Quick Guide to Land Use Planning for Hazardous Facilities

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1 Purpose

The *Quick Guide* summarises and highlights the key issues associated with land use planning for hazardous facilities in general, and the Hazardous Facility Screening Procedure in particular. A comprehensive description of the matters addressed here is provided in the main document, the *Land Use Planning Guide for Hazardous Facilities*. While the *Land Use Planning Guide* is intended for more detailed study, the *Quick Guide* is meant to serve as a frequently used rapid reference.

2 Relevant legislation

The management of hazardous substances is predominantly governed by the Hazardous Substances and New Organisms Act 1996 (HSNO) and the Resource Management Act 1991 (RMA) and their respective regulations. Other Acts, such as the Health and Safety in Employment Act 1992 (HSE), the Building Act 1991, the Agricultural Compounds and Veterinary Medicines Act 1997, the Transport Act 1962 and the Land Transport Act 1993 also play a role.

The HSNO Act establishes a comprehensive assessment and approval process for manufactured and imported hazardous substances (and new organisms), to ensure that any substances deemed to be hazardous (as defined by the HSNO Regulations) are subject to an integrated, consistent and performance based control system for all stages of their lifecycle. In practice, hazardous substances will be subject to minimum performance requirements (set by regulations) covering containment, packaging, identification/labelling, tracking, competency of handling, emergency preparedness and disposal once the HSNO Regulations come into force. These requirements apply regardless of circumstances such as activity, location and quantity.

The RMA addresses those aspects of hazardous substances management associated with a particular location or land use. Generally, this function is undertaken by territorial authorities (TAs) which make provisions for the control of hazardous facilities (i.e. sites where hazardous substances are used, stored, handled or disposed of) in their district plans. However, regional councils may choose to exercise this function (or part of it), but they need to state this intent in a regional policy statement.

The two Acts are designed to complement each other, with HSNO providing the overall framework for managing hazardous substances anywhere in New Zealand, and the RMA providing additional controls over and above those available through HSNO to ensure that site-specific circumstances can be taken into account.

3 Management controls for hazardous substances

The use, storage and handling of hazardous substances present potential sources of risk to humans, the environment and property. To manage such risks, facilities and/or sites involved in such activities have traditionally been subject to a variety of controls under different legislation, such as the Dangerous Goods Act 1974.

With the introduction of the HSNO Act, controls on hazardous substances and facilities have changed. Hazardous substances are now subject to minimum performance standards independent of their location. These performance standards address:

- packaging and containers
- identification
- tracking and competency
- emergency preparedness
- disposal.

However, HSNO does not allow for control mechanisms specific to a particular location, as Dangerous Goods Licenses used to do. Any site-specific controls can only be imposed under the RMA, through appropriate provisions in the district plan.

Typically, such provisions consist of two elements:

- a set of minimum performance requirements that apply to any facility using, storing or otherwise handling hazardous substances
- a mechanism for distinguishing between hazardous facilities deemed to be of low risk (i.e. permitted activities) and those of higher risk (i.e. those requiring a resource consent, enabling further controls to be imposed).

An overview of minimum performance requirements for hazardous facilities under the RMA is provided below. One possible mechanism for distinguishing between hazardous facilities of low and higher risk is the Hazardous Facility Screening Procedure or HFSP, which is explained in detail in the main document and presented in abbreviated form in this *Quick Guide*. Guidance with respect to assessing higher risk hazardous facilities requiring resource consents is provided in the companion document, *Assessment Guide to Hazardous Facilities* (MfE, 1999c).

4 Minimum performance requirements for hazardous facilities under the RMA

As noted above, site-specific controls for the use, storage and general handling of hazardous substances have to be provided under the RMA. These apply both to facilities presenting a relatively low risk (due to the type and quantity of substances on the site and the characteristics of the site itself), as well as to facilities requiring resource consents. A recommended set of minimum performance standards is outlined below.

