

# Coal Mining Safety and Health (Explosion Barriers) Amendment Regulation 2021

Explanatory notes for SL 2021 No. 186

made under the

*Coal Mining Safety and Health Act 1999*

## General Outline

### Short title

*Coal Mining Safety and Health (Explosion Barriers) Amendment Regulation 2021*

### Authorising law

Section 282 of the *Coal Mining Safety and Health Act 1999* (the Act)

### Policy objectives and the reasons for them

The Act establishes a legislative framework with the objectives of: (a) protecting the safety and health of persons at coal mines, and persons who may be affected by coal mining operations; (b) requiring that the risk of injury or illness to any person resulting from coal mining operations be at an acceptable level; and (c) providing a way of monitoring the effectiveness and administration of provisions relating to safety and health under the Act.

The *Coal Mining Safety and Health Regulation 2017* (the Regulation) supports the operation of the Act by prescribing ways of protecting the safety and health of persons at coal mines; and achieving an acceptable level of risk in particular circumstances that expose coal mine workers to risks at coal mines.

The objective of the *Coal Mining Safety and Health (Explosion Barriers) Amendment Regulation 2021* is to provide for the installation and maintenance of active explosion barriers in underground coal mines, as alternative risk controls to passive explosion barriers, or in combination with passive explosion barriers, to suppress any coal dust explosion, and to limit its propagation to other parts of the mine.

A coal dust explosion is potentially the most catastrophic incident that can occur in an underground coal mine. Under section 300, the Regulation already includes requirements for the risk control of coal dust explosions. An underground coal mine's safety and health management system must provide for minimising the risk of a coal

dust explosion, suppressing coal dust explosion and limiting its propagation to other parts of the mine.

Stonedusting of roadways to a high standard, or use of alternative coal dust explosion inhibitors in underground coal mines is currently required under section 301 of the Regulation, to control the risk of a coal dust explosion.

Because stonedust is incombustible, it is spread on the roadways so that if an explosion occurs, stonedust mixes with the coal dust to quench any further more intense coal dust explosions.

Stonedust must be applied at a rate that prevents the buildup of too much coal float dust in the underground roadways, to control explosion hazards. However, modern production methods in underground coal mines can present challenges to ensuring sufficient stonedust is being consistently applied to roadways, to satisfy prescribed minimum standards.

In an underground coal mine, an initial explosion can be caused by spontaneous combustion, a fire, or an ignition of methane through other means such as frictional ignition. If stonedusting of roadways is insufficient, and the pressure wave from the initial explosion lifts the accumulated coal dust into suspension, the coal dust is then ignited by the flame front. This creates an explosion of a higher intensity and longer duration which continues whilst the airborne coal dust is ignitable.

Any resulting more intense coal dust explosion could lead to the loss of many lives as the explosion can potentially travel throughout the mine. In 2010, in the United States of America at the Upper Big Branch mine, an explosion of this type resulted in the loss of 29 lives.

Explosion barriers provide a second line of defence to the stonedust on roadways, should the stonedust on the roadways initially fail, to suppress and quench any coal dust explosion.

The *Coal Mining Safety and Health (Explosion Barriers) Amendment Regulation 2020* commenced on 1 January 2021, and requires underground mine managers to ensure that explosion barriers are installed and maintained; by 1 January 2022, to further reduce the risk of any coal dust explosion propagating through an underground coal mine. It provided guidance about the locations in an underground coal mine where passive explosion barriers must be installed and maintained, but did not cover active explosion barriers, as active explosion barriers were not considered sufficiently tested, and available at that time.

Active explosion barriers are now a tested, proven, and available alternative, to traditional passive explosion barriers, and can be used as an alternative to, or in combination with passive explosion barriers. Further amendments are required to provide for the minimum requirements for active explosion barriers.

The *Coal Mining Safety and Health (Explosion Barriers) Amendment Regulation 2021* provides that active explosion barriers can be installed and maintained instead of passive explosion barriers. Active explosion barriers can be installed and maintained on plant in a way that would prevent the propagation of a coal dust explosion to the roadways and places that would otherwise require the installation and maintenance of passive explosion barriers.

## **Achievement of policy objectives**

Section 303A of the Regulation initially covered where stonedust passive explosion barriers, as the main type of explosion barrier, would be installed and maintained. It did not specifically cover requirements for alternative, active explosion barriers.

Under section 303A of the Regulation, the underground mine manager for an underground coal mine must ensure that explosion barriers are installed and maintained in the part of each of the following roadways within an explosion risk zone one (ERZ1) in a part of the mine where coal is being extracted – a return roadway, a roadway with a single point of entry, a roadway in which a coal conveyor is installed.

The *Coal Mining Safety and Health (Explosion Barriers) Amendment Regulation 2021* amends section 303A of the Regulation, to also provide that alternatively, explosion barriers that are active barriers, devices, or systems may be installed and maintained on plant within an ERZ1 in a part of the mine where coal is being extracted, in a way that would prevent the propagation of a coal dust explosion to all of the following places: a return roadway, a single entry drive, and a roadway in which a coal conveyor is installed.

Section 303A of the Regulation is also amended to replace the reference to “a roadway with a single point of entry”, with the defined term “single entry drive”, to clarify the intention. “Single entry drive” is defined in the dictionary in schedule 9 of the Regulation.

