

Explosives Inspectorate



Explosives Inspectorate Quarterly Report - Q2 22/23

Chief Inspector of Explosives

Quarterly Message



1 - Hermann Fasching, Chief Inspector of Explosives

Happy New Year

On New Years Eve, many Queenslanders celebrated the New Year by attending organised fireworks displays. The Inspectorate received 133 Fireworks Display Notifications for the night from contractors and operators across the state.

Fireworks Display Exclusion Zones

During inspections of fireworks displays, inspectors have witnessed spectators breaching exclusion zones which creates the potential for harm to spectators, operators, and the public. The incident in NSW before Christmas highlights the potential risks to the community during fireworks displays. Although these incidents are rare, they can happen. While the investigation into the incident is still ongoing and the causes are not yet known, there are steps that can be taken to reduce the risk of harm in the community.

It is vital for contractors and operators to establish and maintain exclusion zones that are appropriate for the product being used.

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Deputy Chief Inspector of Explosives

2 - Dr. Snezana Bajic, Deputy Chief Inspector of Explosives

Near miss trend– A Closer Look

In 2021, The Queensland resource sector, including explosives, went through its second safety reset with the theme: "Chronic unease: improving safety culture through better hazard and incident reporting." Resets focused on building an industry culture of open and comprehensive reporting and investigation of near miss events, without fear, to encourage vigilance and diligence in hazard identification and control. It was based on comprehensive review of all fatal accidents in Queensland mines and quarries from 2000 to 2019, completed for RSHQ by Brady Haywood in 2019. It was found that near misses play a significant role in serious accidents and fatalities, where 9 fatalities had known near misses occur prior to the fatality. In some cases, prior fatalities had occurred in a similar manner.

These accidents are commonly combination of everyday straightforward factors, such as a failure of controls, a lack of training, and/or absent or inadequate supervision.

The Explosives inspectorate is concerned with an observed increase in reported near misses which lack recognition of the underlying system failures. Internal reports focus on "bad luck" or "human error", and the operation continues to operate without significant changes, with some minimal administrative corrective actions, which usually leads to another near miss in the future. Unless the system failures are recognised and significant changes are made, it will be not long before we see "bad luck" turn into serious accident.

The previous history shows that the industry goes through periods of reduced vigilance. What will the Explosives Inspectorate do? We will focus on few recommendations from Brady's review:

"Recommendation 4: The industry needs to focus on ensuring workers are appropriately supervised for the tasks they are undertaking.

Recommendation 5: The industry needs to focus on ensuring the effectiveness and enforcement of controls to manage hazards. Given the increasing Serious Accident Frequency Rate, industry should implement more effective controls (such as elimination, substitution, isolation, or engineering controls). A significant number of the controls reported put in place in the aftermath of an incident were administrative in nature.

Recommendation 11: The Regulator should adopt the High Potential Incident Frequency Rate as a measure of reporting culture in the industry. "

How does this translate into every-day operation? We will have a close look at workers' training and supervision. Rather than accepting investigation outcomes with administrative controls, compliance actions will mandate and focus on effective controls and their implementation, which will be confirmed through follow up inspections and audits.

A Best Practice Guide to Prevent Misfires has been published and should be used to assist with misfire investigations. We are continuing to see a large percentage of the misfire cause classification as "unconfirmed", and we would like to ask the industry to give more consideration to identifying the causes and report accordingly.

Incident reporting is assisting us to better understand early warning signs, and they are a great opportunity to identify hazards before they cause harm and ensure they are effectively controlled.

We have also observed increased reporting in the fireworks industry, which is demonstrating a positive move towards safety culture. The Explosives Inspectorate will work to simplify the reporting system which will encourage open reporting.

Reporting

Under the Explosives Act 1999, the Chief Inspector of Explosives must be contacted by phone (1300 739 868) immediately following certain events. A written follow-up notification must then be submitted within 48 hours.

Our mission is to regulate, educate and assist the explosives industry in meeting its obligations to protect and promote safety and health of persons from risks associated with explosives. It is imperative that incidents are reported, to allow the inspectorate to investigate and communicate learnings to industry where there is a hazard and controls are eroding or when these controls are ineffective.

Every unreported high potential incident (HPI) should be considered both a learning opportunity wasted, and a hazard left in play, waiting to cause an incident at some point in the future;

"a safety culture is a reporting culture in which people are prepared to report errors, near misses, unsafe conditions, inappropriate procedures, and any other concerns they may have about safety." (121 Hopkins, 2009, Learning from high reliability organisations, Sydney, CCH Australia Limited.)

Continuous learning from incidents is a key part of any High Reliability Organisation or Industry. The following types of incidents need to be reported:

- actual or apparent loss or theft of explosives
- attempted theft or security threat
- accidental explosion, fire or spillage
- death of or an injury to a person
- unexpected damage to property
- misfire or
- other event that has the potential to cause any of the above.

For more information visit <u>Reporting explosives incidents</u> | <u>Business Queensland</u>.