A Site design

Any part of a hazardous facility which is involved in the manufacture, mixing, packaging, storage, loading, unloading, transfer, use or handling of hazardous substances must be designed, constructed and operated in a manner which prevents:

(i) the occurrence of any off-site adverse effects from the above listed activities on people, ecosystems, physical structures and/or other parts of the environment unless permitted by a resource consent

(ii) the contamination of air, land and/or water (including groundwater, potable water supplies and surface waters) in the event of a spill or other type of release of hazardous substances.

B Site layout

The hazardous facility must be designed in a manner to ensure that separation between on-site facilities and the property boundary is sufficient for the adequate protection of neighbouring facilities, land uses and sensitive environments.

C Storage of hazardous substances

The storage of any hazardous substances must be carried out in a manner that prevents:

(i) the unintentional release of the hazardous substance

(ii) the accumulation of any liquid or solid spills or fugitive vapours and gases in enclosed off-site areas, resulting in potentially adverse effects on people, ecosystems or built structures.

Specific performance requirements for the storage of hazardous substances are covered by HSNO regulations.

D Site drainage systems

Site drainage systems must be designed, constructed and operated in a manner that prevents the entry or discharge of hazardous substances into the stormwater and/or sewerage systems unless permitted by a network utility operator.

Suitable means of compliance include clearly identified stormwater grates and access holes, roofing, sloped pavements, interceptor drains, containment and diversion valves, oil-water separators, sumps and similar systems.

E Spill containment systems

Any parts of the hazardous facility site where a hazardous substances spill may occur must be serviced by suitable spill containment systems that are:

(i) constructed from impervious materials resistant to the hazardous substances used, stored, manufactured, mixed, packaged, loaded, unloaded or otherwise handled on the site; and for liquid hazardous substances:

- able to contain the maximum volume of the largest tank present plus an allowance for stormwater or fire water
- for drums or other smaller containers, able to contain 50 percent of the maximum volume of substances stored plus an allowance for stormwater or fire water

(ii) able to prevent the entry of any spill or other unintentional release of hazardous substances, or any contaminated stormwater and/or fire water into site drainage systems unless permitted by a network utility operator.

Suitable means of compliance include graded floors and surfaces, bunding, roofing, sumps, fire water catchments, overfill protection and alarms, and similar systems.

F Washdown areas

Any part of the hazardous facility site where vehicles, equipment or containers that are or may have become contaminated with hazardous substances are washed, must be designed, constructed and managed to prevent any contaminated wash water from:

(i) entry or discharge into the stormwater drainage or the sewerage systems unless permitted by a network utility operator

(ii) discharge into or onto land and/or water (including groundwater and potable water supplies) unless permitted by a resource consent.

Suitable means of compliance include roofing, sloped pavements, interceptor drains, containment and diversion valves, oil-water separators, sumps and similar systems.

G Underground storage tanks

Underground tanks for the storage of petroleum products must be designed, constructed and managed to prevent any leakage and spills and resulting adverse effects on people, ecosystems and property. Suitable means of compliance include:

- using materials that are resistant to the hazardous substances concerned
- using secondary containment facilities in areas of environmental sensitivity
- providing leak detection or monitoring system which capable of detecting a failure or breach in the structural integrity of the primary containment vessel
- adherence to the Code of Practice for "Design, Installation and Operation of Underground Petroleum Systems" (OSH, 1992).

H Signage

Any hazardous facility must be adequately signposted to indicate the nature of the substances stored, used or otherwise handled.

Suitable means of compliance include adherence to relevant Codes of Practice or the HAZCHEM signage system.

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

(ii) the waste entering or discharging into the sewerage system unless permitted by the sewerage utility operator

(iii) the waste discharging into or onto land and/or water (including groundwater and potable water supplies) unless permitted by a resource consent.

The storage and management of any process waste or waste containing hazardous substance on the site shall at all times comply with the performance standards specified for hazardous substances.

All waste containing hazardous substances shall be disposed of to facilities holding the necessary consents, or be serviced by a registered waste disposal contractor.

5 The Hazardous Facility Screening Procedure (HFSP)

The HFSP was first introduced in 1995 in the document entitled *Land Use Planning for Hazardous Facilities* (Hazardous Facility Screening Procedure Review Group, 1995). With the subsequent introduction of the HSNO Act and experience gained in implementing the HFSP, the method has now been revised to align it with HSNO requirements and make it more user-friendly.

