



# SAFETY ALERT

SAFETY ALERT NO. 51

**Queensland  
Government**

**Natural Resources  
and Mines**

Issued 29/06/2001 by Mines Inspectorate, Safety and Health Division  
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*Our Vision: "Our industries free from injuries and accidents"*

## **Pyrogen Canister Fire Suppression System Failure**

**MINE TYPE:** All Mine Types

**INCIDENT:** In order to work on the fire detection panel of a dragline fitted with a PyroGen Canister fire suppression system a technician powered the system down by disconnecting the backup batteries and isolating the 240 volt supply. At this time the dragline lost power and upon investigation it was found that the PyroGen canisters in the slipring enclosure had discharged and an electrical flashover of the 6.6 KV sliprings to earth had occurred. Furthermore the canisters had not discharged through the coolant in the correct manner but had burned holes in the sides of the canisters.



**EQUIPMENT:** PyroGen canister fire suppression system.

**HAZARD:** The PyroGen system is a pyrotechnically generated fire extinguishing aerosol system. Each canister contains a chemical which when ignited internally in the canister rapidly generates combustion products. These combustion products pass through a coolant mixture to limit their temperature to 250 degrees Celsius at the point of discharge.

In this instance the combustion process burned a hole in the canister wall allowing the combustion products to bypass the coolant mixture. Exposure to these hot combustion products appears to have initiated a breakdown of the electrical insulation and a high energy electrical fault.

**CAUSE:** PyroGen canisters have a normal service life of 10 years, but this can be reduced to 5 years when installed in harsh conditions. The vibration occurring in the slipring enclosure of a dragline would be considered as a harsh condition. This had not been recognised.

### **COMMENTS & RECOMMENDATIONS:**

That the conditions under which PyroGen canisters are installed be assessed and life expectancy reduced from 10 years where appropriate.

That a system of replacement of PyroGen canisters be implemented taking into account expected life.

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