

Significant Incident Report

Mines Inspectorate

Significant incident report no. 77
12 May 2011

Opal miner dies from engulfment in mullock

Mine Type: Metalliferous mine — surface or underground gemstone

Incident: An opal miner, working alone in old shallow underground workings on a mining claim, was removing mullock used to backfill a shaft, by hand. The material flowed and engulfed him. He was unable to extricate himself and was found dead, buried up to his neck in the mullock.

Equipment: Pick and shovel

Hazard: Engulfment by uncontrolled movement of mullock

Cause: Removing material from the bottom of the mullock pile caused the angle of the pile to steepen. As more material was removed, the pile, unable to support the weight of mullock backfilling the shaft, collapsed and flowed into the workings.

Comments:

- To access old workings located 3.5 m below the surface, the miner had removed material from a previously backfilled shaft. The sides and collar of the shaft had not been secured after re-opening and over time loose material had fallen to the floor, possibly blocking his retreat.
- The backfilled shaft mullock pile in the 1.2 m high workings was close to the bottom of the miner's access shaft. It was composed of loose, unconsolidated, dry and fine rock. A small heap of mullock had accumulated between the working miner and the bottom of the access shaft, reducing the height of the workings there and partially blocking his access and retreat.
- The workings were supported by original timber props installed when they were mined about 80 years ago. A number of large rocks had fallen from the sandstone roof and were lying on the mullock pile and on the floor of the workings, indicating that the ground support was inadequate.
- The miner had an informal 'working alone' arrangement with two of his neighbours, but on the day of the incident this arrangement did not work as both neighbours were away. It is possible that the miner's absence went unnoticed for up to 48 hours.
- The miner had a solar-powered battery light to provide lighting, but it was inadequate for the task.
- The mullock pile on top of the backfilled shaft on the surface did not slump as a result of the material flowing into the underground workings. This indicates there is now a void in the shaft, which is a subsidence and engulfment hazard to anyone walking on the muck pile on the surface.
- There were a number of unprotected open shafts and excavations on this claim that made access around the claim hazardous.
- This is the second engulfment of an underground opal miner due to removal of part of a mullock pile from a backfilled shaft. Fortunately, in the first incident the miner was rescued by another miner working with her, who was able to remove the material covering her face and chest.



View of the underground workings where the opal miner was engulfed

The mining claim where this fatal accident occurred has been barricaded by the Mines Inspectorate to restrict access to the open shafts and excavations on the claim.

Recommendations:

1. Be aware of the location of any backfilled shafts that may intersect your workings as a result of your mining activities and record the location on your mine plan.
2. Do not disturb backfilled shafts in underground opal mine workings using hand-mining methods.
3. Do not disturb backfilled shafts in underground opal mine workings using mechanical excavation equipment without first conducting a risk assessment and implementing appropriated risk control measures to guard against the engulfment hazard.
4. Install appropriate ground support to prevent rock falls from the roof.
5. Ensure adequate lighting is provided and maintained to enable you to see what you are doing and to monitor any change in the underground conditions.
6. When working alone, implement a robust 'working alone' procedure to ensure you are checked on at appropriate intervals and so receive timely assistance if you are injured or trapped.
7. Restrict access to mullock heaps on top of backfilled shafts because there may be voids in the material that could cause a collapse.
8. Support the sides and collar of access shafts appropriately, to prevent shaft collapse into the workings.
9. Either backfill or install a structurally sound cover over any abandoned or open shaft.
10. Install bunds around all excavations being worked to prevent people falling into them, place clear signage warning of the fall hazard and backfill any excavations that have been abandoned.

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