

Coal Mining Safety and Health (Explosion Barriers) Amendment Regulation 2020

Explanatory notes for SL 2020 No. 221

made under the

Coal Mining Safety and Health Act 1999

General Outline

Short title

Coal Mining Safety and Health (Explosion Barriers) Amendment Regulation 2020

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 2020* (Amendment Regulation) is to require explosion barriers to be installed and maintained in underground coal mines, as additional risk controls, 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 Amendment Regulation will require underground mine managers to ensure that explosion barriers are installed and maintained, to further reduce the risk of any coal dust explosion propagating through an underground coal mine.

Achievement of policy objectives

Under new 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 – (i) a return roadway, (ii) a roadway with a single point of entry, (iii) a roadway in which a coal conveyor is installed.

The underground mine manager must also ensure that explosion barriers are installed and maintained in any other place identified by a risk assessment for the mine. A risk identified under a risk assessment is for example, continual failure in stonedusting

rates, due to coal dust deposition rates. Examples of other places based upon a risk assessment are homotropical conveyor roadways and return bleeder roadways not within an ERZ1 in a part of the mine where coal is being extracted.

“Explosion barrier” is defined to mean a barrier constructed, installed and maintained in compliance with a recognised standard for barriers known as explosion barriers; or another barrier that achieves a level of risk that is equal to or better than the acceptable level of risk achieved by a barrier constructed, installed and maintained in compliance with a recognised standard for explosion barriers.

A tripartite technical working group developed the recognised standard for explosion barriers to support the amendments. The recognised standard covers the type of barrier currently used in New South Wales’s underground coal mines. It is a shortened version of stonedust bags.

The definition of “explosion barrier” allows for alternative types of explosion barrier, including any new types through technological innovation over time.

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

The amendment of section 300(1)(b) of the Regulation confirms that the requirement to provide for suppressing a coal dust explosion and limiting its propagation to other parts of the mine under an underground coal mine’s safety and health management system, includes installing and maintaining explosion barriers as required under section 303A of the Regulation.

The Amendment Regulation commences on 1 January 2021. A transitional period of one year to 1 January 2022, is provided for the construction and installation of the explosion barriers in the underground coal mines.

The Amendment Regulation is consistent with the policy approach to managing the risk of coal dust explosions in underground coal mines in New South Wales.

The New South Wales *Work Health and Safety (Mines and Petroleum Sites) Regulation 2014* requires the installation and maintenance of explosion barriers in underground coal mines.

Consistency with policy objectives of authorising law

The Amendment Regulation 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 requiring more comprehensive risk controls through the addition of 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 Amendment Regulation is consistent with the policy objectives of coal mining safety and health legislation of other jurisdictions.

Benefits and costs of implementation

The Office of Best Practice Regulation within the Queensland Productivity Commission was consulted regarding whether regulatory impact analysis was required under the *Queensland Guide to Better Regulation* (guidelines), and collaborated with the Department of Natural Resources, Mines and Energy to finalise the Consultation RIS, and the Decision RIS.

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 Consultation RIS estimated the cost per year of explosion barriers to be approximately \$210 000 per underground coal mine, or less than nine cents per tonne of coal.

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.

Consistency with fundamental legislative principles

The Amendment Regulation 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.

A tripartite working group of representatives from Resources Safety and Health Queensland including SIMTARS, the CFMMEU, and industry, provided feedback to finalise the details of the amendments, and developed the supporting recognised standard.

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