

## Appendix 1: List of Hazardous Characteristics

UN Class <sup>51</sup>	Code	Characteristics (See Note 1)
1	H1	<p><b>Explosives</b></p> <p>An explosive substance or waste is a solid or liquid substance or waste (or mixture of substances or wastes) that is, in itself, capable by chemical reaction of producing gas at such a temperature and pressure, and at such a speed, as to cause damage to the surroundings.</p>
3	H3	<p><b>Flammable Liquids</b></p> <p>The word "flammable" has the same meaning as "inflammable". Flammable liquids are liquids, or mixtures of liquids, or liquids containing solids in solution or suspension (for example, paints, varnishes, lacquers, etc., but not including substances or wastes otherwise classified on account of their dangerous characteristics) which give off a flammable vapour at temperatures of not more than 61 degrees Celsius.</p>
4.1	H4.1	<p><b>Flammable Solids</b></p> <p>Solids, or waste solids, other than those classed as explosives, which under conditions encountered in transport (see Note 2) are readily combustible, or may cause or contribute to fire through friction.</p>
4.2	H4.2	<p><b>Substances or Wastes Liable to Spontaneous Combustion</b></p> <p>Substances or wastes that are liable to spontaneous heating under normal conditions encountered in transport, or to heating up on contact with air, and then being liable to catch fire.</p>
4.3	H4.3	<p><b>Substances or Wastes which, in Contact with Water, Emit Flammable Gases</b></p> <p>Substances or wastes which, by interaction with water, are liable to become spontaneously flammable or to give off flammable gases in dangerous quantities.</p>
5.1	H5.1	<p><b>Oxidising Substances</b></p> <p>Substances or wastes which, in themselves are not necessarily combustible, but may, generally by yielding oxygen, cause or contribute to the combustion of other materials.</p>
5.2	H5.2	<p><b>Organic Peroxides</b></p> <p>Organic substances or wastes which contain the bivalent O=O structure are thermally unstable substances which may undergo exothermic self-accelerating decomposition.</p>
6.1	H6.1	<p><b>Poisonous Substances</b></p> <p>Substances or wastes liable either to cause death or serious injury or to harm human health if swallowed or inhaled or by skin contact.</p>

<sup>51</sup> Corresponds to the hazard classification system used in the United Nations Recommendations on the Transport of Dangerous Goods (ST/SG/AC. 10/1/Rev.6, United Nations, New York, 1989).



UN Class	Code	Characteristics
6.2	H6.2	<b>Infectious Substances</b> Substances or wastes containing viable micro-organisms or their toxins which are known or suspected to cause disease in animals or humans.
7	H7	<b>Radioactive Material</b> Spontaneously emits radiation greater than background level. Includes alpha, beta, gamma, x-rays, neutrons, high energy electrons, protons, other atomic particles.
8	H8	<b>Corrosives</b> Substances or wastes which, by chemical action, will cause severe damage when in contact with living tissue, or, in the case of leakage, will materially damage, or even destroy, other goods or the means of transport; they may also cause other hazards.
9	H10	<b>Liberation of Toxic Gases in Contact with Air or Water</b> Substances or wastes, which, by interaction with air or water, are liable to give off toxic gases in dangerous quantities.
9	H11	<b>Toxic (Delayed or Chronic)</b> Substances or wastes, which if they are inhaled or ingested or if they penetrate the skin, may involve delayed or chronic effects, including carcinogenicity (see Note 3).
9	H12	<b>Ecotoxic</b> Substances or wastes, which if released, present or may present immediate or delayed adverse impacts on the environment by means of bioaccumulation and/or toxic effects upon biotic systems (see Note 3).
9	H13	<b>Capable of Yielding Another Material</b> Capable, by any means, after disposal, of yielding another material, e.g., leachate, which possesses any of the characteristics listed above.

**Note:** (1) These categories do not correspond precisely with the definition of hazardous substances adopted in this Plan. In this list, Code H1 is equivalent to the property of "explosiveness" in the definition of hazardous substances adopted in this plan; Codes H3, H4.1, and H4.2 are equivalent to the property of "flammability"; Code H5.1 is equivalent to "a capacity to oxidise"; Code H8 is equivalent to "corrosiveness"; Codes H6.1 and H11 are equivalent to "toxicity"; Code H12 is equivalent to ecotoxicity; Code H7 is equivalent to "radioactivity"; and Codes H4.3, H10 and H13 are equivalent to Clause 2 of the definition of hazardous substances adopted in this Plan.

