

Module 13. Major hazard facilities

13.1 Major hazard facilities state code

13.1.1 Purpose

The purpose of this code is to:

- (1) assess off-site physical or chemical risks associated with developments involving a major hazard facility or proposed major hazard facility
- (2) identify clear, concise and robust assessment criteria to assess any off-site risks a major hazard facility or proposed major hazard facility may have on its surrounding environment
- (3) minimise the risk of knock-on effects between a major hazard facility or proposed major hazard facility and any adjacent buildings or structures, hazardous facilities or existing major hazard facilities.

Editor’s note: It is a fundamental principle of this code that major hazard facilities and proposed major hazard facilities are designed taking into account of sound engineering principles, relevant Australian Standards and other good industry practice to reduce the risk so far as reasonably practicable (SFARP).

In addition to this, it is recommended that a hazard assessment of the proposed design should be conducted to identify any foreseeable hazard scenarios with the potential to create off-site physical or chemical effects. Any such hazard scenarios should be quantified using suitable software modelling.

Proponents of major hazard facilities and proposed major hazard facilities should demonstrate that they have taken all measures necessary to minimise the likelihood of any off-site hazards from materialising, and to limit their physical and chemical effects in the event they did occur. As a guiding principle, major hazard facilities should be designed so that the effects of any hazards are contained within its boundaries. Where a major hazard facility cannot be designed in accordance with this principle, it should be designed so that the risk to health and safety of persons is minimised SFARP.

13.1.2 Criteria for assessment

Development mentioned in column 1 below must be assessed against the assessment criteria in the table mentioned in column 2.

Column 1	Column 2
Material change of use	Table 13.1.1

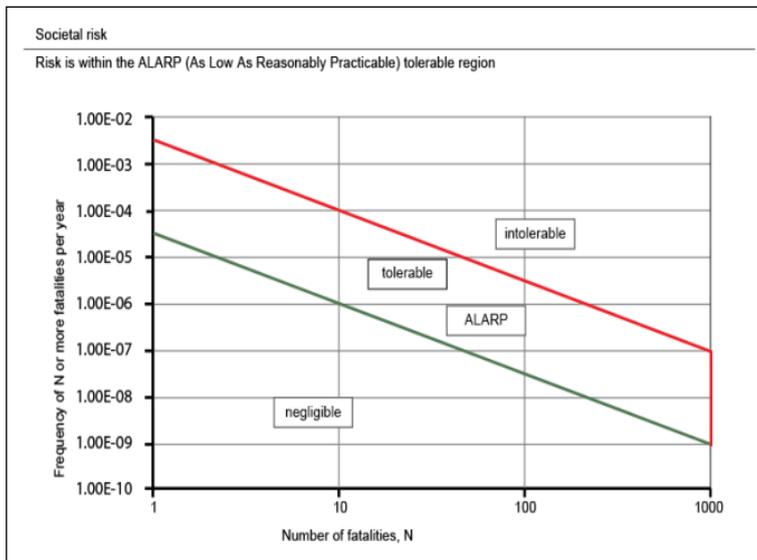
Table 13.1.1: Material change of use

Performance outcomes	Acceptable outcomes
<p>PO1 The <u>major hazard facility</u> or <u>proposed major hazard facility</u> does not create a new risk at any property outside its boundaries that is not commensurate with the sensitivity of the surrounding land uses or zones.</p>	<p>AO1.1 Any off-site impact from a <u>foreseeable hazard scenario</u> shall not exceed, at the boundary of any <u>vulnerable land use</u> or zone:</p> <ol style="list-style-type: none"> (1) a <u>dangerous dose to human health</u>, or (2) if the above criteria cannot be achieved: <ol style="list-style-type: none"> (a) an <u>individual fatality risk level</u> $>0.5 \times 10^{-6}/\text{year}$ (b) the societal risk criteria in Figure 13.2.1. <p>AND</p> <p>AO1.2 Any off-site impact from a <u>foreseeable hazard scenario</u> shall not exceed, at the boundary of any <u>sensitive land use</u> or zone:</p> <ol style="list-style-type: none"> (1) a <u>dangerous dose to human health</u>, or (2) if the above criteria cannot be achieved: <ol style="list-style-type: none"> (a) an <u>individual fatality risk level</u> $>1 \times 10^{-6}/\text{year}$ (b) the societal risk criteria in Figure 13.2.1.

Performance outcomes	Acceptable outcomes
	<p>AND</p> <p>AO1.3 Any off-site impact from a <u>foreseeable hazard scenario</u> shall not exceed, at the boundary of any <u>commercial or community activity land use or zone</u>:</p> <ol style="list-style-type: none"> (1) a <u>dangerous dose to human health</u>, or (2) if the above criteria cannot be achieved: <ol style="list-style-type: none"> (a) an <u>individual fatality risk level</u> $> 5 \times 10^{-6}$/year (b) the societal risk criteria in Figure 13.2.1. <p>AND</p> <p>AO1.4 Any off-site impact from a <u>foreseeable hazard scenario</u> shall not exceed, at the boundary of any <u>industrial land use or zone</u>:</p> <ol style="list-style-type: none"> (1) a <u>dangerous dose to the built environment</u>, or (2) an <u>individual fatality risk level</u> $> 50 \times 10^{-6}$/year.

