

Major Hazard Facilities and the New Mining Regulations

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With the release of the *Mining and Quarrying Safety and Health Regulation* and the *Coal Mining Safety and Health Regulation* in February this year, mines that meet the criteria for a major hazard facility are required to meet the safety and health provisions of the National Occupational Health and Safety Commission's *National Standard for the Control of Major Hazard Facilities* [NOHSC:1014(1996)].

The relevant parts of each regulation state that any mine that meets the criteria for a major hazard facility must, in addition to meeting the regulation, ensure that operations are carried out in accordance with the national standard safety and health provisions to the extent the provisions are consistent with the relevant Act and regulation. The safety and health provisions of the National Standard are specified as:

- Part 6 – Hazard identification, risk assessment and risk control
- Part 7 – Safety reports
- Part 8 – Training and education
- Part 9 – Emergency planning
- Part 10 – Reporting of major accidents and near misses

The purpose of this paper is to provide an understanding of these parts of the National Standard by presenting information on the purpose and intent of the National Standard and considering the implementation of the Standard in the non-mining sector. Potential overlaps between the National Standard and other parts of the relevant Acts and Regulations will also be presented.

What is a Major Hazard Facility?

In simple terms, a major hazard facility is a facility that due to the presence of significant quantities of dangerous goods has the potential for a major accident. The National Standard defines a major hazard facility through the use of a schedule. If quantities of dangerous goods are present (or likely to be present) in excess of the threshold quantities in the schedule, then the facility is a major hazard facility. Examples of threshold quantities are listed in Table 1.

For facilities involving more than one material in the list a simple aggregation rule applies (ie if the sum of the quantity present divided by the threshold quantity for all materials is greater than 1, then the facility is a major hazard facility).

Table 1: Threshold Quantities for Selected Materials

Material	UN Nos	Threshold Quantity (tonnes)
Acetylene	1001	50
Anhydrous Ammonia	1005	200
Ammonium Nitrate	1942	5 000
Hydrogen Cyanide	1051, 1614	20
Hydrogen Sulfide	1053	50
LP Gases	1011, 1012, 1075, 1077, 1978	200
Methane or Natural Gas	1971, 1972	200
Oxygen	1072,1073	2 000
Explosive of Class 1.1A		10
All other Explosives of Class 1.1		50
Explosives of Class 1.2		200
Explosives of Class 1.3		200
DG Class 3 Packing Group I		200
DG Class 3 Packing Group II or III		50 000

NOTE: This is not a complete list. For a full list of materials, consult Schedule 1 of NOHSC:1014(1996).

When determining the quantities present, a number of issues need to be considered:

- The quantity should include the quantity present, or likely to be present at the facility. Interpretations of this require quantities to reflect the maximum design capacity of a facility (even if it has never operated at this capacity).
- The quantities present do not only relate to storage. Quantities present in process vessels and interconnecting piping systems, storage tanks and vessels, package stores, and pipelines outside storage areas need to be included.
- Activities that need to be considered when determining the quantities include processing, production, disposal, handling, use or storage (either temporarily or permanently).

The National Standard also allows the relevant public authority (in the case of Queensland mines and quarries, this is the Chief Inspector of Mines) to classify a facility as a major hazard facility if it contains materials in quantities between 10% and 100% of the thresholds in Schedule 1, if it is believed that the facility presents a significant risk based on:

- The properties of materials at the facility;
- The process and storage conditions;
- Organisational issues; or
- Off-site issues (including surrounding land use and environmental sensitivity).

The relevant public authority can also classify any facility as a major hazard facility, regardless of the materials on-site, if it believes an activity on site has the potential to cause a major accident.

The extent of a major hazard facility includes the whole area under the control of an Operator (an employer, occupier or person who has overall management or control of a major hazard facility) including:

- Production equipment;
- Permanent or in-transit storage;
- Ancillary equipment or processes;
- Marshalling yards;
- Docks, piers and jetties;
- Depots;
- Pipelines; or
- Similar structures whether floating or not.

This broad definition within the National Standard gives the relevant public authority the ability to classify almost anything as a major hazard facility. However, to go further than classifying according to the thresholds in the Schedule would require a detailed justification.

History of the National Standard

The National Occupational Health and Safety Commission is a tripartite body established by the Commonwealth government to develop, facilitate and implement a unified national approach to occupational health and safety in Australia. A major focus of NOHSC is the development of national occupational health and safety standards that are prepared in consultation with representatives of the Commonwealth, State and Territory governments as well as peak employee and employer bodies. Each State or Territory is then responsible (although not obligated) to implement these National Standards in an effort to achieve national uniformity in the regulation of health and safety.