The HFSP is a method that allows a council to distinguish between a low-risk hazardous facility and one presenting a higher risk, based on the type and quantity of the hazardous substances involved, and the characteristics of the site or facility in question (for example, the manner in which the substances are used or stored, or whether the facility is close to a sensitive environment). In the context of the HFSP, three types of effects are considered:

- Fire/Explosion Effect Type: addressing damage to the built environment and safety of people
- Human Health Effect Type: addressing adverse effects on the well-being, health and safety of people
- Environmental Effect Type: addressing adverse effects on ecosystems and natural resources.

The HFSP uses numerical values for this assessment, resulting in a number which can be compared with a value in the district plan. Essentially, if the number resulting from the HFSP calculation (Quantity Ratio) is below the value indicated in the district plan, the facility is a permitted activity, and if the number is higher, then a resource consent is required.

Detailed information on this process, and the development of appropriate district plan provisions, is provided in the main document.

An overview of the method and the steps involved to arrive at the Quantity Ratio is presented below.

1 Describe the hazardous facility	***Explanation:***
Prior to using the HFSP, it is necessary to compile a full description of the hazardous facility in question. This includes the creation of an inventory of hazardous substances held on the site, including: • names of hazardous substances • quantities of hazardous substances • the physical form of the substances at 20°C and 101.3 kPa • the location of use or storage on the site, including separation distances from the site boundary and neighbouring hazardous facilities (on-site and off-site). The description should also include site-specific details, including neighbouring land uses and the surrounding environment, with a focus on sensitive land uses and receptors (e.g. retirement accommodation, aquifers or wetlands).	The HFSP uses standard units of tonnes (for solids, liquids and liquefied gases) and m^3 (for compressed gases). In some cases, it may therefore be necessary to convert substance quantities to these units. In the case of liquids, specific gravity (or density) must be taken into consideration when converting litres or m^3 to tonnes. Adjustments to quantities are also necessary where a substance is diluted with water or mixed with another substance. In this instance, only the percentage quantity of the hazardous substance or product in the dilution or mixture is assessed for the purposes of HFSP calculations (unless a mixture is more hazardous than its components, in which case data on the mixture needs to be used). An exception to this are products or brands that already constitute dilutions or mixtures of hazardous substances and which have been classified in terms of their hazardous properties as the 'whole' dilution or mixture for life cycle management. Examples of this are corrosives, oxidising substances and pesticides, which are often sold commercially as standard solutions or strengths. In these cases, quantity adjustments are only applied when these commercially supplied concentrations are further diluted or mixed.
2 Determine Hazard Rating	***Explanation:***
For the purposes of the HFSP, the effects of substances are categorised into three Effect Types: • Fire/Explosion Effect Type: addressing damage to the built environment and safety of people • Human Health Effect Type: addressing adverse effects on the well-being, health and safety of people • Environmental Effect Type: addressing adverse effects on ecosystems and natural resources. Each Effect Type is divided into three Hazard Rating Levels: ♦ High ♦ Medium ♦ Low The rating levels are based predominantly on the HSNO classification system.	The HFSP rates hazardous substances in terms of each of the three Effect Types as having a high, medium or low hazard. The Hazard Rating of a substance is derived as follows: the list of HFSP-rated hazardous substances in Appendix B of the main document. the HSNO classification (refer Appendix A in the main document). Once a substance has been classified under HSNO, Hazard Ratings can be assigned for each Effect Type as shown in Appendix A. if a substance is not found in Appendix B and has not assigned a HSNO classification yet, default ratings should be used (Fire/Explosion Effect Type: Medium, Human Health Effect Type: Medium and Environment Effect Type: High). Alternatively, the user can follow the instructions in Appendix C to derive an appropriate Hazard Rating.

