

## Appendix 8a - Use, Storage and On-Site Movement of Hazardous Substances

### A8.1 Introduction

This Appendix gives effect to the objectives and policies in Chapter 20. Each Environment contains a land use rule referring to this Appendix, apart from the Rural Area Environments where the rule is contained in the overarching Rural Area Chapter.

### A8.2 Hazardous Substances - Rules

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#### Permitted activities

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### A8.3 Hazardous Facilities

A hazardous facility is a **permitted** activity if:

- a) The activity is one of the following exemptions:
  - i. Retail sale of petrol (up to 100,000 litres storage in underground tanks), diesel (up to 50,000 litres storage in underground tanks) and LPG (up to 2 tonnes) in the Business 1, 2, 3, 4, Marsden Point Port and Airport Environments, and the storage (and dispensing) of aviation fuel in the Airport Environment, in approved tanks of up to 100,000 litres (total) provided that the Code of Practice for '*Design, Installation and Operation of Underground Petroleum System*' published by the Department of Labour, OSH (or similar), or AS/NZ 1596:1997 Storage and Handling of LPG (or a more recent edition) or other approved Code of Practice for fuel installation systems, are adhered to;
  - ii. Road construction and improvements with related storage, all within road reserves;
  - iii. Milk storage, provided that measures are taken and/or facilities installed so as to ensure that any spillage is prevented from entering a watercourse or waterbody, or from seeping into groundwater;
  - iv. Any accepted discharge by a network utility operator of trade waste into sewerage and waste treatment facility;
  - v. Storage and use of hazardous consumer products for private domestic use contained within original packaging;
  - vi. Retail outlets for the sale of hazardous substances in domestic quantities;
  - vii. Fuel in motor vehicles, boats and small engines such as weed trimmers, lawn mowers, chainsaws etc;
  - viii. Oil, petrol and gas pipelines;

- ix. Any use or storage of radioactive materials with an activity level below that specified as an exempt activity in the Radiation Protection Regulations 1982;
- x. Application of agri-chemicals in a farming, forestry or horticulture situation, provided that NZS 8409:1999 Code of Practice for the Management of Agrichemicals (or a more recent edition) and any applicable regional policies and rules are adhered to;
- xi. The use and storage of hazardous substances associated with Temporary Military Training Activities where this complies with New Zealand Defence Force orders contained within Ammunition and Explosives Regulations Volume One for the storage of ammunition and explosives and New Zealand P2, Safety in Training;
- xii. The use and storage of fuel, of up to 1000 litres of petrol and 5000 litres of diesel, for use on-site for farming, forestry or horticultural operations, provided that these facilities are at least 30.0m away from other storage facilities for hazardous substances, and that suitable measures are provided to prevent any spills to water courses or water bodies, or to ground or groundwater.

Or

- b) The total Quantity Ratio for any Effect Group does not exceed the level stated below for the Environment in which the activity is to establish:

Living 1, 2, 3, RUEE, RLE and RVRE .....	0.025
RCE .....	0.5
Business 1, 3 and RVCE .....	0.15
Business 2.....	0.4
SRIE, RVIE, Business 4 and Marsden Point Port.....	1.5
Airport .....	1.0
Open Space .....	0.1

- c) Storage Containers: Storage containers for hazardous substances and waste containing hazardous substances are:
  - i. Constructed or lined with a material that is resistant to corrosion or embrittlement by the hazardous substance;
  - ii. Fitted with an appropriate release mechanism to prevent increases or decreases of pressure, or of an approved design for the substance being stored;
  - iii. Designed in a manner that prevents exposure to ignition sources;
  - iv. Designed in a manner that prevents unintentional release of the hazardous substance or waste.
- d) Spill Containment: The hazardous substance is exempt under the Hazardous Substances and New Organisms Act 1996 and its Regulations, or the site is serviced by a spill containment system that is:
  - i. Constructed from impervious material resistant to the hazardous substances used, stored, manufactured, mixed, packaged, loaded, unloaded or otherwise handled on the site;
  - ii. Able to contain the maximum volume of the largest tank used, or where drums or other containers are used, able to contain half the maximum volume of substances stored;

