

COMMON HAZARDS ASSOCIATED WITH DIGGING

RISK CONTROLS FOR:

Confined spaces with build-up of gas and fumes

- Using suitable ventilation and dust extraction systems.
- Monitoring atmospheric conditions.
- Developing rescue procedures including use of self-rescuers.
- Having training and certification for work in confined spaces.
- Using Personal Protective Equipment (PPE).

Rock falls

- Inspecting the tunnel regularly and scaling where needed.
- Mechanically scaling and bolting.
- Installing ground support with overhead protection.
- Changing ground support methods.

Failure of floor or roadway

- Providing hard floor and roadway surfacing.
- Ensuring drainage.

Scaling

- Using mechanical equipment and/or overhead protection.
- Working from an elevating work platform basket or an area of supported ground.

High water and mud inflow

- Grouting old drill holes.
- Pre-grouting before excavation starts.
- Injecting grouting ahead of the face.
- Probing, drilling and draining.
- Dewatering and pumping from surface bores.
- Using other forms of ground treatment, for example, freezing.
- Installing sump and drainage systems.
- Setting limits on maximum height of water and mud flow during work, for example, less than boot height.

Gas inrush

- Increasing face ventilation and extraction.
- Probing drill hazard areas through check valves.
- Monitoring for gas.
- Installing automatic plant cut-off and flame-proofing plant in possible flammable atmospheres.
- Restricting smoking to designated areas.

Falls from height

- Planning and implementing tasks in accordance with *Code of Practice: Managing risks of falls at workplaces*.
- Using guardrails wherever possible, for example, on maintenance platforms and landings.
- Using fall-arrest systems.
- Using PPE.

Loss of lighting

- Providing emergency lighting and cap lamps.

Moving plant

- Isolating and restricting contact with moving plant.
- Using audible plant reversing alarms and spotters for vehicle movements.
- A system to warn workers when plant is reversing or special loads like explosives are being moved.
- Providing lighting for safe movement.
- Planning vehicle and pedestrian movements.

Manual tasks such as handling air tools, drill rods, supports and cutters

- Selecting lighter plant and equipment.
- Using mechanical equipment with automatic feed, lifting aids and vibration insulation on handles.
- Implementing lifting procedures, engineering and ergonomic solutions and manual handling procedures and training.

Heat stress

- Reducing use of high heat output machinery.
- Increasing ventilation.
- Providing air-conditioned offices, meal rooms and cool water.
- Using cool suits.
- Heat acclimatisation strategies.
- Scheduling frequent rests.

Noise

- Insulating plant.
- Using hearing protection.
- Silencing engines to achieve a noise level not exceeding LAeq 85 dba at a distance of 1 metre.

Dust and hazardous chemicals

- Increasing face extraction ventilation.
- Using water sprays on cutting equipment or over muck heaps and spoil conveyors.
- Providing information, i.e. Safety Data Sheets (SDS).
- Spill kits.
- Using PPE.

Electricity

- Installing hazard reducing devices such as cut-out, earth-leakage and isolating devices.
- Back-up power supplies in case of power loss to critical systems like ventilation, pumping, emergency lighting and fire fighting systems.
- Inspecting equipment before use.
- Implementing lock-out procedures.

Fire or explosion, flammable gases and vapours

- Eliminating ignition sources underground, where practicable.
- Isolating fuel sources from remaining ignition sources.
- Removing potential fuel sources from the work area.
- Monitoring atmospheric conditions.
- Storing only necessary fuel underground.
- Implementing fire fighting training and procedures.
- Ensuring availability of fire fighting resources.
- Restricting smoking to designated areas.
- Using a hot work permit system.