3 *Find Base Quantities (Table 1 in the Quick Guide)* The Base Quantity (B) is pre-calibrated. It is the amount of a substance that has been assessed as generating no significant off-site effects in a heavy industrial area before site- and substance-specific considerations have been taken into account (refer Step 4 below). Base Quantities for different hazardous properties and hazard ratings in each Effect Type are listed in the next table. (Table 3 in the main document.)	***Explanation:*** For example, in the Fire/Explosion Effect Type [Sub-category Flammables], non-significant off-site effects in a heavy industrial area are represented by a Base Quantity of: • 100 tonnes of a HSNO Category D flammable liquid (3.1 D) which has a low hazard level for the Fire/Explosion Effect Type. • 30 tonnes of a HSNO Category C flammable liquid (3.1 C) which has a medium hazard level for the Fire/Explosion Effect Type.
4 Calculate Adjusted Quantity (A) (Table 2 in the *Quick Guide*) The pre-calibrated Adjustment Factors (FF, HF, EF) (refer Table 4 in the main document) are multiplied with the Base Quantities (B) to account for substance properties and site-specific environmental circumstances. This multiplication yields the Adjusted Quantity (A). Adjustment Factors differ for each of the Effect Types, and take into account the following considerations: • the physical state of the substance • the type of storage • the type of activity or use • separation distances to the site boundary • the environmental sensitivity of the site location.	***Explanation:*** Different Adjustment Factors are applied for each Effect Type. For example, for the Fire/Explosion Effect Type, the temperature is relevant, while for the Human Health Effect Type, proximity to a potable water resource is important. In some instances, more than one Adjustment Factor within each Effect Type must be applied, which then need to be multiplied with each other to yield the total Adjustment Factor for the Effect Type. When the Adjustment Factors for each Effect Type have been calculated, they in turn are multiplied with the Base Quantity to yield the Adjusted Quantity.
5 Calculate and add Quantity Ratios (FQ, HQ, EQ) This step requires the calculation of the Quantity Ratio for each hazardous substance in question. The Quantity Ratio is a dimensionless number. It is obtained by dividing the quantity of a substance that is proposed to be used or stored on a site, i.e. the Proposed Quantity (P) by the Adjusted Quantity (A). If several hazardous substances are used or stored on a site, the Quantity Ratios calculated for each of these substances are added up for each Effect Type. Note that $FQ/HQ/EQ_{Total}$ stands for the total sum of Quantity Ratio values from all assessed hazardous substances, within each Effect Type.	***Explanation:*** By using the dimensionless ratio of the Proposed Quantity of a hazardous substance over the Adjusted Quantity, it is possible to aggregate the effects presented by multiple substances held on the same site. Hence, it becomes possible to assess the cumulative potential effects which may be created by several substances present on the same site.
6 Assess resource consent status of hazardous facility When assessing the resource consent status of a particular hazardous facility, the added Quantity Ratios for each Effect Type are compared with relevant Consent Status Indices in the Resource Consent Matrix in the district plan. If they are exceeded, a resource consent is required.	***Explanation:*** When examining total Quantity Ratios against applicable Consent Status Indices, one or several substances may trigger a resource consent. This highlights the fact that when assessing hazardous facilities, it is often sufficient to assess just a few hazardous substances to start off with, mainly those that are either highly hazardous or are used/stored in high quantities.

The HFSP is only applied to new facilities, or those where a modification in operations causes a significant change in the character, nature and/or scale of actual or potential effects. However, if the HFSP is incorporated into a **regional** plan, the procedure may also be applied to existing facilities.

Certain situations or activities are not appropriate for being considered by the HFSP:

- trade waste sewers
- gas or oil pipelines
- storage and use of hazardous consumer products for private domestic purposes
- fuel in motor vehicles, boats and small engines
- retail outlets for the domestic scale use of hazardous substances (e.g. supermarkets, hardware stores, pharmacies)
- facilities presenting a dust explosion risk of non-hazardous substances
- hazardous activities that do not involve hazardous substances (e.g. high-voltage transmission lines, radio masts).

