

REMEDICATION AND CLOSURE OPTIONS

At a minimum, abandoned mine openings should be identified with warning signs to alert individuals travelling in the area to their presence. However, to reduce or eliminate the hazards associated with abandoned mine openings, the openings should be:

- fenced to keep people away from the hazard;
- barricaded to restrict access; or
- sealed to prevent entry.

Securing Mine Openings

While signs and barriers can serve to warn individuals about the hazards of mine openings, they do not prevent access and eliminate the hazard. Physically securing a mine opening with a barricade or sealing with backfill are the only effective ways to reduce or eliminate any danger to the health and safety of the general public. Before a method is selected to secure a mine opening, it is important to assess:

- the level of hazard;
- the potential future economic or historical value of the mine opening; and
- the associated cost of the closure method.

The effective life of the selected closure method must also be considered. Typically closure methods are classified as temporary, long term and permanent in nature.

Temporary Closure Methods:

Temporary closure methods prevent deliberate or accidental entry into a mine opening, but do not alter the general condition of the opening. These closure methods are generally the least expensive and are applicable to openings which present a hazard but which also have potential future economic and/or historical value. Appropriate closure methods to temporarily seal off a mine opening include:

- fencing;
- wire screening; and
- steel grating.

Depending upon the nature of the method, temporary closure methods can remain effective for up to 20 years. Regular inspections and maintenance can often extend the life.

Long-Term Closure:

Long term closure methods seal and prevent entry into a mine opening, but still preserve the general condition of the opening. This method of closure is applicable to openings which present a hazard but which may also have potential future economic and/or historical value or where permanent closure is not practical. Appropriate long-term closure methods for mine openings include:

- pre-cast concrete caps;
- cast-in-place concrete caps;
- monolithic concrete caps; and
- native rock or concrete block bulkheads.

Long-term closure methods can remain effective for 30 to 50 years. Regular inspections and maintenance can often extend the life.

Permanent Closure:

Permanent closure methods completely close off an abandoned mine opening and eliminate access. This option is applicable to openings which present a significant hazard, are readily accessible to the general public, and have no economic or historic value. Appropriate methods to permanently seal a mine opening include:

- backfilling; and
- closure through blasting.

Permanent closure methods typically do not require inspection and maintenance.

Monuments

A monument should be positioned over the location of any abandoned mine opening which is backfilled or capped. The monument will assist in locating the closure area for future inspections and any required maintenance. The simplest type of monument is to use a concrete filled, rebar reinforced pipe which is embedded into the backfill or affixed to a concrete cap placed over an abandoned mine opening and extends above the surface. The protruding portion of the pipe can be surveyed to record its location or painted to enhance its visibility.