



## Work Safety Alert Gas Poisoning in Underground Cooling Main

1. **Date of Accident :** September 2023
2. **Place of Accident :** An underground cooling main
3. **Summary :**

Two workers were suspected to have been injured by inhaling hazardous gases while conducting pipework inside an underground cooling main. Both workers were certified dead later in the hospital.

### **4. Work Safety Alert for Contractors/Proprietors/Employers :**

Workers working inside an underground cooling main may be exposed to various risks relating to confined space work. Contractors/ proprietors/ employers/ employees undertaking pipework inside enclosed underground facility should follow the Factories and Industrial Undertakings (Confined Spaces) Regulation<sup>1</sup>, Code of Practice for Safety and Health at Work in Confined Spaces<sup>1</sup>, and relevant safety and health legislation and guidelines, to ensure the safety and health of workers while working inside the confined space.

Gas poisoning may occur as a result of improper identification of the atmospheric hazards in enclosed underground facilities and disregard of safety procedures. Contractors/proprietors/employers undertaking pipework should:

- appoint a competent person to conduct task-specific risk assessments, taking into account the nature of the work, emergency situations and rescue operations before the commencement of the work;
- if the assessments identify risks of serious injuries, loss of consciousness or asphyxiation, avoid man-entry into the facility;
- if man-entry into the facility cannot be avoided, formulate and implement an effective safe system of work which should include, but are not limited to, the following:



- implementing a permit-to-work system, having all necessary safety precautions taken and certified in writing with the period during which workers may remain safely inside the facility specified, before any workers are allowed to enter the facility;
- conducting effective purging and thereafter air monitoring to ensure that any hazardous gases, fumes or vapours have been removed before allowing workers to enter the facility and work therein;
- taking effective steps to prevent ingress of any hazardous gases, fumes or vapours into the facility;
- providing forced ventilation to remove any hazardous substances and to maintain sufficient fresh air supply while workers are at work in the facility;
- ensuring that only those workers with suitable training and experience are allowed to enter the facility for work and providing them with adequate information and instruction;
- ensuring that workers entering the facility use suitable personal protective equipment as appropriate, including approved breathing apparatuses and safety harnesses connected to lifelines that are strong enough to enable each of them to be pulled out;
- avoiding workers working alone and assigning a stand-by person to station outside the facility throughout the time of operation to maintain communication with the workers inside;
- ensuring effective communication among the workers working inside and outside the facility;
- formulating and implementing proper emergency procedures, including provision of sufficient and suitable rescue equipment and presence of a rescue team that is commensurate with the scale of the task;
- instructing the standby person not to enter the facility even in case of emergency, who should remain stationed outside the facility and summon assistance of the rescue team and public emergency services (i.e. the Police and the Fire Services); and



- exercising effective monitoring and supervision to ensure that the above safety measures are fully implemented and strictly followed.

## 5. References :

- [Five Steps to Risk Assessment](#)<sup>1</sup>
- [Safe Systems of Work](#)<sup>1</sup>
- [A Brief Guide to the Factories and Industrial Undertakings \(Confined Spaces\) Regulation](#)<sup>1</sup>
- [Code of Practice for Safety and Health at Work in Confined Spaces](#)<sup>1</sup>
- [Breathing Apparatuses Approved by the Commissioner for Labour for Use in Confined Spaces](#)<sup>1</sup>

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### DISCLAIMER

This Work Safety Alert (“the Alert”) is issued at the earliest possible opportunity after a serious accident with a view to drawing the attention of interested parties to the general safety precautionary measures necessary to protect people engaging in similar work activities. The material contained in the 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 the 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 of the information on the Alert.

Note: The material contained in the Alert is not exhaustive, and will be supplemented/ adjusted where necessary if more relevant information comes to light.

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<sup>1</sup> Click to view document