(2) In the above descriptions, where specific reference is made to conditions of transport, this should include all conditions of storage, transport and disposal.

(3) These categories, in the absence of specific tests are considered to contain, but are not limited to, all wastes having as constituents any substances listed in the four schedules of the New Zealand Toxic Substances Regulations at or above the concentrations listed in the schedule to these Regulations.

Source: Centre for Advanced Engineering, 1992.



## Appendix 2: Matters to be Included in Landfill Management Plans

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### SECTION 1 - INTRODUCTION

- 1.1 General description of the landfill site, including ownership and management responsibilities.
- 1.2 Approvals and Consents Obtained
- 1.3 Staging
- 1.4 Projected Life
- 1.5 End Use
- 1.6 Initial Upgrading
- 1.7 Geotechnical Investigation
- 1.8 Environmental Impact Assessment
- 1.9 Any implications of site management and operation of landfill for Iwi (This will require consultation)

### SECTION 2 - MANAGEMENT

- 2.1 Right of Access
- 2.2 Landfill Hours
- 2.3 Kiosk Operation and Charging
- 2.4 Landfill Operation Contract
- 2.5 Management Structure
- 2.6 Staff Requirements
- 2.7 Training
- 2.8 Operator's Guide
- 2.9 Annual Review and Report

### SECTION 3 - LANDFILL OPERATION

- 3.1 Site Preparation
  - Tip Head
  - Signs
  - Screens
  - Perimeter Fencing
  - Landscaping
- 3.2 Water Control
  - Stormwater
  - Leachate
- 3.3 Landfilling
  - Method of Landfilling
  - Size of Face
  - Height of Lifts
  - Access Roads
- 3.4 Compaction
  - Method of Compaction
  - Degree of Compaction
  - Method of Compaction Testing
  - Frequency of Compaction Testing



- 3.5 Hazardous Waste
  - Documentation
  - Acceptable/Unacceptable Wastes
  - Waste Compatibilities
  - Methods of Disposal
  - Monitoring and Recording
  - Reporting Results to Regional Council
  - Waste in Drums
  
- 3.6 Liquid Waste
  - Acceptable/Unacceptable Wastes
  - Methods of Disposal
  - Areas for Disposal
  - Maximum loadings
  - Monitoring
  
- 3.7 Cover Material
  - Type of Cover Material to be Used
  - Depth of Cover
  - Amount of Cover Material to be Used
  - Final Cover
  - Importing of Cover Material
  - Stockpiling of Cover Material
  - Surface Water Runoff
  
- 3.8 Inert Fill
  - Method of Disposal
  
- 3.9 Control of Nuisances and Adverse Effects
  - Spillages
  - Litter
  - Dust
  - Vermin
  - Birds
  - Scavengers
  - Odours
  - Landfill Gas
  
- 3.10 Monitoring and Records
  - Groundwater
  - Surface Water
  - Landfill Gas
  - Refuse Quantities
  - Hazardous Wastes
  
- 3.11 Emergency Procedures
  - Fire
  - Landfill Gas
  - First-Aid
  - Emergency Contacts

#### SECTION 4 - REINSTATEMENT

- 4.1 Final Landform
- 4.2 Closure and After-care

APPENDICES: Approval Documentation, Drawings, Aerial Photograph, Staged Management Plans, Final Landform Plan *Source: Adapted from Centre for Advanced Engineering, 1992.*



## Appendix 3: Matters to be Included in Annual Landfill Reports

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1. Annual Mass balance of each hazardous substance entering, and leaving the facility as notified through the “Hazwaste Manifest System” (as specified in Policy 8.6 Section 6 - Hazardous Substances) including identification of quantities consumed, spilled, lost or unaccounted for.
2. Total mass of contaminants discharged to land since the last audit report including masses of individual contaminants identified in resource consent.
3. Results since the last audit report of any environmental monitoring specified in the resource consent including commentary on any contravention of the resource consent requirements, the accuracy of the monitoring, and any long term trends.
4. The state of preparedness of equipment, measures, and procedures or other safeguards, including training put in place to prevent or reduce any adverse environmental effect (including potential effects of low probability but high potential impact).
5. The name of the most senior management person in the company with responsibility for ensuring compliance with the resource consents and the mechanisms by which that person has up-to-date knowledge of:
  - the legal and practical requirements of meeting the resource consents;
  - the degree to which the operations comply with these requirements.
6. Commentary on the adequacy of the management plan including identification of any deficiencies.