***Quick Guide* Table 1:** Base quantities (B) for all effect types and hazard ratings

HSNO category	UN class equivalent	Hazard level	Unit tonnes or cubic metres	Base quantity (B)		
				Fire/ explosion	Human health	Environment
Explosive substances						
1.1	1.1	High	tonnes	0.1	–	–
1.2	1.2	Medium	tonnes	1	–	–
1.3	1.3	Low	tonnes	3	–	–
1.5	1.5	Low	tonnes	3	–	–
Flammable gases						
2.1.1A	2.1	High	m^3 tonnes	10,000* 10	–	–
2.1.2A	2.1	High	m^3 tonnes	10,000* 10	–	–
	LPG	Medium	tonnes	30	–	–
Flammable liquids						
3.1 A	3PGI	High	tonnes	10	–	–
3.1 B	3PGII	High	tonnes	10	–	–
3.1 C	3PGIII	Medium	tonnes	30	–	–
3.1 D	Combustible liquids	Low	tonnes	100	–	–
Liquid desensitised explosives						
3.2 A 3.2 B 3.2 C	3 PGI 3 PGII 3 PGIII	High	tonnes	1		
Flammable solids						
4.1.1.A	4.1 (a) PGII	Medium	tonnes	10	–	–
4.1.1 B	4.1 (a) PGIII	Low	tonnes	30	–	–
4.1.2 A 4.1.2 B	4.1 (b) PGII	High	tonnes	1	–	–

HSNO category	UN class equivalent	Hazard level	Unit tonnes or cubic metres	Base quantity (B)		
				Fire/ explosion	Human health	Environment
4.1.2 C 4.1.2 D	4.1 (b) PGII	Medium	tonnes	10	–	–
4.1.2 E 4.1.2 F 4.1.2 G	4.1 (b) PGII	Low	tonnes	30	–	–
4.1.3 A	4.1 (c) PGI	High	tonnes	1	–	–
4.1.3 B	4.1 (c) PGII	High	tonnes	1	–	–
4.1.3 C	4.1 (c) PGIII	High	tonnes	1	–	–
4.2 A	4.2 PGI	High	tonnes	1	–	–
4.2 B	4.2 PGII	High	tonnes	1	–	–
4.2 C	4.2 PGIII	Medium	tonnes	10	–	–
4.3 A	4.3 PGI	High	tonnes	1	–	–
4.3 B	4.3 PGII	High	tonnes	1	–	–
4.3 C	4.3 PGIII	Medium	tonnes	10	–	–
Oxidising substances						
5.1.1 A	5.1 PGI	High	tonnes	1		
5.1.1 B	5.1 PGII	High	tonnes	1		
5.1.1 C	5.1 PGIII	Medium	tonnes	10		
5.1.2 A	2.2	High	m^3 tonnes	10,000 10		
5.2 A 5.2 B	5.2 Types A and B	High	tonnes	1		
5.2 C 5.2 D	5.2 Types C and D	Medium	tonnes	10		
5.2 E 5.2 F 5.2 G	5.2 Types E, F and G	Low	tonnes	30		
Toxic substances						
6.1 A	6.1 PGI 2.3	High	tonnes m^3	–	1 50	–
6.1 B	6.1 PGII 2.3	High	tonnes m^3	–	1 50	–
6.1 C	6.1 PGIII 2.3	Medium	tonnes m^3	–	10 150	–
6.1 D	Standard poison	Low	tonnes m^3	–	30 500	–
Corrosive substances						
8.2 A	8 PGI	High	tonnes	–	1	–
8.2 B	8 PGII	Medium	tonnes	–	10	–
8.2 C	8 PGIII	Low	tonnes	–	30	–
Ecotoxic substances						
9.1 A	GHS	High	tonnes	–	–	3
9.1 B	GHS	Medium	tonnes	–	–	30
9.1 C	GHS	Low	tonnes	–	–	100
9.1 D	GHS	Low	tonnes			100