13.2 Reference documents

Figure 13.2.1: Societal risk criteria



American Industrial Hygiene Association 2006 [Emergency response planning guidelines](#)

National Transport Commission 2011 [Australian code for the transport of dangerous goods by road and rail](#)

13.3 Glossary of terms

AEGL means Acute Exposure Guidelines Level which identifies threshold exposure limits for the general public and are applicable to emergency exposure periods ranging from 10 minutes to 8 hours as published by the US Environmental Protection Agency.

AEGL-2 means the airborne concentration (expressed as ppm or mg/m³) of a substance above which it is predicted that the general population, including susceptible individuals, could experience irreversible or other serious, long-lasting adverse health effects or an impaired ability to escape.

Commercial or community activity land use means any of the following:

- (1) retail centre
- (2) shop

- (3) office
- (4) entertainment building
- (5) market
- (6) showroom
- (7) convention centre
- (8) sporting stadium
- (9) tourist attraction
- (10) nightclub
- (11) building for religious worship
- (12) community hall
- (13) theatre
- (14) art gallery.

This term does not include a park, sporting field or open space.

Dangerous dose to human health means:

- (1) for fire or explosion - an effect that equals or exceeds the following:
 - (a) 4.7 kilowatts per square metre for heat radiation, or
 - (b) 7 kilopascals for explosion overpressure
- (2) for toxic or corrosive gases - an effect that equals or exceeds the following:
 - (a) AEGL-2 (60 minutes)
 - (b) where a corresponding AEGL is not available – ERPG-2
 - (c) where a corresponding ERGP-2 is not available – a concentration that is likely to produce the following effects:
 - (i) severe distress to almost all people
 - (ii) a substantial proportion of people require medical attention
 - (iii) some people are seriously injured, requiring prolonged treatment
 - (iv) highly susceptible people might be fatally injured.

Dangerous dose to the built environment means an effect from fire or explosion that equals or exceeds the following:

- (1) 12.6 kilowatts per square metre for heat radiation, or
- (2) 14 kilopascals for explosion overpressure.

ERPG means the *Emergency Response Planning Guidelines* developed by the American Industrial Hygiene Association and includes ERPG-2.

ERPG-2 means the maximum airborne concentration below which it is believed that nearly all individuals could be exposed for up to 1 hour without experiencing or developing irreversible or other serious health effects or symptoms which could impair an individual's ability to take protective action.

Foreseeable hazard scenario means a scenario resulting in an uncontrolled fire, explosion, corrosive vapours or toxic gas release from the development based on the hazardous properties of its hazardous chemicals, their quantities, how they are to be stored or handled and any relevant historical incidents.

Individual fatality risk level means the risk of death to a person at a particular point.

Industrial land use see the standard planning scheme provisions.

Editor's note: Industrial land use means any of the following:

- (1) warehouse
- (2) low impact industry
- (3) medium impact industry
- (4) high impact industry
- (5) special industry.

Major hazard facility see the Work Health and Safety Regulation 2011, schedule 19.

Editor's note: Major hazard facility means a facility:

- (1) at which Schedule 15 chemicals are present or likely to be present in a quantity that exceeds their threshold quantity, or
- (2) that is determined under Part 9.2 of the Work Health and Safety Regulation 2011 to be a major hazard facility.

Proposed major hazard facility see the Work Health and Safety Regulation 2011, schedule 19.

Editor's note: Proposed major hazard facility means:

- (1) an existing facility or other workplace that is to become a major hazard facility due to the introduction of Schedule 15 chemicals or the addition of further Schedule 15 chemicals, or
- (2) a major hazard facility that is being designed or constructed.

Sensitive land use means any of the following as defined in the standard planning scheme provisions:

- (1) community residence
- (2) dual occupancy
- (3) dwelling house
- (4) educational establishment
- (5) multiple dwelling
- (6) relocatable home park
- (7) residential care facility
- (8) rooming accommodation
- (9) short-term accommodation
- (10) tourist park.

Threshold quantity see the Work Health and Safety Regulation 2011, schedule 19.

Editor's note: Threshold quantity in relation to a Schedule 15 chemical, means:

- (1) the threshold quantity of a specific hazardous chemicals determined under Schedule 15, section 3, or
- (2) the aggregate threshold quantity of two or more hazardous chemicals as determined under Schedule 15, section 4.

Vulnerable land use means any of the following as defined in the standard planning scheme provisions:

- (1) child care centre
- (2) community care centre
- (3) educational establishment
- (4) health care services
- (5) hospital
- (6) retirement facility.

13.4 Abbreviations

AEGL – Acute Exposure Guidelines Level

ERPG – Emergency Response Planning Guidelines

SFARP – So far as reasonably practicable