



## Dangerous Goods Safety Significant Incident Report No. 02-18

### Fireworks technician injured in fireworks line-of-fire incident

#### Summary of incident

*Note: The Department of Mines, Industry Regulation and Safety's investigation is ongoing. The information contained in this significant incident report is based on materials received, knowledge and understanding at the time of writing.*

In December 2017, a fireworks technician was working at a fireworks display, which included both ground and aerial fireworks.

About 10 minutes into the display, the technician manually lit a 29 mm 52-shot fan-type ground firework. This type of firework produces a V-shaped fan effect when initiated. The shot tubes at each end of this specific fan firework were angled so that the fireworks were expelled at a trajectory with a particularly low angle to the ground.

After lighting the fan firework, the technician retreated backwards. Feeling that she was too close to an area where aerial fireworks were being initiated behind her, she stepped away, inadvertently moving into the line-of-fire of the fan firework, and was struck in the face by an unidentified projectile, receiving facial injuries.

*Note: Because of the low angle of trajectory of the shot tubes at the ends of this fan firework, a person can be in the line-of-fire even when they have moved several metres away.*



*The spent 29 mm 52-shot fan firework involved in the incident. The burn mark is unrelated to the incident and there was no evidence of malfunction.*

#### Direct factors

- The fireworks technician moved into the line-of-fire.

### **Contributory factors**

- The ground fireworks were manually ignited, requiring the technicians to be close to the lit fireworks.
- There was a lack of awareness about hazardous areas and the extent of the line-of-fire for all ground fireworks used at the display.
- The technician was not wearing a face shield.

### **Actions required**

Operators of outdoor fireworks displays are reminded of their duties under the *Safe use of outdoor fireworks in Western Australia – code of practice*. The following actions by fireworks operators will reduce the risks involved in fireworks displays.

### **Risk management**

- As part of a risk assessment, determine the type of initiation to be used for the display. To limit the need for close contact between operators and fireworks at the time of ignition, consider using electric initiation of fireworks where possible, practical and safe.
- When planning the set-up of fireworks displays, consider the line-of-fire and hazardous area surrounding each firework. If the display includes any manual firing, the display set-up must include sufficient safe space between the fireworks for operators to retreat after firing.

### **Safe practices**

- Instruct all technicians involved in a display on:
  - the risks presented by the fireworks they are working with
  - the location of all firework types within the set-up
  - safe and unsafe areas within the display zone.
- Provide sufficient personal protective equipment (including face protection) for workers performing manual firing.

### **Further information**

- Department of Mines, Industry Regulation and Safety  
Dangerous goods safety publications, [www.dmp.wa.gov.au/Safety/Dangerous-goods-safety-16164.aspx](http://www.dmp.wa.gov.au/Safety/Dangerous-goods-safety-16164.aspx)

*Safe use of outdoor fireworks in Western Australia - code of practice*

Ross Stidolph, Chief Dangerous Goods Officer

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