



Systemic Safety Alert
Hot Work on Metal Tanks/ Containers with
Flammable/ Combustible Substances/ Residues

Major systemic safety problems

Hot work such as arc welding or flame cutting on metal tanks or other containers that contained or have contained flammable/ combustible substances/ residues may ignite the substances/ residues, resulting in fire or explosion. Workers carrying out the work or working nearby would be seriously injured or even dead. The following are the major systemic safety problems attributed to the occurrence of the relevant accidents:

- failure to eliminate or substitute hot work process with a safer method;
- failure to conduct task-specific risk assessment;
- failure to formulate or implement appropriate and adequate risk control measures to remove/ purge of flammable/ combustible substances/ residues if hot work process could not be avoided;
- failure to provide adequate safety information, instruction, training and supervision to employees concerned; and
- slack in control and monitoring to ensure that risk control measures are strictly followed and stay effective.

Accident prevention measures

Registered Safety Officers (RSOs) should advise their employers/ clients to:

- (i) eliminate or substitute the hot work process by a safer method so far as practicable, such as using a new tank/ container rather than repairing the old one, or adopting cold repairing or cold cutting by epoxy resin sealing or hydraulic/ pneumatic cutting to replace hot work;
- (ii) appoint a competent person to conduct task-specific risk assessments to identify all potential hazards associated with the work, especially fire and explosion hazards caused by the high temperature of electric arc/ flame cutting used or hot slag and sparks of molten metal produced, having regard to the nature of work, the work environment and the work activities in the vicinity;
- (iii) if carrying out hot work is unavoidable, formulate proper and adequate precautionary measures before commencing the work with due regard to the



results of risk assessments, including but not limited to:

- obtain all necessary information about the tanks/ containers to ascertain whether they contained or have contained flammable/ combustible substances;
- ensure that the tanks/ containers are free from any flammable/ combustible substances/ residues by:
 - fully draining off flammable/ combustible substances/ residues from the tanks/ containers;
 - removing the residues from the tanks/ containers by washing with suitable solvents and purging with inert gas, or using hydraulic or hot water/ steam wash, with additional and appropriate safety measures taken for any possible causing of other hazards associated with solvent, gas or hot water/ steam;
 - ventilating the tanks/ containers for prolonged period or forced ventilate them as appropriate to remove any residues; and
 - inspecting the tanks/ containers to ensure all flammable/ combustible residues are removed, including any solid material or non-volatile liquid.
- (iv) provide all workers/ employees involved with necessary safety information, instruction and training and ensuring that they are familiar with safe working procedures and safety measures; and
- (v) establish and implement an effective monitoring and control system to ensure all safety measures are strictly followed and stay effective.

Registered Safety Auditors (RSAs) should take into account these systemic safety problems and accident prevention measures in executing safety audit functions.

DISCLAIMER

This Systemic Safety Alert is issued to draw the attention of interested parties to the relevant systemic safety problems and accident prevention measures necessary to protect people engaging in similar works activities. The material contained in this Alert constitutes general guidance only. It does not reduce, limit, or replace, any legal obligations upon any person to comply with any statutory duties under relevant legislation. Users such as Managers and Supervisors should make their own evaluation of the information contained in this Alert to determine if it can be applied to their own situations and practices. The Labour Department does NOT accept any responsibilities for any loss or damage resulting from the use of or failure to use the information contained herein.