- iii. Able to prevent any spill or other unintentional release of hazardous substances, and any stormwater or fire water that has become contaminated, from entering the stormwater drainage system;
  - iv. Able to prevent any spill or other unintentional release of hazardous substances, and any stormwater or fire water that has become contaminated, from discharging into, or onto land or water (including groundwater and potable water supplies), unless permitted by a resource consent.
- e) Site Design: The hazardous substance is exempt under the hazardous Substances and New Organisms Act 1996 and its Regulations, or any part of a site where hazardous substances are used or stored is to be designed, constructed and managed in a manner that prevents:
- i. Any effects of the intended use from occurring outside of the intended area;
  - ii. The entry or discharge of the hazardous substance into the stormwater drainage or a municipal sewerage system, unless accepted by the network utility operator, and the ultimate discharge of the substance from the utility complies with any relevant discharge permit or plan provisions for discharges;
  - iii. The entry or discharge of the hazardous substance into the stormwater drainage or a municipal sewerage system, in the event of a spill or other unintentional release;
  - iv. The contamination of any land or water (including groundwater and potable water supplies) in the event of a spill or other unintentional release of hazardous substances.
- f) Stormwater Design: The hazardous substance is exempt under the Hazardous Substances and New Organisms Act 1996 and its Regulation, or a site where hazardous substances are used or stored shall be designed, constructed and managed in a manner that any stormwater originating on or collected on the site:
- i. Does not transport any hazardous substances that are contaminants to any land or water, unless permitted by any resource consent;
  - ii. Does not enter or discharge into the stormwater drainage or a municipal sewerage system, unless accepted by the network utility operator, and the ultimate discharge of the substance from the utility complies with any relevant discharge permit of plan provisions for discharges.
- g) Underground Storage Tanks for the Storage of Hazardous Substances: Adherence to the Code of Practice for '*Design, Installation and Operation of Underground Petroleum Systems*' (Department of Labour - Occupational Safety and Health), or another approved by the Environmental Risk Management Authority will be accepted as one method of complying with this condition. These underground storage tanks will be of double containment design, unless the site geology and soil structure make this design unnecessary. Where a site for the storage of hazardous substances is within 100.0m of a water body or coastal water, all pipes will be of double containment design.
- h) Signage: Any hazardous facility is signposted to indicate the nature of the substances stored or used. Adherence to the Code of Practice for 'Warning Signs for Premises Storing Hazardous Substances' of the New Zealand

Chemical Industry Council or any other Code of Practice approved by the New Zealand Fire Service will be accepted as one method of complying with this condition.

- i) Waste Management: Any process waste or waste containing hazardous substances shall be managed to prevent:
  - i. The waste entering or discharging into the stormwater drainage system or into the sewerage system, unless permitted by the sewerage utility operator;
  - ii. The waste discharging into, or onto land and/or water (including groundwater and potable water supplies), unless permitted by a resource consent.

Any facility generating waste containing hazardous substances shall dispose of these wastes to appropriately permitted facilities, or be serviced by a reputable waste disposal contractor.

- j) Records: All sites which use or store hazardous substances shall at all times maintain a record of all types and quantities of hazardous substances and wastes produced or stored. This record will also note the method of waste disposal.
- k) Emergency and Contingency Plans: All sites which produce, use, store or dispose of hazardous substances shall prepare an emergency and contingency plan which sets out how any spillage or leaks will be contained, cleaned up and disposed of. The plan must identify the elements required to respond to an emergency and define responsibilities and specific tasks in an emergency.

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### Discretionary activities

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A hazardous facility that contravenes a condition for a permitted activity is a **discretionary** activity.

**Note:** The provisions of the Regional Water and Soil Plan for Northland also apply to discharges from hazardous facilities.

### A8.4 Reasons for Rules / Explanations

Use, storage or on-site movement of hazardous substances must comply with the relevant effects ratio, unless it comes within the exemptions in paragraph a) of Rule A8.3 Hazardous Facilities. These exemptions are included to cover common situations where hazardous substances are held in limited quantities, or in conditions where further management of risk is unnecessary. The effects ratios are derived from the Hazardous Facilities Screening Procedure, which has been adopted by many other districts throughout the country. The process by which this procedure was developed involved accepted risk management theory and scientific evidence. The use of effects ratios reflects the philosophy of the Resource Management Act 1991, whereby the method assesses the potential adverse effects of the use, or storage of hazardous substances, in a site-specific context. The various effect ratio levels for each environment reflect the levels of effects beyond which a resource consent application is required. The Hazardous Facilities Screening Procedure methodology is explained in section A8.6 below.