^{3 -} Explosives Incidents by Region - Q2

Incidents with significant unplanned detonation risks

Serious incidents reported this quarter include an unplanned initiation of explosives, multiple events with significant potential for an unplanned detonation risk, as well as two significant misfires resulting from unknown system issues with electronic initiation systems.

These events demonstrate that explosives activities are being conducted with an elevated level of risk. Under Section 32 of the Queensland Explosives Act 1999, "Any person who is doing an act involving explosives must take reasonable precautions and use reasonable care to avoid endangering any person's safety, health or property."

Everyone who in undertaking explosives activities review their current practices, to:

- Ensure that explosives activities are being conducted with an acceptable level of risk.
- Can physically account for the explosives throughout their entire lifecycle.

Large Scale Misfires

Two large scale misfires were reported in Quarter 2. The first large-scale misfire was caused by the use of series 1 and series 2 detonators in the same shot. The mine site was advised by their supplier that the use of both series detonators in the same blast was allowed.

Upon investigation, the detonator manufacturer identified that the series 2 detonators received the firing signal 140 milliseconds faster than the series 1 detonators. Given the unknown time differences for the detonators to receive the firing signal, the series 2 detonators initiated prior to the series 1 detonators programmed to initiate before some of the series 2 detonators. This caused 947 holes to not fire as planned.

The other large-scale misfire occurred when one of the bench boxes was configured to be in an incorrect synchronising mode. The incorrect synchronising setting resulted in 60 holes failing to receive a firing signal.

To prevent re-occurrence of such misfires, the following recommendations are made:

Explosives manufacturers and suppliers must ensure that full change management processes are undertaken when developing new versions of electronic initiation systems. This includes changes in firmware and signal processing times.

• Explosives suppliers should review electronic initiation system configuration settings, to ensure that synchronisation settings cannot be readily changed through menu settings.



4 - 60 blast holes not firing due to incorrect synchronisation setting on bench box

Fire on front end loader

An incident reported to the inspectorate involved a fire in the engine bay of a front-end loader used to undertake stemming activities. The Image below shows a loaded blast hole was approximately 10 metres away. It was noted that the loaded blast hole had been stemmed and an electronic initiation system had been utilised.

The loader was not fitted with any on-board, automatic fire suppression systems. The operator exhausted two extinguishers on the fire, however, smoke was still emitting form the engine bay. At this stage, the operator called an emergency and an evacuation was undertaken. A 600-metre exclusion zone was established, and a drone used for video surveillance of the scene, to determine when it was safe to re-enter the area. Preliminary investigations have identified that a cracked fuel line was most likely spraying diesel onto the turbo.

To prevent fires on plant and equipment around explosives, it is recommended that authority holders review risk management systems to consider:

• the implementation of on-board, automatic fire suppression systems for plant and equipment working in proximity to explosives; and

• maintenance regimes of plant and equipment, to ensure that potential fuel sources for fires are maintained in a serviceable condition.



5 - Fire on a front-end loader used for stemming activities approximately 10 metres from a loaded blast hole.

Complaints

Illegal Fireworks Complaints

Over the Christmas and New Year period, the inspectorate received an increased number of illegal fireworks complaints from the community.

It is illegal to make, keep or use fireworks (including firecrackers) without a licence in Queensland. Unlicenced use and possession of fireworks (other than unrestricted items such as sparklers, bonbons, streamer cones or caps for toy pistols), is an offence and carries a penalty. **Offenders can be fined up to** \$ 57,500 (400 penalty units), face 6 months imprisonment, and risk severe injury.

For penalty-free fireworks surrender call the Explosives Inspectorate on 1300 739 868 (24/7).

Members of the public can report illegal fireworks or make a complaint regarding a planned fireworks display by visiting: <u>Complaints about explosives or fireworks | Emergency services and safety | Queensland Government (www.qld.gov.au)</u>



6 - Types of Complaints Received - Q2

Statistics

Incidents by Industry, Activity or Location



7 - Incidents by Type across all industries



8 - Incidents - Above Ground Mining



9 - Incidents - Underground Mining



10 - Top 10 Causes of Misfires



11 - Causes of Misfire across all industries

Publications this Quarter

Safety Alert 107 - Electrical component failure on ammonium nitrate handling and transfer equipment

Explosives Safety Alert 107

Safety Alert 108 - Members of the public injured during fireworks display

Explosives Safety Alert 108

Interested in our other Safety Alerts? You can find them here: <u>https://www.rshq.qld.gov.au/safety-notices</u>

Best Practice Guide for the Prevention of Misfires in Blasting Applications

The best practice guideline provides practical guidance to prevent the generation of misfires associated with blasting activities in open cut, underground and civil applications. Version 1 of the BPG has been published to the <u>Business Queensland Website</u>.