The underground mine manager must also ensure that explosion barriers, whether active or passive explosion barriers, are installed and maintained in any other place identified by a risk assessment for the mine, other than a place at which an explosion barrier is already installed and maintained in compliance with section 303A(1) of the Regulation.

The definition of “explosion barrier” is to be amended to refer not only to a barrier, but to a barrier, device, or system, to recognise the possible characteristics of active explosion barriers, as a device, or system.

A tripartite technical working group updated the recognised standard for underground explosion barriers, to support the amendments providing for the alternative of active explosion barriers to passive explosion barriers, or in combination with passive explosion barriers.

The definition of “explosion barrier” still allows for any further technological innovation over time, or alternative types of explosion barrier, device or system.

An alternative explosion barrier, device or system can be used if it achieves a level of risk that is equal to or better than the acceptable level of risk achieved by an explosion barrier, device or system constructed, installed and maintained in compliance with a recognised standard for explosion barriers.

The *Coal Mining Safety and Health (Explosion Barriers) Amendment Regulation 2021* commences on notification.

## **Consistency with policy objectives of authorising law**

The *Coal Mining Safety and Health (Explosion Barriers) Amendment Regulation 2021* is consistent with the policy objectives of the Act. It assists in protecting the safety and health of persons at coal mines, and in ensuring the risk of injury or illness to any person from coal mining operations is at an acceptable level.

It does this by allowing for active explosion barriers as an alternative to passive explosion barriers, to suppress any coal dust explosion, and to limit the propagation of any coal dust explosion to other parts of the underground mine.

## **Inconsistency with policy objectives of other legislation**

The *Coal Mining Safety and Health (Explosion Barriers) Amendment Regulation 2021* is consistent with the policy objectives of coal mining safety and health legislation of other jurisdictions.

## **Benefits and costs of implementation**

Queensland's Mine Safety Framework Consultation Regulatory Impact Statement (Consultation RIS) detailed the benefits and costs of implementation of explosion barriers.

The Consultation RIS proposed mandating explosion barriers to further reduce the risk of a coal dust explosion, to improve protection for coal mine workers and mine assets. Explosion barriers have the potential to significantly reduce the risk of a catastrophic incident from a coal dust explosion.

The Decision RIS was tabled in the Queensland Parliament on 22 March 2018. The Decision RIS recommended that explosion barriers be mandatory in underground coal mines.

The Decision RIS also recommended that the type and spacing of the explosion barrier be left to an assessment of the most suitable type of explosion barrier, at each individual underground coal mine.

The *Coal Mining Safety and Health (Explosion Barriers) Amendment Regulation 2021* will not impose any new requirements, but will allow the use of active barriers in addition to, or as an alternative, to passive explosion barriers.

## Consistency with fundamental legislative principles

The *Coal Mining Safety and Health (Explosion Barriers) Amendment Regulation 2021* has been drafted to be consistent with fundamental legislative principles, as defined in section 4 of the *Legislative Standards Act 1992*.

## Consultation

Extensive consultation about explosion barriers was conducted through the Consultation RIS.

In 2017, the Coal Mining Safety and Health Advisory Committee (CMSHAC) was consulted about the proposed amendments, and supported requiring explosion barriers in underground coal mines.

The Decision RIS includes a summary of the results of consultation from underground coal mine stakeholders, about mandating explosion barriers. Industry preferred to retain a more general risk management based approach rather than explosion barriers being mandatory. The Construction, Forestry, Maritime, Mining and Energy Union (CFMMEU) supported requiring explosion barriers, in underground coal mines.

In 2020, CMSHAC again supported requiring explosion barriers, and the supporting recognised standard for explosion barriers.

A tripartite technical working group comprised of representatives from Resources Safety and Health Queensland (including the Mines Inspectorate and the Safety in Mines Testing and Research Station - known as SIMTARS), the CFMMEU, and industry (including the Queensland Resources Council), collaborated to finalise the details of the amendments for active explosion barriers, devices, or systems, and updated the supporting recognised standard for underground explosion barriers.

Industry stakeholders were consulted about the amendments for active explosion barriers and the updated recognised standard from 19 August 2021 to 17 September 2021. Initial feedback from stakeholders related only to the recognised standard with no concerns raised in relation to the active explosion barrier amendments. The recognised standard was revised and further consultation with industry stakeholders occurred between 6 October 2021 and 1 November 2021. No concerns were raised in relation to the explosion barrier amendments during the final round of consultation.

The Office of Best Practice Regulation was consulted regarding whether regulatory impact analysis was required under the *Queensland Guide to Better Regulation* (guidelines), and collaborated with the [then] Resources Safety and Health Division of the former Department of Natural Resources and Mines to finalise the Consultation RIS, and the Decision RIS between 2013 to 2017.

The Office of Best Practice Regulation was consulted in 2021 about the further amendments providing for the installation and maintenance of active explosion barriers, as an alternative to passive explosion barriers.

In 2021, the Office of Best Practice Regulation noted that the amendments will not impose any new requirements, because they will allow the use of active barriers in addition, or as an alternative to, passive barriers. The Office of Best Practice Regulation considers the amendments will not add to the burden of regulation and are unlikely to result in any significant adverse impacts. No further regulatory impact analysis is required under the guidelines.

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