

LivSafe is a conscious safety initiative of Liberty Videocon to help people live safer, secure lives through an education series of proactive and preventative suggestions in the safety arena. This document does not purport to promote any product, directly, or indirectly.

## 'Permit-to-Work' system for effective control of hazardous activity

### Overview

The necessity of having a 'permit to work' in an organisation can never be overlooked. A 'permit-to-work' system is a formal written system used to control certain types of work that are potentially hazardous, and entails a document which specifies the work to be done and the precautions to be taken. It forms an essential part of safe systems of work for many maintenance activities. Such a system allows work to start only after safe procedures have been defined and provides a clear record that all foreseeable hazards have been considered.

We at Liberty Videocon General Insurance value the importance of having a 'permit to work' at your facility or workplace and intend to suggest some useful measures to augment the same. We sincerely hope that the measures suggested in this document will help follow better practices when it comes to implementing a 'permit to work' system.



Source: [http://www.hsa.ie/eng/Your\\_Industry/Agriculture\\_Forestry/Other\\_Hazards/Fire\\_Electricity\\_Chemicals/](http://www.hsa.ie/eng/Your_Industry/Agriculture_Forestry/Other_Hazards/Fire_Electricity_Chemicals/)

### When are permit-to-work systems required?

A permit is needed when maintenance work needs to be carried out in absence of safeguards and in places where hazards are inevitable. For example; entry into vessels, hot work, work at height and high voltage, etc.

- Non-production work (e.g. Maintenance, repair, inspection, testing, alteration, construction, dismantling, adaptation, modification, cleaning, etc.)
- Non-routine operations
- Jobs where two or more individuals or groups need to co-ordinate activities to complete the job safely
- Jobs where there is a transfer of work and responsibilities from one group to another.

### Work permit is recommended for the following types of job

Areas where flammables, explosives and chemicals are used or stored and are the most likely places for a hazard to occur.

Following hazards need to be considered while preparing Emergency Response Procedure:

- Work of any type where heat is generated (e.g. by welding, flame cutting, grinding, etc.)
- Work which may generate sparks or other sources of ignition
- Work which may involve breaking containment of a flammable, toxic or other dangerous substance and / or pressure system
- Work on high voltage electrical equipment
- Entry and work within tanks and other confined spaces
- Pressure testing
- Work involving temporary equipment, e.g. generators, welding equipment, etc.
- Work at height
- Any operation which requires additional precautions or personal protective equipment (PPE) to be in place
- Any other potentially high-risk operation.

### Essentials of permit-to-work systems

#### Display

Copies of a permit-to-work should be displayed:

- At the work site, or in a recognised location near to the work site
- In the central or main control or permit co-ordination room,



- with additional copies at any local control rooms
- In addition, a copy of the permit should be kept with the issuing authority or with the area authority if that person is not located at the worksite or control room.

## Suspension

Work may sometimes have to be suspended, for below mentioned reasons:

- If there is a general alarm
- For operational reasons, when the permit is for hot work while process fluid or gas sampling are carried out at the



same time, with the possibility of a release of a dangerous substance

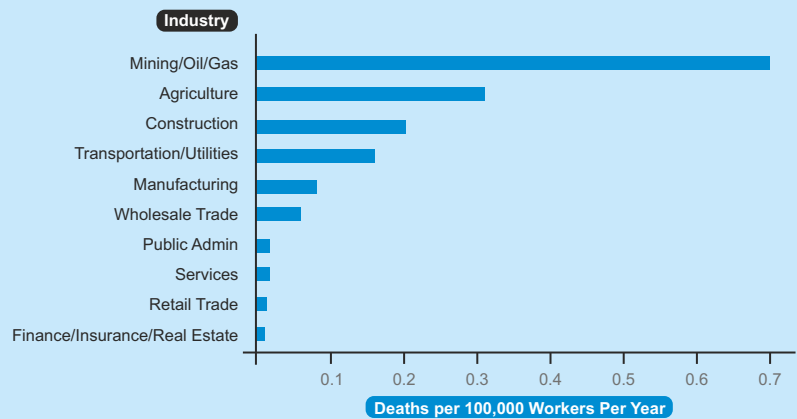
- While waiting for spares
- There is a change to the nature or scope of the work
- Where there is conflict with another scope of work.

## Safety Tips to ensure the implementation of effective 'permit to work' system in an organisation

- The period of validity, in terms of the date, start time and completion time should be mentioned on work permit.
- The location of the work should be specified clearly in terms of the plant, plant area, building, vessel or equipment.
- Respective unit head shall issue the appropriate authority limits for various types of permits as suggested by the committee .
- In case of electrical work, authority should request electrical section for electrical isolation in prescribed permit.
- All copies of permits should be collected, signed and returned to the issuing authority after completion of the job by the recipient of the permit. It is to be ensured that the area has been cleared of all debris, scraps, additional materials, etc. and all temporary electrical connections have been removed.
- A minimum number of two fire extinguishers should be available for each hot work within 8 metres from the place of work.

## Statistics

- During a recent five year period, FM Global reported that after Arson and Housekeeping, Hot Work was the third leading cause of fires in FM insured properties with an average fire loss totaling \$1.4 million dollars per incident.
- There were 585 separate fatal incidents in confined spaces from 1980-89, claiming 670 victims. 12% of these fatal incidents involved multiple victims.



## Case Study

### Case Study 1

Contractors were engaged in demolishing redundant oil storage tanks in a tank farm on an oil blending and storage site. A pump house was in operation in the vicinity and the occupier was aware of the fire risk. A method of work was agreed with the contractors which involved cold cutting those parts of the tanks nearest to the pump house and taking them to a safe place on site for hot cutting into smaller pieces. A permit-to-work was not issued and the agreed procedures were not documented. The contractors did not follow the agreement and began hot cutting the tanks close to the pump house. Flammable vapours from the pump house were ignited and the resulting fire caused considerable damage to the plant. Five firemen were taken to hospital suffering from the effects of the fumes.

### Learning

A permit-to-work should have been issued for this job and the work monitored by the client to make sure the contractor stuck to the agreed method.

### Case Study 2

A major vapour cloud explosion at a chemical complex in Pasadena, USA in 1989 killed 23 people and injured 300. The incident occurred during maintenance work on a reactor vessel which was being carried out by a maintenance contractor. During the investigation, it was discovered that there was no effective permit-to-work system in operation that applied to both company employees and contractors. This lack of an effective system led to a communication breakdown and work taking place on unisolated plant.