In mid-1991 the NOHSC commenced the development of the *National Standard for Control of Major Hazard Facilities*. It was recognised that current legislation relating to facilities storing dangerous goods was designed for general industrial operations, and that this existing approach was insufficient for addressing the potential for major accidents which could have significant impacts on the community and the environment. The Standard, together with a National Code of Practice was released in 1996.

The National Standard has been developed to ensure consistency with international approaches. At the time of drafting, the National Standard was developed to ensure consistency with:

- The International Labour Organisation's *Convention for the Prevention of Major Industrial Accidents* (International Labour Conference, 80th Session, Geneva, 2 June 1993); and
- The Council of the European Communities' *Draft Council Directive on the Control of Major Accident Hazards Involving Dangerous Substances*

In particular the National Standard is based on concepts in the European Communities Council Directive, finalised in December 1996, and commonly known as the Seveso II Directive.

The Seveso Directives – The European Approach to Major Hazard Facilities

In 1976, an accident occurred at a chemical facility manufacturing herbicides and pesticides in Seveso, Italy. A small quantity of extremely toxic dioxin (TCDD) was released into the atmosphere resulting in the contamination of over 1500 hectares of land, evacuation of more than 600 people from their homes, and at least 2000 people requiring medical treatment. As a result of this accident, and in the aftermath of the Flixborough incident in the UK in 1974 (28 fatalities and injury to approximately 100 members of the public), the European Community adopted the first Seveso Directive (*Council Directive 82/501/EEC on the major-accident hazards of certain industrial activities*) in 1982.

Subsequent accidents at Bhopal, India in 1984 (more than 2,500 fatalities) and Basel, Switzerland (fire-fighting water causing massive pollution of the Rhine) resulted in amendments to the Seveso Directive.

These amendments and subsequent reviews of the Directive led to the adoption of the Seveso II Directive (*Council Directive 96/82/EC on the control of major accident hazards*) in late 1996. European Community countries were obligated to bring into force laws, regulations and administrative procedures to comply with this Directive by early 1999.

Further information on the Seveso Directives, including guidance documents, can be found at the Major Accident Hazards Bureau web-site at <http://mahbjrc.srv.it>.

The Australian approach generally follows the concepts outlined in the Seveso II Directive, aiming at both preventing major accidents and limiting the consequences of major accidents if they do occur. In many cases, this requires the submission of a Safety Report (or Safety Case) to the relevant public authority. Under the Seveso II Directive, the Safety Report must:

- demonstrate that a major-accident prevention policy and a safety management system for implementing it have been put into effect;
- demonstrate that major-accident hazards have been identified and that the necessary measures have been taken to prevent such accidents and to limit their consequences for man and the environment;
- demonstrate that adequate safety and reliability have been incorporated into the design, construction, operation and maintenance of any installation, storage facility, equipment and infrastructure connected with its operation which are linked to major-accident hazards inside the establishment;
- demonstrate that internal emergency plans have been drawn up and supplying information to enable the external plan to be drawn up in order to take the necessary measures in the event of a major accident;
- provide sufficient information to the competent authorities to enable decisions to be made in terms of the siting of new activities or developments around existing establishments.

Implementation of the National Standard in Australia

Western Australia

Since the early 1990's, the Department of Minerals and Energy (DME) has had the power under Section 45C of the *Explosives and Dangerous Goods Act 1961* to require the preparation and implementation of a Hazards Control Plan by any premises storing dangerous goods. Initially, this requirement was applied to a small number of facilities (less than 10) in Western Australia. With the release of the *National Standard for the Control of Major Hazard Facilities* [NOHSC:1014(1996)], DME has extended this obligation to all facilities classified as Major Hazard Facilities under this National Standard, and equated a 'hazards control plan' to a 'safety report' as defined in the National Standard.

Administratively, this section of the Act has been administered by a small number of people within DME using third parties to audit safety reports submitted by the Major Hazard Facilities.

Western Australia is currently revising their existing legislation, with the proposal being to amalgamate the *Explosives and Dangerous Goods Act 1961* and the *Dangerous Goods (Transport) Act 1998*. The new act will contain regulation-making powers that allow for the adoption of the *National Standard for the Control of Major Hazard Facilities*.

Victoria

Following the Longford gas explosion in September 1998, and in line with the recommendations of the Royal Commission, Victoria created the Major Hazards Unit within the Victorian WorkCover Authority. The role of this Unit will be to implement and administer the Occupational Health and Safety (Major Hazard Facilities) Regulation. These Regulations are based on the National Standard.

In their development international regulations (particularly European) and the current Australian requirements for offshore oil and gas facilities, have also been considered.

The administrative arrangements in Victoria appear to be much more closely aligned with the UK approach, with the government taking an extremely active role in defining requirements and assessing safety reports submitted by MHF operators. A number of Guidance Notes have already been produced by the Victorian WorkCover Authority and are available on their web-site at www.workcover.vic.gov.au.