## Appendix 4: Matters to be Included in Discharge Management Plans

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1. Description of the waste collection, treatment and disposal system.
2. Identification of discharges and environmental effects and the safeguards in place to avoid or reduce the environmental effects.
3. Identification of wastes which are prohibited.
4. Identification of wastes which can only be accepted under special (specified) conditions.
5. Identification of accepted cleaner production technologies for classes of activity (identified by New Zealand Standard Industrial Classification) which together contribute at least 80% of the waste stream contaminants (measured by mass) and commentary on:
  - the extent to which the cleaner technologies are in place in each activity, including commentary on the source and accuracy of that information,
  - the measures that the consent holder is putting in place to achieve greater conformance with accepted cleaner production technologies,
  - the timetable prepared by the consent holder for each industrial activity for achieving at least 95% compliance with accepted cleaner production technology.
6. Monitoring requirements and procedures including random checking of incoming wastes.
7. Emergency response procedures and contingency plans including:
  - detection of leakage of contaminants,
  - discharge of contaminants in contravention of resource consent conditions,
  - power failure,
  - fire,
  - earthquake.
8. Identification of management responsibilities for compliance with resource consents and environmental regulatory requirements.
9. Maintenance requirements.
10. Identification of corporate environmental performance standards, national or industry group codes of practice, or other recognised environmental, safety, or health standards to which the operation of the facility will comply, and a description of the means for auditing compliance.



## Appendix 5: Site Investigations for On-site Sewage Treatment and Disposal

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### Site investigations must:

- (a) be undertaken by suitably qualified and experienced people;
- (b) be fully documented (an example of appropriate documentation is provided in Appendix E of "On-Site Wastewater Disposal from Households and Institutions" (Auckland Regional Council, 1994));
- (c) include the following matters:

#### (1) Groundwater Information

Map 1 of this Plan shows general information on the vulnerability of groundwater in the Wellington Region. The Regional Council should be contacted for more detailed information on groundwater. If information is lacking and a large development is proposed, additional investigations may be required.

The following factors are relevant:

- (a) depth to groundwater, and seasonal variation of the water table;
- (b) direction and rate of flow of saturated groundwater.

#### (2) Soil Information

The following factors are relevant:

- (a) depth to gravels;
- (b) texture - amount of sand, silt and clay;
- (c) infiltration and drainage characteristics - a percolation test may be used;
- (d) soil variability within the site.

#### (3) Other Site Information

The following factors are relevant:

- (a) topography, slope, and slope stability;
- (b) rainfall and susceptibility of site to temporary flooding and ground saturation during rain;
- (c) evapotranspiration potential (exposure to sun and wind);
- (d) proximity to water bodies and drainage flow paths for surface runoff;
- (e) site vegetation;
- (f) location of bores, structures, paved areas and site boundaries;
- (g) section size and shape, and the availability and location of potential disposal areas;
- (h) water supply source;
- (i) surrounding land uses;
- (j) other local experience with on-site sewage treatment and disposal.

More information about site investigations is in "On-site Wastewater Disposal from Households and Institutions" (Auckland Regional Council, 1994).



## Appendix 6: Guidelines for the Storage of Hazardous Wastes

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These Guidelines are modified from the Centre for Advanced Engineering publication, *Our Waste: Our Responsibility*.<sup>52</sup>

Storage, in these guidelines, covers both bulk and packaged hazardous waste, and the handling, repacking, care, custody and pipeline transfer of hazardous waste.

The Guidelines are designed to eliminate incidents that could result in injury to people or damage to the environment, and minimise the impact of any incidents that do occur.