Best Practice Guidelines - Prevention of Explosive Misfires | Resources Safety & Health Queensland (rshq.qld.gov.au)

National Safety Alerts and Publications

Western Australia - Department of Mines, Industry Regulation and Safety

Incident Alert: Ammonium nitrate emulsion tanker trailer explosion

Key Updates

Best Practice Guide for the Prevention of Misfires in Blasting Applications

The Best Practice Guideline (BPG) is the first stage of a long standing project that the Explosives Inspectorate is undertaking with industry experts. This guide will enable the resources industry to understand serious harm prevention methodologies to minimise the likelihood of an unplanned detonation of explosives. Expressions of interest for the working group for Version 2 of the guideline closed on 27 January 2023. We will finalise the membership of the working group by the end of May, Thank you for your interest.

Fireworks Industry Liaison Group Meeting

In November of 2022, the Explosives Inspectorate met with Queensland fireworks contractors to share information and learnings from incidents and inspections over the last few years.

What's new in Licensing?

SECURITY CLEARANCE STATUS

Due to an increase in the number of domestic violence orders being served to security clearance holders, a concerning trend has been identified that those security clearance holders have not been meeting their obligations under the Explosives Regulation 2017, section 18B and giving notice to the required notifiable persons.

A notifiable person, for the holder or former holder of a security clearance, means-

(a) if the holder or former holder is an employee of an employer who holds a security sensitive authority—the employer; or

(b) if the holder or former holder is a responsible person for a listed corporation that holds a security sensitive authority—each executive officer of the corporation; or

(c) if the holder or former holder is an executive officer of a corporation, other than a listed corporation, that holds a security sensitive authority—each other executive officer of the corporation; or

(d) if the holder or former holder is a partner in a partnership that holds a security sensitive authority—each other partner.

To assist with keeping industry informed of potential safety and security risks, the Explosives Inspectorate has been publishing a list of QESC numbers that have been cancelled, suspended or surrendered.

While the Inspectorate is intending to publish this information monthly, there is an obligation for employers to conduct their own suitability checks which can be undertaken via the <u>QESC status</u> <u>online portal</u>.

INCOMPLETE LICENCE APPLICATIONS

Due to an increased number of incomplete applications being received by the Explosives Inspectorate, there has been a review of our licence application process.

For **new applications** that have been submitted and determined to be incomplete, licensing officers will refuse to process the application and contact the applicant to inform them why the application has not been accepted for processing. The applicant must reapply and submit all required supporting documentation (including certified documents where required).

For renewal of an existing licence, the application will be accepted if it meets the following criteria:

- Renewal application form has been fully completed, signed and submitted **prior** to the expiry date of the licence.
- Payment has been made to renew the licence for 1, 3 or 5 years prior to the expiry of the licence. Renewal applications made prior to the expiry of the licence where supporting documentation hasn't been supplied, would prompt the chief inspector to request additional information from the person under section 16(1) of the Explosives Act 1999 (the Act) before the licence renewal application could be processed. Failure to provide this information within the 20-day charter period, will result in the renewal being refused and the licence expired because the holder does not meet the appropriateness requirements under section 15 of the Act.

The table below indicates how many licences have expired over the last 6 months and how many reapplications the licensing team have processed because the authority holder has not renewed by the expiry date.

License Class	Number Expired	Number Reapplied
Drivers Licence - Individual	7	0
Export	1	0
Fireworks Contractor	2	0
Fireworks Operator	19	3
Import	2	0
Manufacture Vehicle	9	0
Sell	6	0
Shotfirers	67	10
Store	4	1
Transport	60	9
	10	0



What's coming in Licensing?

SMARTFORMS for licence applications

The Explosives Inspectorate are seeking to improve the current licence application process from online PDF forms to a digital solution to improve end user experience. The implementation of SMARTFORMS will see the user complete the application, attach the relevant supporting documentation and also pay for the licence via BPOINT all at the same time whilst allowing digital submission of the application through to the Inspectorate.

The project is nearing completion and online applications will be available soon. More information will be provided on the implementation of SMARTFORMS in due course.

Upcoming Events

<u>The Institute of Quarrying Australia: QLD 2023 Quarrying & Mining Safety & Health Conference</u> - 2nd June 2023

The Queensland Mining Industry Health and Safety Conference - 20-23 August 2023

Contact Us

Explosives Inspectorate Contact Details Website

Resources Safety & Health Queensland (rshq.qld.gov.au)

24 Hour Explosives Inspectorate Hotline

1300 739 868 (manned by Explosives Inspectors)

Report an Incident

1300 739 868 (manned by Explosives Inspectors)

Electronically Report an Explosives Incident

Make a Complaint about Explosives or Fireworks

Electronically make a complaint

Explosives Licensing Team Phone during business hours: 07 3199 8023 Email: <u>explicensing@rshq.qld.gov.au</u>

Queensland Explosives Security Clearance Team

Phone during business hours: 07 3199 8023

Email: <u>QESC@rshq.qld.gov.au</u>

General Enquiries

Phone during business hours: 07 3199 8023 Email: <u>explosives@rshq.qld.gov.au</u>