## **A8.5 Information to be Supplied with Resource Consent Applications**

The following information is required to be submitted with an application for a discretionary activity involving the use, or storage of hazardous substances.

### **Qualitative or Quantitative Risk Assessment**

1. The risk assessment must be a quantitative risk assessment, if the effects ratio is more than twice the maximum effects ratio for a permitted activity stated in Rule A8.3(b). A qualitative risk assessment applies in all other cases.
2. The risk assessment should consider:
  - a) Identification of potential hazards, failure modes and exposure pathways;
  - b) The separation distance to neighbouring activities, with emphasis on people-sensitive activities such as childcare facilities, schools, rest homes, hospitals, shopping centres and residential areas;
  - c) The location of the facility in relation to the nearest aquifer recharge area, river, coast or other sensitive environment;
  - d) The nature of the subsoil and the site geology;
  - e) The distance to, and effect on, environmentally sensitive areas such as wildlife habitats or water catchments;
  - f) Assessment of the probability and potential consequences of an accident leading to a release of a hazardous substance or loss of control;
  - g) Identification of cumulative or synergistic effects;
  - h) Fire safety and fire water management;
  - i) Adherence to health and safety or environmental management systems;
  - j) Spill contingency and emergency planning, monitoring and maintenance procedures;
  - k) Site drainage and off-site infrastructure, including stormwater drainage system, sewer type and capacity;
  - l) The transport of hazardous substances;
  - m) The disposal of wastes containing hazardous substance.

### **Risk Mitigation and Management**

1. The adoption of specific spill contingency plans, emergency procedures, stormwater management and treatment, treatment and disposal procedures for wastes containing hazardous substances, fire safety, monitoring and maintenance procedures, and site management systems. Site management systems include: safety policy; formal descriptions of organisational structure and responsibilities; operating, emergency and monitoring procedures; and performance auditing.

### **Miscellaneous**

1. Alternative locations or methods for undertaking the activity, where it is likely that an activity may result in significant adverse effects on the environment.
2. Adverse effects on the safety of the operation of the adjoining road network from vehicles transporting hazardous substances in residential areas. Conditions may be imposed that require access along specified routes.

## A8.6 Overview of the Hazardous Facilities Screening Procedure

The Hazardous Facility Screening Procedure was prepared on behalf of 36 local authorities in New Zealand. The project was initiated by Environment Waikato and the Auckland Regional Council and was assisted by the Auckland City Council and various consultants who provided the technical support. The technical background to the procedure is outlined in the document *Land Use Planning for Hazardous Facilities - a Resource for Local Authorities and Hazardous Facility Operators (1999)* and this can be viewed at the Council.

The Hazardous Facility Screening Procedure focuses on assessing three groups of potential adverse effects (effects groups):

- Effects caused by fire or explosion;
- Effects on human health;
- Environmental effects.

Possible adverse environmental effects of hazardous substances can be predicted by the hazard of the substance and the anticipated consequences of its release to the environment. Adverse effects include:

- Contamination of water, soil and air;
- Short and long-term damage to ecosystems;
- Accumulation of persistent substances in the bodies of humans and animals, resulting in chronic or long-term damage to their health;
- Acute damage to human health through exposure to substances affecting skin, mucus membranes, respiratory and digestive systems;
- Damage to the environment, human health and property through fire and explosion events.

It is important to distinguish between the **hazard** of a substance and the **risk** it poses:

- **Hazard** is principally defined by the intrinsic properties of the substance, such as its flammability or toxicity;
- The **risk** presented by a substance is defined by the probability of its release, combined with the potential of that release.

The Hazardous Facility Screening Procedure focuses on the potential effects of a hazardous substances release, and thus brings the essential dimension of risk into Council evaluations of hazardous facilities proposals. It works by assessing the quantities and hazard posed by substances on a proposed site in relation to each Council's own assessment of different levels of acceptable risk in different localities. This is stated as the 'Quantity Ratio' for each environment identified in this plan.

