the entrant;
- Has an internal configuration that might cause an entrant to be trapped or asphyxiated by inwardly converging walls or by a floor that slopes downward and tapers to a smaller cross section; and/or
- Contains any other recognized serious safety or health hazards.

OSHA does not apply globally. National Health & Safety Legislative may provide similar provisions. Always comply with the requirements applicable to the country of use.

Prior to any person entering a Permit Required Confined Space, it is required to provide an Entry Permit.

An Entry Permit is a function-specific document. It is sometimes referred to as a "Confined Space Entry Permit" or "Entry Certificate" or in the case of the tank container industry "Tank Entry Permit".

The Entry Permit is issued by a Competent Person who has assessed the risks and put procedures in place to ensure a safe tank entry.

The Entry Permit includes risk assessment of conditions such as the last transported cargo, empty and clean, cleaning document, cargo residues and the atmosphere in the tank.

The Entry Permit is a specific document and should not be confused with a Cleaning Receipt or a Cleanliness Certificate.

These two documents are provided in Appendix A.

Training

Tank entry is necessary for tasks such as inspection, maintenance and remedial cleaning.

Risks can be minimised by ensuring that personnel receive relevant safety training.

Training of personnel is a requirement for:

- Issuance of the Tank Entry Permit
- Entering the tank
- Providing safety assistance

All personnel, including employees and external contractors and inspectors, should receive the appropriate training required by Health and Safety Legislation.

Additional function specific training is required appropriate to the Service Provider's site and company policy.

Function specific training and qualification is also required for the Competent Person assigned to issue an Entry Permit.

External persons attending the Service Providers site e.g. Inspectors, Contractors, Clients

Appropriate training should be provided by the company employing the external person.

Service Provider contracts with external companies should include provisions for safety and training.

On arrival at the Service Provider's site, external persons should confirm in the Service Providers register the time of arrival and that they are trained in the required safety procedures appropriate for the planned tasks.

The register format should allow for a concise and efficient means of confirming safety training compliance.

The register should also indicate relevant safety information appertaining to the site and the emergency plan.

Tank Entry Permit (Certificate)

Prior to any person entering a Permit-Required Confined Space, an Entry Permit procedure is required.

An Entry Permit is a document where relevant data is recorded after assessing the risks.

Entry permit procedures require that a risk assessment is carried out, the atmosphere in the tank verified and safety measures put in place.

The Tank Entry Permit is a function-specific document required by Health & Safety Legislation. It is sometimes referred to as a "Confined Space Entry Permit" or "Entry Certificate".

Tank entry (confined space entry) legislation applies the same process to a wide spectrum of conditions that might be present on a Service Providers site e.g.

- Uncleaned tank containing residues of a dangerous substance.
- Cleaned tank that previously transported cargo classified as Dangerous Goods.
- Cleaned tank that previously transported non-regulated (non-dangerous) cargo.
- New manufactured tank that has not transported cargo but might contain inert gas
- Tanks where there is a risk of an oxygen deficient atmosphere

The Competent Person assigned to issue the Tank Entry Permit is required to assess the risks for each tank and specify safety measures to be taken appropriate to the prevailing conditions.

Competency of the person issuing the Tank Entry Permit

The permit should be issued by a Competent Person. A Competent Person is someone who has the combination of training, skills, experience and knowledge and has the ability to perform a task safely."

The Competent Person might be a Service Provider employee or an external surveyor or safety consultant. It might be appropriate to appoint an external expert for any tank identified by the Competent Person as a high risk and beyond the scope of competency.

National Health & Safety Legislation might require specific training or accreditation for the Competent Person. This might apply to specific risk levels.

Tank Entry Permit

The format of a Tank Entry Permit might vary, but should include at least the minimum content required by Health & Safety Legislation.

The Competent Person should complete all appropriate risk assessments and tests before completing the Entry Permit.

