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www.dmp.wa.gov.au/ResourcesSafety

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The advice provided in this pamphlet is basic safety and health information. Ensure you are familiar with your site procedures and, if uncertain, discuss this information with your supervisor and safety and health representative.

Rockfalls underground



THE HAZARDS

Rocks from the backs, walls and face of an underground excavation can fall into the workplace if the ground is not adequately supported.

The two most common types of rock failure are:

- loose blocks falling or sliding from the rock surfaces of an underground excavation
- ejection of rock from the rock surfaces due to failure of the rock mass by mining-induced stresses. This is usually noisy, with cracking, banging and popping sounds easily heard.

The potential for rockfall can be increased by:

- seismic events
- exposure of rock to air and moisture
- blasting, drilling or vehicular vibration
- changes in rock stress
- deterioration of ground support.

WHAT CAN HAPPEN

Rockfalls can result in entrapment, injury and death. They can also damage vital services such as ventilation and power distribution.

SAFE WORK PRACTICES

- Use controlled drilling and blasting methods to minimise excavation blast damage. Check methods with your supervisor
- To check the newly blasted area, stand well back on level ground under a safely supported roof. Wash down the backs, walls and face of the workplace to expose the clean rock surface
- Ensure lighting is adequate to allow thorough inspection of the rock surfaces in the backs, walls and face
- Look for planes of weakness in the rock — they will be visible as flat surfaces, steps or cracks in the rock surface, and may also contain soft clay-like materials. Any long (more than 2 m) continuous plane of weakness that runs the length or width of the excavation should be treated with caution
- Be aware that small, potentially loose, blocks can be formed by short joint lengths or other planes of weakness
- Look for shallowly dipping planes of weakness in the backs that may form large, thin, flat slabs
- Look for intersecting planes of weakness in the backs that dip in opposite directions, which can form unstable blocks or wedges in the backs
- Look for steeply dipping, well bedded rocks in the side walls — large flat slabs can topple or fall off the side walls
- Look for stress-induced spalling of thin rock slabs from the perimeter of the opening
- Follow site scaling procedures to sound the backs, walls and face of the workplace for possible loose rock. Remove loose rock with the scaling bar or other scaling equipment in a thorough and systematic manner
- When scaling loose rock, do so from beneath proven safe ground, working towards “bad” ground. Always ensure ground is level underfoot and behind you in case urgent retreat is required

- If necessary, mark (using a standard method) potentially unstable blocks and slabs that may require support by rock bolting
- With very large, potentially unstable blocks it may be necessary to use drill-and-blast methods to remove them. Check with your supervisor
- Install ground support and surface protection such as mesh and shotcrete as you go up to the face and before entering an unsupported area
- Look for any changes over time in the ground conditions in all access ways and work areas, such as recent rockfalls, appearance or disappearance of water, fresh cracking or unexpected rock noise. Report any concerns or relevant observations to your supervisor
- Report all rockfalls, no matter how minor
- Report to your supervisor any deterioration in the ground support, such as corrosion, failed bolts, missing plates, damaged mesh, broken straps and spalling shotcrete
- Tape off any areas of concern until they are deemed safe to enter

For further advice, refer to regulation 10.28 — Geotechnical Considerations of the Mines Safety and Inspection Regulations 1995, and the *Geotechnical Considerations in Underground Mines* and *Underground Barring Down and Scaling* guidelines, and *Surface Rock Support in Underground Mines* code of practice available at www.dmp.wa.gov.au/ResourcesSafety

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