Queensland

The Chemical Hazards and Emergency Management Unit (CHEM Unit) of the Queensland Department of Emergency Services, is the regulating authority for the Dangerous Goods Safety Management Act 2001. The primary objective of this legislation is to consolidate existing legislation relating to the storage and handling of dangerous goods by implementing the NOHSC *National Standard for Storage and Handling of Workplace Dangerous Goods* [NOHSC:1015(2001)] and the *National Standard for the Control of Major Hazard Facilities* [NOHSC:1014(1996)].

Administrative arrangements for the implementation of this Act are currently being developed. The proposed approach is to draw on existing resources within government departments to provide a whole-of-government, team approach to the control of Major Hazard Facilities. Issues relating to resourcing, training of personnel, and practical implementation of the National Standard are currently being explored.

While the Act was passed in Parliament earlier this year, commencement and implementation of requirements relating to major hazard facilities is not expected until late 2001.

New South Wales

Since the mid-1980s, the *Environmental Planning and Assessment Act 1979* has required developers to conduct risk assessments as part of the development approval process. As conditions of the development approval, the Department of Urban Affairs and Planning (DUAP) has required facilities to implement a safety management system and ongoing auditing procedures.

At this stage, there has been no other formal implementation of a process to control Major Hazard Facilities. The need to do this, in light of current requirements under the development approval process, is currently being explored. An option currently being considered is the implementation of the National Standard using existing expertise from within a number of different government departments.

Sections of the National Standard Implemented Under Mining Legislation

Part 6 – Hazard identification, risk assessment and risk control

This section of the National Standard requires Operators to carry out and document a systematic risk assessment. This risk assessment focuses on those hazards that could lead to a major accident. It needs to identify the type, likelihood and consequences of major accidents that could occur and assess the risks posed by these hazards.

The identified risks should be minimised by:

- eliminating or minimising the hazards;
- implementing measures to minimise the likelihood and consequences of a major accident; and
- through the establishment of emergency plans and procedures.

The risk assessment and risk controls should be reviewed and updated prior to any modifications (including changes to the safety management system) and at least every five years. The National Standard requires that employees and employee representatives be consulted during all processes.

Part 7 – Safety Reports

It is this section of the National Standard that will have the most tangible impact on facilities classified as major hazard facilities. It requires the Operator of a major hazard facility to submit a Safety Report to the relevant public authority (in this case the Chief Inspector of Mines). The initial submission from existing major hazard facilities is required within eighteen months of implementation of the National Standard.

The implementation date for mines in Queensland under the safety and health regulation was the 16 March 2001. Therefore, the National Standard requirement for submission of safety reports is by 16 September 2002. However, there is allowance for the relevant public authority to vary the time within which a safety report is required.

For new facilities, the safety report should be submitted prior to the commencement of operations.

The purpose of the safety report is for the Operator to demonstrate that the risk of a major accident is adequately controlled, and that the safety management system in place is effective in managing the risks. It is really a documentation of the hazard identification, risk assessment and risk control, and the safety management system that is in place to ensure ongoing safety. It is the Operator's submission to the government that provides "justifications as to the adequacy of the measures taken to ensure the safe operation of the major hazard facility".

The safety report needs to be prepared in consultation with employees, employee representatives, the community and closely located facilities, including other major hazard facilities. In relation to major hazard facilities that are closely located, the relevant public authority can request that Operators of these facilities to prepare coordinated safety reports, sharing information as necessary.

Safety reports need to be revised, updated and resubmitted to the relevant public authority prior to any modification which significantly alters the risk, or at least every five years.

Part 8 – Training and Education

The National Standard requires operators to develop occupational health and safety competency standards appropriate to the hazards and risks at the facility. These competency standards should include:

- practices and control procedures for major accident prevention;
- emergency procedures to be followed in the event of a major accident; and
- responsibilities related to the safety management system at the major hazard facility.

Induction, education and continuing training to meet these competency standards should be provided to all employees, contractors and visitors according to the roles and responsibilities of the person. The training should be provided at appropriate intervals including before any changes that significantly alter the risk. Again, training needs to be carried out in consultation with employees and employee representatives.

Part 9 – Emergency Planning

Both on-site and off-site emergency plans need to be established, tested, evaluated and updated. For existing facilities emergency plans should be updated within three months of the date of implementation of the National Standard (ie by 16 June 2001). Emergency plans should be developed and maintained in conjunction with emergency services. Consultation with employees and employees representatives together with consultation with the community, including other closely located facilities, should be carried out when developing the emergency plans.

The purpose of these emergency plans is to contain and control a major accident so as to minimise the effects, and also to implement measures to protect people, property and the built and natural environment.