Fig. 1 Tank Entry Permit example:

Name and address of Service Provider:	
Entry Permit issued by company name:	
Tank no:	
Place of issue:	Date/time of issue:
Last cargo:	UN. No:
Purpose of tank entry:	
Test of tank atmosphere:	
Test type:	Result
Safety equipment required:	
A full assessment of the risks and hazards and appropriate safety tests has been undertaken. The tank is safe to enter.	
Valid from Date & time	Valid to date & time:
Name (Print):	Signed:

Factors to consider when assessing an Entry Permit

Tank entry risks vary widely ranging from a tank containing residues of a dangerous substance, to a tank cleaned of a last cargo of a non-regulated substance and issued with a cleaning document.

The process to determine a Permit Required Confined Space requires a systematic assessment of the risks to each tank.

Last cargo (substance)

Proper information of the last cargo.

- UN Number
- Proper Shipping Name
- Technical name – if the last cargo an N.O.S. substance (not otherwise specified)
- Technical name if the substance is not regulated (UN number not assigned) and is not explanatory from the shipping name

Note:

Abbreviations or proprietary (brand) names should not be used in place of the proper shipping or technical name. The last cargo notification should be a traceable document e.g. an electronic transmitted text, provided by a person who has verified knowledge of the last cargo.

Last cargo is important and essential information. In the event of an accident, precise and prompt information is required to be provided to emergency and medical responders.

Safety data sheet (SDS)

The SDS provides information of the assessed hazards and the required safeguards.

Refer to the SDS and take appropriate safety measures.

Tank cleanliness

Assess the condition of the tank.

If the tank has been cleaned, a cleanliness document should be available:

- Cleaning receipt
- Cleaning certificate / report

The initial cleaning process does not preclude the risk of contamination remaining in the tank.

The issuance of a cleaning receipt or cleanliness certificate is not a substitute for an Entry Permit. It is one of the relevant factors to consider in the assessment of a Permit Required Confined Space.

Atmosphere inside the tank

The presence of vapours from cargo residue or inert gas creates a hazardous oxygen deficiency atmosphere.

The atmosphere in the tank should be measured using a calibrated gas and oxygen meter to ensure that the tank is safe to enter.

This check should be undertaken as part of the Tank Entry Permit issuance and also immediately prior to entering a tank for the prescribed tasks

Note:

Before opening the tank to measure the atmosphere inside, check that the tank is safe to open e.g. not under pressure.

Purpose of tank entry

The purpose of the tank entry should be considered as this has a bearing on the safety measures that may be required e.g.

- Cleanliness inspection
- Structural Inspection
- Remedial cleaning of residues and stains
- Repairs - cold or hot work

Validity date time

The Entry Permit should be time-limited, commensurate upon the assessed risks.

For example, a tank assessed as safe to enter by the Competent Person for the purpose of remedial cleaning might be at risk of vapours developing during the works. This would require the Entry Permit validity to be limited. An entirely clean tank where access is for the purpose of visual inspection, might be assessed by the Competent Person to be safe to enter for a longer period.

Safety equipment

The Entry Permit should itemise the required safety equipment and procedures appropriate to the purpose of tank entry e.g.

- Gas and or oxygen meter
- Ventilation and breathing equipment
- Lighting
- Protective clothing
- Mask, goggles, etc
- Harness
- Alarm
- Safety watch attendant

Safety training exercises should be periodically undertaken, including training to remove an incapacitated person from the tank.

Alternative procedures to the issuance of a Tank Entry Permit.

Health & Safety Legislation in the country of use may provide for differentiation of tanks that are not Permit Required Confined Space.

OHSA define a Permit Required confined space as follows:

- Contains or has the potential to contain a hazardous atmosphere;
- Contains a material that has the potential for engulfing the entrant;
- Has an internal configuration that might cause an entrant to be trapped or asphyxiated by inwardly converging walls or by a floor that slopes downward and tapers to a smaller cross section; and/or
- Contains any other recognized serious safety or health hazards.

The Competent Person assessing the tank for safe entry should determine if the tank is a Permit Required Confined Space by a negative answer to each of the four “yes-no” statements.

Service Providers might devise an alternative documentation process if, after a systematic safe entry assessment, it is determined that the tank is not a Permit Required Confined Space.

For example, a tank might be assessed as safe to enter by the Competent Person who has carried out all the checks and risk assessment required for the issuance of a Tank Entry Permit.