### 1. Principles of Storage

The following matters should be complied with:

- 1.1 Any relevant regulations or codes of practice;
- 1.2 Inspection of incoming waste to ensure that packaging is of the required standard, is not damaged and is properly labelled;
- 1.3 Reactive materials are separated by approved segregation devices or approved separation distances;
- 1.4 Effective documented control procedures are followed, together with proof of their being followed, for the inspection, receipt, shipping, handling, storage, and security during storage of waste;
- 1.5 People involved in the handling and storage of hazardous waste are trained and certificated. Training records are kept and refresher courses given;
- 1.6 The range and suitability of fire-fighting equipment and materials required to contain or neutralise spills is adequate. Employees are trained in procedures to be followed in the event of a fire and in emergency procedures such as spill containment and neutralisation;
- 1.7 Information about the waste, particularly on containment, neutralisation and its behaviour under fire conditions is provided. Employees are trained in the interpretation of this information;
- 1.8 An up-to-date Emergency Plan for the site, covering all potential incidents and addressing the extent to which community services will be involved, is developed and maintained;
- 1.9 Any necessary special equipment is provided, for example explosion proof forklift trucks;
- 1.10 Any ancillary operations of other operations on the site which may have an impact on the storage of waste are effectively controlled;
- 1.11 Hazardous waste should not be held in long-term storage where there is an established treatment process and facility.

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<sup>52</sup>

Centre for Advanced Engineering, 1992. pp 219-221. This reference also contains a checklist for hazardous waste storage facilities.





## 2. Management Practices

The organisation should:

- 2.1 Have written policies, procedures and improvement plans for storage of hazardous substances. Responsibilities for approving, communicating, implementing, reviewing and updating these documents should be clearly defined;
- 2.2 Maintain policies and procedures that meet or exceed all applicable laws, regulations and relevant New Zealand standards in letter and in spirit;
- 2.3 Maintain records and quantitative measures of storage incidents and reviews;
- 2.4 Set specific targets for reduction of these incidents and for improvement in reviews;
- 2.5 Maintain a system that identifies ownership, responsibility and status of stored hazardous wastes.

## 3. Risk Management

The organisation should carry out risk assessment of its storage operations on a regular basis, in particular:

- 3.1 Maintain a system of review that considers the hazards of each material, the methods of containment (including pipelines) and the procedures involving handling and storage;
- 3.2 Maintain a system that considers the likelihood of accidents or spillage and the resultant impact on human health and the environment;
- 3.3 Maintain a system that will only allow new hazardous waste into storage after a risk assessment has been completed.

The organisation should actively practice risk reduction, and in particular should:

- 3.4 Ensure the appropriate and approved siting of all facilities;
- 3.5 Ensure security is provided at all facilities to prevent unauthorised access;
- 3.6 Maintain a system that reviews the integrity of all containment facilities, including storage tanks, pipelines, drums and other packaging, at least in accordance with regulatory requirements;
- 3.7 Ensure materials are appropriately segregated during storage;
- 3.8 Ensure all operations are covered by written, regularly updated procedures;
- 3.9 Ensure, as a minimum, that all labelling is in accordance with regulatory requirements;
- 3.10 Maintain a system that provides guidance and information in advance to any group that may be affected by the warehousing and storage of hazardous waste. The system must include provisions to keep such information current;
- 3.11 Maintain a system that regularly reviews the suitability of all facilities;
- 3.12 Maintain a system that reviews generator and contractor ability to meet these guidelines;
- 3.13 Maintain a system that ensures prompt and effective response to any incident during storage;
- 3.14 Ensure that all personnel are adequately trained in all operational matters (including safety, health and environmental matters) and that this training is formally reviewed.



#### 4. Community Awareness

The views and needs of the surrounding community should be taken into account in the design and operation of a storage facility and the formulation of emergency plans. The organisation should:

- 4.1 Ensure that the local community is informed of any new hazardous waste facility or any major change at an existing hazardous waste facility;
- 4.2 Maintain a system that responds to any reasonable community request as to the type and quantity of hazardous waste in a storage facility;
- 4.3 Encourage the local community to have an understanding of the organisation's practices, especially those involving security and accident response;
- 4.4 Encourage the formation of neighbourhood consultative committees where deemed appropriate;
- 4.5 Maintain a system that, as a minimum, makes information on all reportable releases or loss of containment available to the public;
- 4.6 Keep relevant agencies (e.g., fire service, civil defence) up to date on types of hazardous waste on site and established emergency procedures.