***Quick Guide* Table 2:** Adjustment factors for all effect types

Fire/explosion	Human health	Environment
FF1: Substance form	***FH1: Substance form***	***FE1: Substance form***
Solid = 1 Liquid, powder = 1 Gas (101.3 kPa, 20°C) = 0.1	Solid = 3 Liquid, powder = 1 Gas (101.3 kPa and 20°C) = 0.1	Solid = 3 Liquid, powder = 1 Gas (101.3 kPa and 20°C) = 0.1
FF2: Separation distance from site boundary (sub-facility)	***FH2: Separation distance from site boundary (sub-facility)*** *(gases only)*	***FE2: Environmental sensitivity***
< 30 m = 1 > 30 m (>60 m)[1] = 3	< 30 m = 1 > 30 m (>60 m)[2] = 3	Normal = 1 Adjacent to water resource[2] = 0.3
FF3: Type of activity	***FH3: Type of activity***	***FE3: Type of activity***
Use = 0.3 Above ground storage = 1 Underground storage[3] = 10	Use = 0.3 Above ground storage = 1 Underground storage[6] = 10	Use = 0.3 Above ground storage = 1 Underground storage[6] = 3
Final fire/explosion adjustment factor **FF = FF1 x FF2 x FF3**	Final human health adjustment factor **FH = FH1 x FH2 x FH3**	Final environment adjustment factor **FE = FE1 x FE2 x FE3**

Other activities, although suitable for assessment by the HFSP, may be exempted should an individual council wish to do so. Such activities should be well regulated by other mechanisms such as Codes of Practice, for example those approved by ERMA NZ under the HSNO Act or Standards. They should also comply with the minimum performance standards specified in the district plan. Over time, it is expected that councils will exempt other activities where they are well regulated by other mechanisms, provided council is satisfied that the other regulations ensure all obligations under the RMA are complied with. Examples of activities suitable for exemption are:

- the retail sale of liquid fuel, up to a storage of 100,000 litres of petrol in underground storage tanks and up to 50,000 litres of diesel, provided that the *Code of Practice for the Design, Installation and Operation of Underground Petroleum Systems*, published by the Department of Labour – OSH, is adhered to
- retail LPG outlets, with storage of up to 6 tonnes (single vessel storage) of LPG, provided that the Australian/New Zealand *Standard AS 1596:1997 – Storage and Handling of LP Gas* is adhered to
- the use, storage and transport of hazardous substances by teaching and research laboratories, provided that the relevant Standards are adhered to.

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1 If the facility is assessed as a sub-facility, the distance to the neighbouring sub-facility must be more than 60 metres (i.e. 2 x 30 metres) to qualify for an Adjustment Factor of 3 (refer Section 5.5.4 of the main document).

2 Water resources include aquifers and water supplies, streams, springs, lakes, wetlands, estuaries and the sea, but do not include entry points to the stormwater drainage network. 'Adjacent' must be defined in respective district plans and will depend on the type of water resource potentially affected (adjacent is variably defined as between 30 and 100 metres).

3 Applicable to UN Class 3 substances (flammable liquids) only.

6 Using the HFSP in a district plan

A district plan chapter that incorporates the HFSP should be structured as follows:

- a general part outlining issues, objectives, policies and outcomes
- a section specifying the rules – this section must include a table showing consent status indices for the different activities (the so-called Consent Status Matrix)
- a section setting out minimum performance standards for all activities, whether permitted or in need of a consent (refer Section 4 of the *Quick Guide*)
- a section on monitoring and performance assessment
- an attachment providing information on the HFSP to enable potential applicants to understand and work with the procedure.

Detailed information on linking the HFSP with a district plan and a model district plan section can be found in Chapters 6 and 8 respectively of the main document.

7 Case study

This case study (also found in Appendix E of the main document) shows how the district plan provisions of an average provincial service town apply to a proposal to establish a panel-beating and spray painting workshop in its commercial area. The Consent Status Matrix below may be found in Section 6.4.1.1 of the main document.

Zone	Consent status indices for permitted activities	Consent status indices for discretionary activities
Industrial	≤1	>1
Light industrial	≤0.5	>0.5
Commercial	≤0.2	>0.2
Open space	≤0.1	>0.1
Residential	≤0.02	>0.02

This example uses a moderately sized panel-beating and spray-painting facility in a commercial area to demonstrate the HFSP. The storage of degreasers, thinners and paints is the major aspect of this operation. The facility is not near a water body.

Step 1: Describe the facility and hazardous substances

A major aspect of this operation is the storage of the 'tools of the trade', i.e. the paints and solvents necessary for undertaking the work and the tools used, some of which require gases such as acetylene and oxygen. The substances and the quantities in which they will be found on the site are listed in a table such as the one shown below. It is also important to note that the facility will be located less than 30 metres from its site boundary and that no water body of any kind is in the neighbourhood.

