



GOVERNMENT OF
WESTERN AUSTRALIA



WorkSafe
Western Australia

Old mine workings



To report a dangerous old mine working or for more information contact the Department of Energy, Mines, Industry Regulation and Safety, Abandoned Mines Program at AbandonedMines@dmirs.wa.gov.au

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WSMar24_310

STAY OUT AND
STAY ALIVE!



Abandoned mine workings are part of the heritage of Western Australia. Historically, mines were constructed and maintained to be safe only while they were in operation.

In the early days of mainly small-scale mining, the abandonment process was not always well performed – when the early mine operators departed in search of fresh deposits, they often left mine openings uncovered, allowed water to flood the workings and blocked ventilation shafts. Support structures, timbers and ore pillars may have been left to deteriorate or even removed.

Even where the abandonment was done properly, deterioration over many years has led to potential hazards being created as precautions put in place at the time gradually age and become less effective.

Abandoned mine workings are a serious hazard to any outdoor recreational activity, particularly if using bicycles, motorbikes or motor vehicles.

WHAT ARE THE HAZARDS?

Mine openings and tunnels are the most frequently encountered abandoned mine hazards. When many older underground mines were abandoned, their entries were not adequately sealed. Open tunnels and shafts are very hazardous. People who enter abandoned mines expose themselves to serious injury or death. Dangers and hazards within the mines may include:

- poisonous or explosive gases
- lack of oxygen
- floods and slippery slopes
- rockfalls and roof collapse
- hard-to-see vertical shafts
- venomous animals
- confusing mazes of tunnels.

These problems are made worse by the total darkness within underground mines.

Old, abandoned open pit mines and processing plants are also hazardous, with the main dangers being falling rocks, landslides and collapsing structures.

Old mines conceal a multitude of potentially lethal hazards. There is a real risk of people being killed or seriously injured in abandoned mines.

Mine openings

Falling down vertical or near-vertical openings in abandoned mines has the potential to cause serious injury or death. Vegetation, darkness, loose debris and false floors can hide vertical openings. Weathered rock at the edge of an opening can break away and slide into the open hole under a person's weight.

Deadly gases and lack of oxygen

Lethal concentrations of methane, carbon monoxide, hydrogen sulphide and sulphur dioxide can accumulate in the underground workings. Pockets of still air with little or no oxygen can be encountered. The process of weathering (oxidation) of certain minerals can literally consume a significant proportion of the oxygen normally present in the atmosphere. By the time people feel ill, they may be unable to react appropriately to remove themselves from the hazard.

Cave-ins

Old mine workings are potentially unstable and can cave in at any time. The effects of blasting and weathering can weaken strong rock. Work to stabilise rock walls may become less effective over time.

Unsafe structures

Old and disused underground or surface support timbers, ladders, buildings, pumps, tanks, and other mining related structures may seem safe but can easily collapse or crumble under a person's weight.

Unstable explosives

Although explosives are supposed to be removed or disposed of on mine closure, deteriorating explosives that have been left in place on abandoned operations are occasionally encountered. Unused or misfired explosives may be deadly. Old explosives containing nitro-glycerine become unstable, and a very small disturbance can trigger an explosion.

Highwalls

Highwalls are created during surface mining as the sides of hills or material from pits below the natural surface are removed to expose ore during the mining process. Rock walls

resembling cliffs remain at the point where the mining excavation ceased. These highwalls can be unstable and prone to collapse.

Waste rock heaps

Waste rock heaps from surface and underground mines may become unstable. The most common causes of landslides or slips include:

- steep slopes
- saturation of slopes by water from mine sources or natural aquifers or rainfall
- the inherent instability of the disturbed materials.

Landslips can engulf people, result in injuries from falls, damage roads and buildings, and block the paths of creeks, causing upstream flooding.

Under no circumstances should waste rock heaps be used as recreational jump sites.

Water hazards

Many abandoned mines become flooded. Shallow water can conceal sharp objects, drop-offs, and other hazards. Do not swim or dive in flooded old mine workings because:

- the water may be very salty or acidic, causing skin irritation, or contain microorganisms that can cause illness and infection
- there may be unseen hazards from abandoned equipment or rockfalls
- extreme temperature gradients are possible within the body of water, which may cause muscle cramps or other physical problems in the swimmer.

Radioactivity

Some mined minerals may have contained radioactive elements such as uranium and thorium, and many mines may contain radon, a radioactive gas. The effects of radiation exposure are cumulative through a lifetime, so potentially any exposure may be harmful.

Rescues

Mine rescues are extremely hazardous. Mine rescue teams, despite their extensive training, are at significant risk every time they have to enter an abandoned mine.

The advice is simple:

**STAY OUT AND
STAY ALIVE!**