

## Activities on Narrow Benches at Mines and Quarries

In the past few years, a fatality and several high potential incidents have involved persons driving or falling over the edge of excavations at mines and quarries. These incidents involved a variety of equipment performing different tasks at different locations. All were potentially fatal.

The fatal accident occurred several years ago at a small open cut copper mine in north Queensland when an air trac drill rig toppled over the edge of a narrow bench and came to rest approximately 20 metres below. The driller was killed. The accident investigation concluded at least seven simultaneous defences failed and contributed to the accident. These failures related to:

**Mine Design.** The bench was too narrow for safe operation, particularly to allow construction of adequate safety bunds on the edge of the bench for the equipment being used. The compromised narrow bench design was to compensate for a narrowing orebody and the steeply sloping terrain.

**Hierarchy of Risk Controls.** The bench as designed had an engineering control of safety bunds on the bench edge. For operating expediency and because of the narrowness of the bench, this control was replaced by an inadequate procedural control of daily inspections by the supervisor.

**Housekeeping.** The bench floor contained a number of loose rocks which were not cleaned off the bench. These ultimately became an unstable operating platform for the air trac.

**Stability of Equipment.** The air trac was operated beyond its limit of stability. The boom was fully extended and swung to the side towards the bench edge.

**Operator Experience.** The operator was inexperienced. He had less than two months experience on an air trac and less than three months experience at a mine.

**Supervision.** The supervisor had not assessed the risk of the air trac operating on a narrow bench on loose rocks, particularly with the boom fully extended.

**Training.** There was no documented training assessment for operation of the air trac.

All mines and quarries should complete a comprehensive assessment of the risk of falling from height, particularly from benches, and must ensure that appropriate facilities are provided to minimise the risk to persons from falling. The risk assessment should include consideration of:

- existing site conditions, particularly topography, geology, and environmental conditions;
- mine design, taking into account geotechnical considerations, minimum bench width, bench height, batter angle, overall pit gradient, haul road width and gradient, ramp width and gradient, and drainage;
- mine sequencing/scheduling;

- housekeeping on the benches, particularly the need for even floors for both tracked and rubber tyred equipment;
- the design and construction of adequate safety bunds;
- operating equipment and future equipment selection;
- the effectiveness of procedures for all activities conducted in proximity to excavation edges, including inspection/view points, working benches, and dump locations;
- training and familiarisation given to visitors and workers required to be in near excavations, and
- the suitability and location of infrastructure – for example, lighting plants and their impact on visibility.

**Roger Billingham**  
**Chief Inspector of Mines**

Contact: Julie Dryden, Inspector of Mines, +61 7 4760 7407

Please ensure all relevant people in your organisation receive a copy of this safety bulletin. Any such advice supplied to site should reach those who require it, and it should also be placed on the mine notice boards.

See more Safety Alerts and Safety Bulletins at  
[www.dme.qld.gov.au/mines/safety\\_information\\_bulletins.cfm](http://www.dme.qld.gov.au/mines/safety_information_bulletins.cfm)