Name	Quantity (tonnes or cubic metres)	Form (liquid, powder, solid, gas)	Location
Degreaser (solvent)	0.015 t	Liquid	Inside, < 30 m from boundary
Thinner (xylene based)	0.1 t	Liquid	Inside, < 30 m from boundary
Waste thinner (xylene based)	0.05 t	Liquid	Inside, < 30 m from boundary
Lacquer paints	0.1 t	Liquid	Inside, < 30 m from boundary
Enamel paints	0.06 t	Liquid	Inside, < 30 m from boundary
Fibreglass resin (styrene)	0.01 t	Solid	Inside, < 30 m from boundary
Acetylene	8 m^3	Gas	Inside, < 30 m from boundary
Oxygen	8 m^3	Gas	Inside, < 30 m from boundary

For many of the substances, the proprietary name is not known. In addition, many different types and colours of paints are used, although all are solvent based. For this reason, the paints are conservatively assumed to be both flammable and corrosive, and summarised into the categories named above. As the specific gravity of the paints is not known, the conversion of proposed quantities is based on an estimated specific gravity of 1. The degreaser has been rated according to the general properties of solvents. As organic solvents generally have a specific gravity of less than 1, an averaged specific gravity value of 0.75 has been assigned for conversion purposes. The thinner, including the waste thinner, has been rated on the basis of its main component, xylene.

Step 2: Identify hazard ratings

As a first step, Appendix B of the main document is used to determine the hazard ratings for the listed substances. If the substance is not listed, Appendix A provides criteria for rating the substance provided that the HSNO classification is known. If these approaches do not yield a result, the default ratings of medium for the Fire/Explosion and Human Health effect types and high for the Environment Effect Type should be applied, unless the user is willing to undertake the steps required to rate the substance with the help of the Rating Guide in Appendix C of the main document. The ratings are recorded in a table as below.

As noted above, the paints have been summarised into two categories, and as for the degreaser, little substance-specific information is known. For this reason, default ratings have been used for all Effect Types, as indicated by italics.

Name	Hazard rating		
	Fire/explosion effect type	Human health effect type	Environment effect type
Degreaser (solvent)	*Medium*	*Medium*	*High*
Thinner (xylene based)	Medium	Low	–
Waste thinner	Medium	Low	–
Lacquer paints	*Medium*	*Medium*	*High*
Enamel paints	*Medium*	*Medium*	*High*
Fibreglass resin (styrene)	Medium	Low	Medium
Acetylene	High	–	–
Oxygen	Medium	–	–

Step 3: Find base quantities

Now that hazard ratings have been established for all substances that will be used or stored at the facility, Table 1 in this *Quick Guide* (Table 3 in the main document) can be consulted to find the Base Quantities (B) for each substance.

Name	Base quantity (tonnes or m^3)		
	Fire/explosion effect type	Human health effect type	Environment effect type
Degreaser (solvent)	30	10	3
Thinner (xylene based)	30	30	–
Waste thinner	30	30	–
Lacquer paints	30	10	3
Enamel paints	30	10	3
Fibreglass resin (styrene)	30	30	30
Acetylene	10,000	–	–
Oxygen	10,000	–	–

Step 4: Calculate adjusted quantity

Table 2 in the *Quick Guide* (Table 4 in the main document) lists the Adjustment Factors for the three Effect Types that must be used to calculate the Adjusted Quantity (A), i.e. the quantity that can be used at the facility without giving rise to adverse off-site effects.

In this case, no special circumstances apply. The facility is less than 30 metres from the site boundary, and information obtained from the council's district plan shows that the site is not located in the vicinity of a water body. Inquiries at the regional council have ascertained that the facility is not sited near a potable water resource.

Most of the substances used on the site are liquids, with the exception of acetylene and oxygen (gases) and fibreglass resin (solid). Although the substances are in use, the amount used represents only a part of the whole quantity. According to the guidance provided in the Step-by-Step Guide to the HFSP (refer main document), the substances held on the site are therefore regarded as being in storage.