Generally, each substance to be used or stored on the site should be assessed for its effects in each of the three Effect Groups. For each substance and in each Effect Group, the Hazardous Facility Screening Procedure has assigned the following:

- a) A Base Quantity (B) which is mainly dependent on the substance's intrinsic hazardous properties. The Base Quantity is the amount of substance that has been assessed as generating no significant off-site effects in an industrial area, before site and substance-specific considerations have been taken into account. It is expressed as the weight or volume (for compressed gases), of classes of substances.

- b) Adjustment Factors (FF, FH, FE) which have been developed specifically for use with the Hazardous Facility Screening Procedure. These adjust the Base Quantity of substances on the site, to reflect the risk posed by factors which increase or decrease the likelihood and consequences of release, such as the physical state of the substance, the type of storage and activity, site separation distance, and the environmental sensitivity of the location.

Users of the Hazardous Facility Screening Procedure then calculate the following:

- a) An Adjusted Quantity, by multiplying the Base Quantities by the Adjustment Factors. This generates an Adjusted Quantity for each substance in each of the Effect Groups, so as to more realistically reflect the potential effects of the substances on the site.
- b) The Quantity Ratio for each substance in each Effects Group, by dividing the proposed quantity of the substance to be used or stored with the Adjusted Quantity. Where multiple substances are used or stored, the Quantity Ratios for each of the Effect Groups are added up, to indicate the cumulative potential effects of the proposed facility.

The Total Quantity Ratio (i.e. the sum of all Effects Ratios of individual substances within an Effects Group) is used to determine whether or not the activity needs a resource consent. Rule A8.3(b) indicates the Total Quantity Ratio values at which an activity or facility is permitted or discretionary in different Environments.

If the Hazardous Facility Screening Procedure indicates that a proposed facility is discretionary, a more detailed assessment of the risks will be needed. This risk assessment should take account of:

- The probability and effects of potential hazardous substances accidents;
- The proposed measures to mitigate and manage the risk; and
- Location and characteristics of the proposed site.

The granting of a resource consent would then be considered in terms of whether the off-site risks presented by a hazardous facility are adequately contained and managed. The Hazardous Facility Screening Procedure does not determine the outcome of the resource consent application.

A conceptual overview of the Hazardous Facility Screening Procedure is shown in Figure A8.1.

## **A8.7 Where the Hazardous Facility Screening Procedure fits into the Range of Controls on Hazardous Facilities**

The Hazardous Facility Screening Procedure is simply a tool for determining whether or not an activity needs a resource consent. Therefore it forms only one component of a management strategy containing other essential and complementary elements.

The tools available to regulatory bodies for controlling hazardous substances are as follows:

- a) Locational controls, such as zoning, which determines where activities may locate;

- b) Management and design controls, such as performance standards or rules, that control how activities are undertaken;
- c) Land use controls imposed by way of a land use consent, when the hazardous facilities screening procedure and Rule A8.3(b) screen out facilities which require more specific controls.

### **A8.9 Rating Hazardous Substances for the Hazardous Facility Screening Procedure**

To be able to assess hazardous substances under the HFSP, they must be rated first. The rating criteria, which are broadly based on the HSNO classification criteria, are specified in Table 8.3. For the purpose of the HFSP, each substance receives a hazard rating based on three Effect Types:

- Fire/Explosion Effects: concerned with damage to property, the built environment and safety of people;
- Human Health Effects: concerned with the well-being, health and safety of people;
- Environmental Effects: concerned with damage to ecosystems and natural resources.

Each Effect Type is divided into three hazard levels:

- High;
- Medium;
- Low.

The rating of a hazardous substance for the HFSP requires each substance to be assessed in terms of each of the hazard categories listed in Table 8.3. The Council holds information to assist with the process of rating hazardous substances for the Hazardous Facility Screening Procedure.

Where information for the rating of a hazardous substance for the HFSP is not, or is only partially available, a precautionary default rating of 'Medium' for the Fire/Explosion and Human Health Effect Types, and 'High' for the Environmental Effect Type must be applied.

### **A8.10 Hazardous Facility Screening Procedure - Step-by-Step Guide**

This section is a step-by-step guide on how to use the Hazardous Facility Screening Procedure (HFSP), following the steps shown in Figure 8.1. The Council will make available suitable guidance and working materials on the use and application of the Hazardous Facility Screening Procedure so that people using or storing hazardous substances can make their own calculations.



Figure 8.1: Overview of the Step-by-Step Guide to the HFSP