Part 10 – Reporting of Major Accidents and Near Misses

Within 24 hours of a major accident, the Operator shall provide written notification to the relevant public authority (in this case the Chief Inspector of Mines). There is then an obligation for the Operator to thoroughly investigate the major accident and provide a written report to the relevant public authority. This report should be prepared in consultation with employees and employee representatives, providing access to reports and ensuring that the lessons learnt from major accidents and near misses are discussed. These reports should be kept for the lifetime of the facility.

Operators are also required to report any near miss which exceeds criteria defined by the relevant public authority.

The National Standard and the Mining Regulations

In drafting the regulations relating to major hazard facilities, only particular sections have been selected as requirements for operations conducted on mining leases. Given that both the coal mining and mining and quarrying regulations have extensive sections covering many of these issues, it is unclear as to how the implementation of the National Standard will occur in practice.

Hazard identification, risk assessment and risk control, together with the concept of acceptable risk, form the basis for the new mining legislation. Training and education, emergency planning and the reporting of accidents and incidents are key elements of the act, regulations, or both. The only substantially different element in implementing the National Standard is the requirement for major hazard facilities to submit a Safety Report.

Guidance on what this Safety Report entails, in addition to that provided in the National Standard, has not been provided by the regulating authority. The National Standard specifies that the 'major hazard facility' includes the whole area under the control of an Operator. In the case of mines, this would include the whole mining lease, including all mining and ancillary operations. However, it is not expected that it is the intent of the Chief Inspector of Mines for Operators to include in their Safety Report details of operations not directly related to the materials listed in Schedule 1 of the National Standard. To date, clarification on this issue has not been provided by the Department of Natural Resources and Mines.

The National Standard for the Control of Major Hazard Facilities has been developed for facilities that have the potential for major accidents due to the presence of significant quantities of dangerous goods. Mines, by their very nature, have the potential for major accidents simply due to the types of tasks undertaken as part of the mining operations. Through the implementation of the National Standard for operations involving hazardous materials, it would appear that different requirements have been set for tasks involving similar hazards and risks. The requirement to submit a Safety Report for one type of hazardous operation and not another, all conducted on the same site, could be seen to be contradictory.

In support of mining operations, certain types of dangerous goods are often stored, eg LPG, explosives. In addition, a number of mine sites in Queensland also include significant petrochemical or minerals processing facilities. The obvious application of the National Standard is to those mine sites with significant processing or storage facilities involving quantities of dangerous goods in excess of the threshold quantities outlined in the standard. In these cases, the most sensible approach would be to adopt a similar application of the National Standard as will be done under the Dangerous Goods Safety Management Act for non-mine sites. It is understood that consultation between the regulating authorities is being undertaken, and that the Standard will be implemented in a similar manner for mines sites and non-mine sites.

Conclusions

The implementation of the National Standard for the Control of Major Hazard Facilities under the new mining safety and health regulations, is an attempt to address those hazards and risks presented by the storage, handling and processing of significant quantities of dangerous goods on mining sites. These dangerous goods could be associated with the mining operations (eg explosives) or could be part of a processing facility that could just as easily be found on a non-mine site.

This National Standard is based on international approaches, and is at different stages of implementation for non mine-sites throughout Australia. In Queensland the Department of Emergency Services is implementing the National Standard under the new Dangerous Goods Safety Management Act.

Only parts of the National Standard have been adopted under the new regulations, and many of these parts overlap significantly with other sections of the mining legislation. The one significant impact that the National Standard will have for Operators, is the requirement to submit a Safety Report. According to the timeframe in the National Standard, this Safety Report will need to be submitted by 16 September 2002.

The Department of Natural Resources and Mines have contacted mine sites who they believe may be classified as a major hazard facility. The process of classifying particular sites will commence once information is received from each of these sites, allowing judgements to be made regarding the level of risk.

The implementation of the Standard is likely to follow a similar approach to that currently being developed for non-mine sites by the Department of Emergency Services under the Dangerous Goods Safety Management Act.

This consistency of approach towards major hazard facilities on mine sites to that adopted for non-mine sites is commendable. Ongoing consultation between the regulating agencies should achieve a consistent approach to the same risks throughout the State, regardless of where they are located.

With only parts of the National Standard being implemented, and a number of these parts overlapping significantly with other sections of the mining regulations, there is potential for confusion when it comes to the practical implementation of the Standard. Many of these issues are likely to be addressed as they crop up.

With the emphasis on self-regulation, it will be up to Operators to interpret the requirements of the National Standard for their particular circumstances. At present, there is limited guidance material available for application of the Standard here in Queensland. Overseas approaches, and the detailed approach being taken in Victoria, are readily available sources of information on the objectives and interpretation of the concepts outlined in the National Standard. Further guidance is likely to be available when the Dangerous Goods Safety Management Act commences later this year for non-mine sites. Until then operators of major hazard facilities on mine sites must conduct their operations to ensure that the risks are 'as low as reasonably achievable' using the approaches outlined in the National Standard.