Most Adjustment Factors, except for those relating to substance form in the case of fibreglass and the gases, are therefore set at 1. It should be noted that Adjustment Factor FH2 for the Human Health Effect Type does not apply at all in this case because all substances that have been assigned a hazard level for this Effect Type are either liquids or solids. The Adjusted Quantities are as follows:

Name	Adjusted quantity (tonnes or cubic metres)		
	Fire/explosion effect type	Human health effect type	Environment effect type
Degreaser (solvent)	30	10	3
Thinner (xylene based)	30	30	–
Waste thinner	30	30	–
Lacquer paints	30	10	3
Enamel paints	30	10	3
Fibreglass resin (styrene)	90	90	90
Acetylene	1000	–	–
Oxygen	1000	–	–

Step 5: Calculate quantity ratios

Now that all the necessary information has been collated, the Quantity Ratios (Q) for all three Effect Types can be calculated, by dividing the Proposed Quantity of a substance by the Adjusted Threshold for each Effect Type (P/A = Q). The values for each substance are then added together within the different Effect Types. Results are shown in the table below.

Name	Quantity ratio (Q)		
	Fire/explosion effect type	Human health effect type	Environment effect type
Degreaser (solvent)	0.0005	0.0015	0.0050
Thinner (xylene based)	0.0033	0.0033	–
Waste thinner	0.0017	0.0017	–
Lacquer paints	0.0033	0.0100	0.0333
Enamel paints	0.0020	0.0060	0.0200
Fibreglass resin (styrene)	0.0001	0.0001	0.0001
Acetylene	0.0027	–	–
Oxygen	0.0027	–	–
Total Q	**0.0163**	**0.0226**	**0.0584**

Step 6: Determine the proposal's consent status

As indicated by the Consent Status Matrix used for this example, the Consent Status Index for a permitted activity in the commercial zone is 0.2. A proposed facility with a value higher than that in any of the three Effect Types would require a resource consent. In this case, no consent is required as even the highest Quantity Ratio (in the Environment Effect type) is still below 0.2.

The activity is permitted, but will need to comply with the minimum performance standards specified in the district plan. However, it is important to note that the facility may also have to comply with other provisions in the district plan (such as building specifications) or rules in a regional plan. For example, the spray-painting booth may require an air discharge consent, depending on regional rules.

8 What happens after a proposed hazardous facility has been screened using the HFSP?

Assessment of a hazardous facility proposal by the HFSP will result in one of the following outcomes:

- **The proposed facility is a permitted activity** and the minimum performance standards for hazardous facilities set out in the district plan need to be complied with, as well as any other relevant specifications. In cases of non-compliance with hazardous facility minimum performance standards, the facility should be regarded as being a discretionary activity.
- **The proposed facility requires a resource consent**. A consent application process must be initiated, including the preparation of an Assessment of Environmental Effects (AEE) and a risk assessment. Detailed information on this process is provided in the *Assessment Guide for Hazardous Facilities* (MfE, 1999c). Compliance with hazardous facility minimum performance standards is also required.

9 Further information

- Detailed information about the use of the HFSP and associated land use planning issues for hazardous facilities are contained in the main document, the *Land Use Planning Guide for Hazardous Facilities*.
- In-depth information about risk assessment and a suggested approach to dealing with facilities that require a resource consent may be found in the companion document, the *Assessment Guide for Hazardous Facilities* (MfE, 1999c).
- A simple approach to undertaking HFSP calculations and a list of common substances rated for the HFSP is provided in the HFSP Spreadsheet Package, a Microsoft Excel® Spreadsheet which may be downloaded from the MfE website: (http://www.mfe.govt.nz/about/laws/hsno/hazfacility.htm). It may also be requested on disk from the MfE.
- The MfE website presents all the resources named above for downloading, as well as providing relevant links, for example to the ERMA website.

The following aspects are essential in dealing effectively with proposed hazardous facilities:

- An understanding of the legislative requirements for hazardous substances and facilities
- District plan provisions that provide:
  - clear objectives, policies and methods
  - a method for assessing whether a proposed facility requires a consent or not, such as the HFSP
  - minimum performance standards for all hazardous facilities regardless of their consent status.