



S A F E T Y B U L L E T I N

ROCKBOLT FAILURES - UNDERGROUND

THE HAZARD

Over the past two years the Inspectorate has noted an increasing incidence of reports of rockfalls which have resulted from rockbolt failures due to corrosion. In most cases the bolts have been reported as the friction stabiliser type, which are particularly susceptible to corrosion due to their thin-shell construction.

Test work has shown that galvanised bolts of this design will also eventually corrode, although the life is extended compared to that of black steel bolts.

Many of the rockfalls were reported to be in declines or access drives, which are required to remain open and stable for long periods. The potential for rockbolt corrosion increases with time as well as the presence of corrosive conditions, (sulphides, water flow etc), and fully grouted bolts are warranted for such applications.

This hazard is both life threatening and insidious as the condition is not readily discerned and a false sense of security may be generated in underground personnel.

PRECAUTIONS

Existing Installations

All areas supported by friction stabilisers should be reviewed to determine when bolts were placed, and the condition of the bolts should be assessed. Under average conditions the friction stabiliser bolt may be expected to show substantial loss of strength after two years, but under adverse conditions bolts may corrode to failure within 6 months.

New Installations

The implications of the use of friction stabiliser bolts as the **sole** means of support in excavations with a long life expectancy should be carefully considered in the light of possible effects of corrosion. Their use for immediate placement prior to subsequent installation of 'permanent' support such as grouted dowels, cable bolts and shotcrete may be appropriate, but in any event, the ground control plan developed for extended-life excavations should deal with the issue of corrosion as it may impact on the integrity of both primary and secondary rock reinforcement elements.

J M Torlach
STATE MINING ENGINEER

19 June 1997