In place of the issuance of a Tank Entry Permit an alternative procedure could be developed by the Service Provider, such as marking the existing cleanliness document with a safe to enter stamp or securely marking the tank with a safe to enter tag.

It remains necessary to undertake the risk assessment procedure for each tank but it might be appropriate to provide an alternative identification document to the Entry Permit document.

OHSA does not apply globally. National Health and Safety Legislation applies. Ensure that the tank entry procedure is compatible with legislation in the country of use.

Safe entry

In addition to the Entry Permit the Service Provider should safe facilities and equipment.

Working on the top of a tank – refer to ITCO TG04.

Ladder - Access to the inside of the tank is through a 50 cm diameter man-way. The ladder should include:

- Means to secure (to the tank man-way neck-ring) to prevent slippage
- Rubber feet to reduce slippage risk
- Length to suit the tank diameter
- Narrow width to provide sufficient space for a person to access

The ladder, being frequently moved in and out of tanks is vulnerable to damage. The ladder condition should be checked before use and maintained fit for purpose.

Harness – Commensurate with the risk assessment the person entering the tank should wear a harness which, should an injury occur, enable the injured person to be lifted from the tank.

Combined with the harness, a lifting frame or other suitable equipment is required to be available in readiness to be mounted above the manway to aid the removal of the injured person.

Identification of tank entry activity – During the period a person is present inside the tank a prominent mark or flag should be displayed to alert other persons of the activity. Periodic safety checks should be undertaken by a designated person.

Attendant - When the Entry Permit requires, a safety attendant should be present outside the tank and in readiness to raise an alarm in case of injury.

Appendix A

Cleaning Document.

The Cleaning Document is a written declaration that the tank container has been cleaned. Depending on the circumstances a cleaning document might be:

- Cleanliness Receipt (Wash ticket)
- Cleanliness Certificate /report

Cleaning Receipt (Wash Ticket).

A document issued by the Competent Person of a specialist cleaning contractor responsible for the tank container cleaning. The document states that the tank has undergone a cleaning process and is clean according to the standards and inspection process applied by the contractor.

Figure 2: Cleaning Receipt (Wash Ticket)

CLEANING COMPANY NAME AND ADDRESS:	
TANK IDENTIFICATION NO:	
PLACE OF ISSUE:	DATE/TIME OF ISSUE:
CLEANING PROCESS:	
LAST CARGO:	
U.N. NO:	
INSPECTION FROM THE MANLID	YES / NO
INSPECTION FROM INSIDE THE TANK	YES / NO
A visual inspection has been carried out and the interior of the tank, valves and fittings are free of contamination, previous cargo and odour. The tank is clean and dry.	
Name (Print):	Signed:

Cleaning (Cleanliness) Certificate

A document issued by a Competent Person e.g. an independent surveyor.

The Cleaning Certificate is issued after the Cleaning Receipt has been presented and requires a thorough inspection of the tank cleanliness.

Although commonly referred to as a "Certificate" the document is effectively a "Report".

Figure 3. Cleaning Certificate (Report)

SURVEY COMPANY NAME & ADDRESS:	
TANK IDENTIFICATION NO:	
PLACE OF ISSUE:	DATE/TIME OF ISSUE:
CLEANING COMPANY NAME & ADDRESS:	
CLEANING PROCESS:	
LAST CARGO:	U.N. NO:
EXTERIOR – FRAME, TANK WALKWAY, MARKINGS CLEAN OF CONTAMINATION	
	YES / NO
INTERIOR CLEAN OF CONTAMINATION & ODOUR:	
	YES / NO
VALVES, MAN-WAY, FITTINGS CLEAN OF CONTAMINATION & ODOUR:	
	YES / NO
REMARKS:	
INSPECTION FROM THE MANLID	
	YES / NO
INSPECTION FROM INSIDE THE TANK	
	YES / NO
A visual inspection has been carried out in good lighting conditions and the interior of the tank, valves and fittings are free of contamination, previous cargo and odour. The tank is clean and dry.	
Name (Print):	Signed: