HAZARDOUS WASTE MANAGEMENT

Office of the
PARLIAMENTARY COMMISSIONER FOR THE ENVIRONMENT
Te Kaitiaki Taiao a Te Whare Pāremata

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PREFACE

New Zealand cannot be proud of its reputation in the area of hazardous waste management. Our 'clean, green' image belies the fact that we send large amounts of waste to landfill (about 900 kg per person per year, including industrial waste) of which about 8 percent is potentially hazardous. Other issues of concern are the uncertain quantities and quality of liquid hazardous wastes being legally and illegally discharged as trade waste to sewers, and the lack of incentives for hazardous waste generators to minimise the amount of waste they produce.

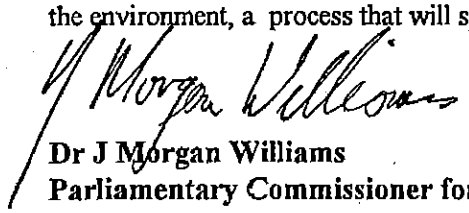
The current problems associated with the management of hazardous waste in New Zealand can be attributed to the lack of appropriate legislation defining 'hazardous waste', poor coordination of information at the national level on hazardous waste quantities and effects on the environment, and the lack of an overall national strategy for implementing the Government's waste policy. Some of these issues have already been highlighted in previous reports, including an OECD Environmental Performance report in 1996 and the first State of New Zealand's Environment report in 1997.

In early 1997 I concluded, following consideration of the two reports noted above and representations from the waste management industry and some local authorities, that an investigation of this environmental management issue was essential. The consistent lack of action over a number of years indicated some fundamental flaws in New Zealand authorities' perceptions of the risks and hence willingness to act. The potential risk of poor environmental management to our international reputation and our clean green image appeared to be high. For these reasons I outlined my intent to investigate this matter in my strategic plan, Future Directions, in August 1997.

In September 1997 the Minister for the Environment announced the initiation of a three-year hazardous waste programme. This represents a significant step forward for the management of hazardous waste, provided it leads to substantive actions. Given the history of inaction, despite earlier reports, I have focused my effort on two aspects:

- an appraisal of the main hazardous waste issues that need to be addressed - highlighting where actions should be directed.
- the establishment of a process, and criteria, for monitoring and assessing the progress and effectiveness of Government's hazardous waste programme over the next 3-4 years - essentially an audit trail.

The Government has made a commitment to improve the management of hazardous waste. I have cast my role to review how effective the hazardous waste programme will be in terms of maintaining and improving the quality of the environment, a process that will span several years.



Dr J Morgan Williams
Parliamentary Commissioner for the Environment

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EXECUTIVE SUMMARY

The management of hazardous waste in New Zealand has been carried out for many years without any overall strategy or consistency. A number of reports published over the last 8 to 10 years, including regional hazardous waste surveys and, more recently, the National Waste Data Report (MfE, 1997b), the OECD Environmental Performance Review of New Zealand (OECD, 1996), and the first State of New Zealand's Environment report (MfE, 1997c), have highlighted deficiencies in the system and failure by successive governments to effectively tackle issues such as:

- the lack of data on hazardous wastes and their effects on the environment;
- inadequate legislative provisions for managing hazardous waste, including the lack of a definition of 'hazardous waste';
- inconsistent hazardous waste policies among local authorities; and
- the lack of incentives to reduce the amount of hazardous waste generated and disposed of.

Concerns about these matters have been expressed to the Parliamentary Commissioner for the Environment by some in the waste treatment industry and some local authorities. It was a combination of these concerns and the history of poor management of hazardous waste in New Zealand which prompted this report.

Government's commitments

The Minister for the Environment announced in September 1997 that funding had been allocated to the development of a 3-year hazardous waste programme intended to improve the management of hazardous waste. Other commitments in this area include the Government's 1992 policy on waste management, its 1996 Coalition Agreement, and the Environment 2010 Strategy.

This report acknowledges the Government's hazardous waste programme initiative. The purpose of this report is to establish a process whereby progress on improving the management of hazardous waste can be monitored and the outcome evaluated by the Parliamentary Commissioner for the Environment in a series of reports to the Transport and Environment Select Committee (or its future equivalent) over the next 3 to 4 years. The timetable for further reports to the Committee is as follows:

Report No.	Stage	Date
1	Submission of this report and recommendations to the Transport and Environment Select Committee.	May 1998
2	a) Review of the hazardous waste programme discussion paper. b) Review of: (i) the analysis and response to submissions on the discussion paper; (ii) advice to Government on the hazardous waste management reforms; and (iii) the timetable for the implementation of reforms.	During 1998/1999
3	Evaluation of Government's adoption of advice and its commitment to completing the hazardous waste management reforms, including the adequacy of resources.	During 1999/2000
4	Assessment of the effectiveness of the completed reforms.	At the completion of the 3-year hazardous waste programme (2000/2001)

Assessing the effectiveness of the programme

This report highlights some of the critical issues arising from various other reports on hazardous waste, including comments on New Zealand's performance in this area. The Government's intention to release a discussion paper later this year on hazardous waste management reforms will be an opportunity for a wider range of views to be expressed on changes needed.

The effectiveness of the hazardous waste programme, to be assessed in later reports of the Parliamentary Commissioner for the Environment, will be based on the following criteria:

Effectiveness criteria

- The programme addresses the criticisms and recommendations on New Zealand's management of hazardous wastes outlined in the 1996 OECD Environmental Performance Review.
- The programme addresses the hazardous waste monitoring problems identified in the National Waste Data Report (MfE, 1997b) and in the 1997 State of the Environment Report (MfE, 1997c).
- The programme is adequately resourced, and achieves its objectives and targets within its specified timeframe.
- 'Hazardous waste' is clearly defined and consistently used in hazardous waste management policies and plans.
- The statutory and other responsibilities of those who generate, transport, handle, treat or dispose of hazardous waste are clear and include matters outlined in the Government's waste management policy.
- Adequate incentives are established which encourage waste generators to reduce the amount of hazardous waste generated, to treat hazardous waste before disposal, and to reduce the environmental effects of disposal. Alternatively, suitable measures are introduced which act as disincentives to generate hazardous waste or to dispose of untreated hazardous waste.
- No gaps, or significant overlaps that cannot be effectively managed, exist in the roles and responsibilities of central and local government or other public authorities involved in the management of hazardous wastes.
- Quantities, types, methods of disposal and environmental effects of hazardous wastes are monitored by territorial authorities and regional councils, in consultation with tangata whenua. Monitoring information is provided to, and coordinated at the national level by, the Ministry for the Environment (where appropriate, in conjunction with the Environmental Risk Management Authority in relation to waste hazardous substances).
- Waste reduction and risk reduction targets for hazardous wastes are established by central government for matters of national significance, and local government for discharges to the environment and trade waste.

Recommendations

The recommendations in this report relate to the establishment of the above audit process to measure the progress and assess the effectiveness of the Government's hazardous waste programme. Other recommendations relate to issues the Minister for the Environment should consider when developing the discussion paper and subsequent proposals on hazardous waste management reforms. Recommendations fall under the headings of:

- objectives, policies, legislation;
- guidelines;
- information; and
- other relevant matters.

1 INTRODUCTION

This report to the Transport and Environment Select Committee has two aims:

a) to highlight a number of unresolved issues associated with the management of hazardous waste in New Zealand, and

b) to advise the Committee of the Parliamentary Commissioner for the Environment's (PCE) intention to audit the development of the Government's hazardous waste programme and policy.

It describes the development of waste policy and guidelines over recent years and gives an overview of the Government's proposals to establish a national framework for the management of hazardous wastes. Recommendations are made to the Committee on matters the PCE considers need to be addressed in the Government's hazardous waste programme, and a procedure is outlined for measuring the programme's progress and assessing its effectiveness.

1.1 Terms of reference

In the work programme for the 1997/98 financial year, the PCE signalled his intention to examine the current hazardous waste management system, and future proposals:

> 'A national issues study for the current year, derived from concerns expressed to the PCE and previous work of the office, will be an investigation of hazardous waste management.' (PCE, August 1997, p.34)

This was considered necessary for the following reasons:

- the lack of action by a number of New Zealand governments over several years (both before and after the introduction of the Resource Management Act 1991 (RMA)) to address concerns about the absence of legislative provisions governing the management of hazardous waste;
- concerns about the lack of direction and consistency in the way hazardous wastes were managed, expressed to the PCE by some in the waste treatment industry and some local authorities;
- the deficiencies in New Zealand's management of waste, including hazardous waste, outlined in the 1996 Organisation for Economic Cooperation and Development (OECD) Environmental Performance Reviews (OECD, 1996); and
- the lack of reliable information on hazardous waste highlighted in the Ministry for the Environment's (MfE) first State of the Environment Report (MfE, 1997c) and in the National Waste Data Report (MfE, 1997b).

The investigation was undertaken in accordance with the functions of the PCE under s 16(1)(a) of the Environment Act 1986. This enables the Commissioner, "with the objective of maintaining and improving the quality of the environment, to review from time to time the system of agencies and processes established by the Government to manage the allocation, use, and preservation of natural and physical resources, and to report the results of any such review to the House of Representatives and to such other bodies or persons as the Commissioner considers appropriate".

The objectives of this report are as follows:

Objectives

1. To identify the significant potential environmental and health risks associated with hazardous wastes.
2. To examine the Government's hazardous waste policies and proposed programmes to ascertain whether they address the risks identified in (1) and, where necessary, draw attention to any other matters that need to be considered by the Government.
3. To establish a review procedure for measuring progress and criteria for assessing the effectiveness of the Government's proposed hazardous waste programme.
4. To draw attention to any other hazardous waste management issues that need to be addressed by central or local government, relevant to their environmental management responsibilities.
5. To submit the findings and recommendations of the Parliamentary Commissioner for the Environment to the Transport and Environment Select Committee for its consideration.

2 BACKGROUND

Our standard of living in New Zealand relies to a large extent on common household hazardous substances such as cleaning agents, paints, pesticides and petroleum products which may generate hazardous waste during their manufacture or become a hazardous waste when finally disposed of by the end user. Also, to some extent our economy relies on activities which have the potential to produce hazardous waste. Examples include the use of agricultural chemicals and the treatment of soft wood timbers with copper, chromium and arsenic based formulations which increase their versatility.

Hazardous wastes generally present some degree of physical, chemical or biological hazard to people or the environment if their production cannot be avoided, their quantities reduced or their hazardous characteristics treated and rendered non-hazardous. Those that cannot be reused or recycled generally are of no further economic use or social value and, consequently, are discarded. Hazardous wastes may consist of:

- Waste hazardous substances that are no longer of any benefit to individuals or society (eg, unused or de-registered agricultural chemicals which cannot be reused and may require careful treatment or disposal, and paint and solvent wastes that cannot be reused or recycled).
- Hazardous residues of waste material that may contaminate and persist in water and soil (eg, sludge from the re-refining of waste oil containing a variety of contaminants).
- Material which may become hazardous as a result of its use or contact with hazardous material (eg, medical waste).
- Substances that were initially regarded as non-hazardous, but are later found to be harmful (eg chlorofluorocarbons (CFCs) and asbestos).
- 'Problem' wastes (defined in appendix 1) such as organochlorines that are stored awaiting suitable hazard-reduction technology to be developed, or that have previously been shipped overseas for destruction as the small quantities involved did not justify building special treatment or disposal facilities at the time (eg, polychlorinated biphenyls (PCBs)).

Hazardous waste management in New Zealand has been the subject of a number of public reports in recent years (eg, CAE, 1992; OECD, 1996; MfE, 1997b; MfE, 1997c).

Some of the concerns raised in these reports remain unresolved today. They include:

- **the lack of a clear and consistently used definition of 'hazardous waste';**
- **inconsistencies in how local authorities[1] classify and manage hazardous wastes;**
- **a lack of reliable information on quantities of hazardous wastes disposed of (and to where);**
- **the lack of incentives to reduce waste at source;**
- **the cost of treating hazardous waste (to render it non-hazardous) relative to the cost of disposal;**
- **the availability, location and adequacy of facilities to treat or dispose of existing hazardous wastes; and**
- **the potential environmental and health risks (short-term and long-term) associated with hazardous waste disposal.**

The lack of reliable information on hazardous waste production, treatment and disposal has been a significant problem for some time. The Centre for Advanced Engineering (CAE) discussed the work done on regional waste surveys, originally promoted by a subsidy scheme operated by the Department (now Ministry) of Health, in its report (CAE, 1992, p.159)[2]. However, these surveys were impeded by the lack of a clear definition of what constituted a hazardous waste. They involved a wide range of approaches, data collection was inconsistent, and the results lacked comparability and repeatability. The CAE report pointed out that, despite these limitations, the data indicated that 'the quantities and types of hazardous waste in New Zealand were generally in line with what could be expected, based on experience in similar jurisdictions' with 'roughly equivalent populations and somewhat similar industrial and agricultural infrastructures' (CAE, 1992, pp.159-160). **Due to the lack of national data, six years later it is still not clear whether New Zealand's generation and disposal of hazardous wastes has increased, decreased or remained the same as similar OECD countries.**

The hazardous waste section of the National Waste Data Report (MfE, 1997b) was an attempt to bring together information on the acceptance of hazardous waste at New Zealand landfills, data from regional hazardous waste surveys of Auckland and Otago, regional hazardous waste collections, exported hazardous waste, the used oil recovery programme, and contaminated sites soil and clean-up. Among other things, the report reveals that:

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1 In the context of this report, the term 'local authorities' is used to collectively refer to regional councils, unitary authorities, city councils and district councils.

2 The landfill and hazardous waste sections of the 1992 CAE report is to be revised and updated, particularly in respect of co-disposal practices.

- 92% of New Zealand landfills do not accept hazardous waste;
- liquid waste (mainly trade waste[3]) represented about 98% of hazardous waste generated by 609 businesses surveyed in the Auckland region in 1995;
- approximately 142,000[4] tonnes of hazardous waste (solid waste component) was handled by final disposal facilities in the Auckland region in 1995, and most [almost 78%] was sent to landfill;
- New Zealand approved the import of 15,000 tonnes and the export of 14,701 tonnes of hazardous waste in 1995 (MfE, 1997b, p.vi).

Some concerns raised in the National Waste Data Report include:

- a wide variety of definitions of 'waste' exist in New Zealand and there is no consistency in the use of the definitions, making aggregation of data impossible and gathering of data at a national level difficult;
- a variety of methods are used to monitor waste and monitoring is ad hoc;
- the Waste Analysis Protocol (MfE, 1992a) is an attempt to provide a uniform method to monitor waste, but it is not used consistently;
- comprehensive data are scarce and often unreliable, especially for hazardous waste;
- it is difficult to obtain data on waste generated, treated[5] and disposed of, from waste generators.

Some important findings from the Auckland Region Hazardous Waste Survey (Environment and Business Group Ltd and Auckland Regional Council, 1996, pp.61-62) include:

- the total quantity of hazardous waste generated by 609 businesses surveyed was an estimated 4,617,733 tonnes;
- the most common types of hazardous waste were acidic or alkaline solutions or solids, scrubber sludges, animal wastes and industrial liquids containing metals;

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3 Most of the trade waste discharges in the Auckland survey were from manufacturing businesses in the food, beverage and tobacco and basic metal industries.

4 A more accurate figure is 129,389 tonnes (P Blütner, Auckland Regional Council, pers. comm.).

5 It is not clear how much hazardous waste is treated off site prior to disposal. The Auckland survey suggests that most of the hazardous waste generators surveyed do not know what happens to their wastes after they are taken off site by the hazardous waste operator. Some landfill operators will not accept untreated hazardous waste due to restrictions placed on them by resource consent conditions.

- the most prevalent hazardous characteristics were ecotoxicity[6] and corrosivity[7];
- nearly 4.5 million tonnes of hazardous waste were estimated to be discharged to trade waste [sewer];
- more than 3 million tonnes of hazardous waste were estimated to be treated on site before discharge or disposal;
- an estimated 2,743 tonnes of hazardous waste were disposed of illegally, mostly to trade waste (2,365 tonnes), and the remainder through incineration (42 tonnes), disposal to land (2 tonnes) or discharge to waterways (1 tonne).

2.1 The OECD's Environmental Performance Review

The management of waste in New Zealand was reviewed in the OECD's 1996 Environmental Performance Reviews (OECD, 1996). **Hazardous waste management, in particular, came under considerable criticism.** For example:

Policy and legislation

- The whole area of waste management does not seem to be a priority for the Government (p.183).
- A national policy on minimisation of hazardous waste should also be developed. The use of economic instruments should also be considered [in relation to waste minimisation]. Until the true costs and benefits of disposal to landfills can be made part of the equation, waste reduction programmes will appear more expensive than disposal ... charges [should] incorporate long-run as well as present costs of waste disposal (p.83) ... Waste minimisation is being sought through voluntary agreements (p.183).
- Some economic incentives to reduce waste exist, but there is no information on their adequacy (p.78).
- Hazardous waste management is considered and carried out in a piecemeal way under present legislation (p.75) ... There is still no comprehensive legislation dealing specifically with both waste and hazardous waste (p.183) ... National legislation governing the management of hazardous waste is urgently needed so that an effective cradle-to-grave management system can be put in place (p.84).

Information

- Information at national level on the sources of waste and total waste generation is very limited. No standard for collecting and summarising information on waste streams and disposal exists, and

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6 The extent to which adverse toxic effects or harm occurs to any living organism or ecosystem.

7 The extent to which reaction by chemical action and break down of the biological or physical structure of materials (eg, metal, skin) occurs.

there has never been a coordinated approach to collecting national waste statistics (p.75).

- There is a lack of reliable, comprehensive information on the magnitude and composition of waste streams. What data exist are limited almost exclusively to domestic waste collected in the largest cities. Information is almost totally lacking on generation, movements and disposal of hazardous waste, in the absence of a clear definition of such waste. Regional councils are trying to remedy this situation, but if definitions of hazardous waste differ by region, waste movements across the country will likely increase, especially if some hazardous waste is accepted for landfilling in one region and not in a neighbouring one. Consistency concerning the definition of hazardous waste is needed at the national level (p.83) ... Regional efforts need to be coordinated and harmonised (p.183).

Hazardous waste treatment/disposal

- New Zealand has no facility specifically dedicated to the treatment of hazardous waste[8]. Although small quantities of hazardous waste, particularly medical waste, are incinerated at special facilities, most hazardous waste is landfilled with municipal waste (co-disposal) (pp.79-80).
- In the absence of adequate facilities for the treatment of hazardous waste, and the lack of clear definition of such waste, most hazardous waste is disposed of with domestic, industrial and other waste. Under the RMA, disposal of hazardous waste is to be based on the effects on the receiving environment, rather than prescriptive controls setting out particular procedures. The disadvantage of this approach is that waste generators and regional council authorities may not know how to dispose of such waste safely ... only limited guidance is available on managing waste for which there is no accepted method of disposal (p.84).

In addition, the OECD report made a number of recommendations on:

- developing a national waste information database;
- increasing the involvement by central government in assisting with guidelines on waste management practices;
- introducing specific legislation for hazardous waste;
- facilitating the introduction and siting of hazardous waste treatment facilities;
- promoting cleaner production;

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8 It is not clear why the OECD came to this conclusion. Facilities for the treatment of most hazardous waste, except 'problem' wastes, are operating in Auckland, Wellington and Christchurch, although the effectiveness of the level of treatment achieved may need to be evaluated (N Thom, University of Auckland, pers comm).

- improving landfill practices; and
- setting realistic disposal charges.

In a news release on 19 November 1996 (Upton, 1996), the Minister for the Environment provided an update on actions taken on the OECD's recommendations since July 1995. This covered proposals to develop national environmental indicators for waste, additional funding for waste management guidelines and standards provided through the 'Green Package' announced in the 1996 Budget, the introduction of the Hazardous Substances and New Organisms Act 1996 (HSNO Act) and the establishment of the Environmental Risk Management Authority, and the funding of several cleaner production projects through the Sustainable Management Fund.

2.2 The State of New Zealand's Environment Report

New Zealand's first national State of the Environment Report (MfE 1997c) acknowledges that the scale of hazardous waste generation in New Zealand is only beginning to be understood. This is illustrated by reference to the Auckland Region Hazardous Waste Survey carried out in 1995/96 (MfE, 1997c, p.3.43). **Although the survey covered only 8 percent of Auckland's approximately 24,000 businesses in the manufacturing, transport and service sectors and was not able to accurately identify the amount of hazardous waste generated in the region, it revealed that the quantities were higher than previously thought and it uncovered deep flaws in the management, disposal and monitoring of hazardous wastes.**

2.3 Impacts on Maori Environmental Values

The management and disposal of hazardous waste are of particular significance for tangata whenua[9]. Potentially, severe impacts, including contamination and damage, could occur to:

- natural taonga[10], in particular, water, harbours and estuaries, rivers and lakes;
- traditional food supplies and mahinga kai[11]; and
- waahi tapu[12], waahi taonga[13] and other significant sites.

A number of claims to the Waitangi Tribunal have addressed the impacts of hazardous waste, including the Motunui, Kaituna and Manukau claims. Some iwi[14] and hapu[15] resource management plans[16]

9 The iwi or hapu that holds customary authority in an identified area.
10 Valued resources, assets, prized possessions.
11 Food-gathering places and resources.
12 Places of spiritual and sacred importance to iwi and hapu.
13 Places of traditional and historical significance to iwi and hapu.
14 Tribal groups.
15 Family or district groups, communities.

include statements of concern regarding the pollution of water, water bodies and other taonga, and policies for their protection from contamination. Hazardous waste issues are fundamental to the kaitiaki[17] responsibility to protect and nurture the physical wellbeing, and the mauri[18] of resources and places.

Recognition of the significance of places and natural taonga to tangata whenua, and participation in processes and decision-making for hazardous wastes, will be necessary to address constructively the concerns of iwi and hapu, and to fulfil the requirements of the RMA and HSNO Act.

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16 Examples include Tainui's 1996 *Resource Management Plan for the Manuka Harbour and Catchments,* Ngati Hauiti's 1996 *Kaupapa Taiao,* or Kai Tahu ki Otago's 1995 *Natural Resource Management Plan.*

17 Guardianship, the duty of tangata whenua to take care of the resources and taonga in their area for present and future generations.

18 Essential life force, the spiritual power and distinctiveness which enables each thing to exist as itself.

3 WASTE MANAGEMENT POLICY IN NEW ZEALAND

A chronology of milestones in relation to the development of policies, reports and programmes on hazardous waste since 1990 is presented in appendix 2.

In August 1992, the Government announced its first waste management policy:

> 'The Government has agreed that New Zealand's waste management policy should be:
> • to ensure that, as far as practicable, New Zealand's waste generators should meet the costs of the waste they produce;
> • to encourage the implementation of the internationally recognised hierarchy of reduction, reuse, recycling, recovery and residual management by all involved in waste generation and management in New Zealand'.

New Zealand's waste management policy framework now incorporates the Government's waste management policy (above), the longer term goals outlined in the Environment 2010 Strategy (MfE, 1995), and the key policy commitments in the Government's Coalition Agreement (December 1996). These are summarised in the National Waste Data Report (MfE, 1997b, pp.1-3). The hazardous waste component of these policy initiatives include:

3.1 Environment 2010 Strategy

- identifying hazardous wastes, and appropriate management strategies for them, starting with those wastes that pose the highest risk;
- giving priority to developing an agreed approach to who will fund the management of existing hazardous wastes, and to managing the ongoing risks from hazardous substances through the HSNO Act and the Environmental Risk Management Authority.

3.2 The Government's Coalition Agreement

- developing national standards and guidelines for landfills, solid waste disposal, hazardous substance disposal, and a timetable for phasing out hazardous, toxic and bioaccumulative substances;
- working with waste producers to reduce waste at source – seek to reduce annual solid waste production to 50 percent of the 1990 level by the year 2000, and encourage reuse and recycling.

3.3 The Government's hazardous waste management programme

In a keynote address to the International Solid Waste Association (ISWA) World Conference in Wellington (30 September 1997), the Minister for the Environment announced the key elements of a new programme to address problems that had been identified with the current regime for managing hazardous waste (Upton, 1997). This $1.3 million[19], 3-year programme, funded through the Green Package of the 1997/98 Budget, started in 1997/98 and became part of Government's implementation of its Coalition Agreement. Concerns raised by the Minister in his speech included:

- the high percentage of hazardous wastes being disposed of as trade waste into sewers, and the actual and potential damage to sewers as a result of this method of disposal;
- hazardous wastes contaminating aquifers;
- approximately 20 percent of hazardous waste being sent to landfills which had no controls on how such waste was disposed of;
- only ten percent of landfills had internationally acknowledged hazardous waste acceptance criteria.

The Minister announced that the hazardous waste programme would consist of the following elements:

- a legal definition of 'hazardous waste';
- regulations covering the tracking and reporting of hazardous waste;
- the development of national environmental standards (under the RMA), where necessary in conjunction with hazardous substances regulations under the HSNO Act, specifying acceptance criteria for the discharge of hazardous wastes to land, water and air;
- a strategy for 'problem' wastes to complement the proposed national environmental standards.

The Minister pointed out that the hazardous waste programme was to be developed in conjunction with other programmes such as:

- the HSNO Act regulations necessary for implementation of this Act, including aspects of the disposal of hazardous substances;
- the management of contaminated sites (including liability for historical contamination);
- land use planning guidelines on hazardous facilities;
- the organochlorines programme;
- the development of environmental standards and guidelines (eg, standards for air, water and soil quality);
- pollution prevention (eg, cleaner production).

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19 The $1.3 million figure is the total amount allocated to all waste-related projects. The actual amount allocated to the hazardous waste programme is $600,000 over 3 years (J Gunn, Ministry for the Environment, pers. comm.)

3.4 Legislation

Although there is no specific waste management legislation in New Zealand, several Acts contain provisions which specify waste management functions of local authorities or enable local authorities to deal with actual or potential effects of waste discharges into the environment. A detailed analysis of this legislation is outlined in appendix 3.

4 HAZARDOUS WASTE ISSUES

This section outlines a number of issues that are considered to be important and need to be addressed in the development of the Government's hazardous waste programme.

4.1 What are the risks?

If hazardous wastes are not properly managed, potential environmental and health risks may arise during the handling, storage, transport, treatment and disposal of the waste. Examples of potential risks include:

- short or long-term contamination of land and water due to poorly managed disposal and leachate (eg, poorly designed, constructed and maintained landfills);
- emissions of contaminants into the air as a result of poorly managed incineration of hazardous waste, uncontrolled burning at landfill sites, or the creation of hazardous compounds during incineration (eg, dioxins);
- catastrophic events causing uncontrolled release of hazardous waste and contamination of land, water or air (eg, leakage or spill from containment as a result of poor maintenance or an accident);
- fire, explosion or toxic discharges due to chemical reactions between various hazardous wastes (eg, due to inappropriate mixing of wastes);
- future potential risks to human health and ecosystems where wastes have been buried with no records or with poor records of their existence (eg, DDT and dieldrin dumps);
- the security of long-term storage of 'problem' wastes, such as organochlorines, and radioactive wastes for which treatment or disposal options are limited;
- contamination of land, water and air by biological wastes, and the potential for disease transmission by vectors;
- health and safety risks due to occupational exposure to hazardous waste by those involved in handling, transporting, treating or disposing of the waste (eg, asbestosis);
- effects of water and soil contamination on animal health and agricultural produce (eg, accumulation of chemical residues and the potential impact on the export market and future export opportunities);
- impacts on natural taonga, on waahi tapu and waahi taonga on mahinga kai, on mauri and kaitiakitanga, and other values of significance for tangata whenua; and
- generally, effects on the sustainable management of resources.

Potential effects on living things, as pointed out in the National Waste Data Report (MfE, 1997b, p.19), include:

- mortality;
- adverse effects on reproduction;
- causing cancer;
- causing deformities and genetic mutations;
- causing other diseases;
- accumulation in the environment and in living tissue (this may have consequences in the food chain);
- indirect effects on ecosystems (alterations in competitive relationships between species).

4.2 Have the risks been assessed?

The occurrence and magnitude of the risks is uncertain because data on quantities of hazardous wastes generated and disposed of have not been systematically collected in the past. The data that are available are unreliable due to the lack of a consistently applied definition of 'hazardous waste'. Similarly, information on the effects on the environment of hazardous waste disposal has not been coordinated at the national level. Such information is needed to develop sound hazardous wastes policy or for assessing the effectiveness of existing policies and programmes.

Some indicative regional surveys have been carried out (for example, those reported in MfE, 1997b). In the Auckland region, the estimated quantity of hazardous waste handled at waste disposal facilities in 1995 included 110,605 tonnes at landfills and 13,390 tonnes as trade waste (solid waste component). The National Waste Data Report refers to estimates of 13,032 tonnes of hazardous wastes being recycled[20] and 5,394 tonnes incinerated[21] in the Auckland region (MfE, 1997b, p.72). Other surveys (eg, Taranaki and Otago) focused on estimates of the amount of hazardous waste generated rather than disposed of. **It is difficult, therefore, to compare regions or to quantify the total amount of hazardous waste handled, with the exception of particular wastes such as certain radioactive wastes which have been collected and stored or exported as part of a nationally coordinated effort.**

20 The figure of 13,032 tonnes of hazardous waste recycled relates to waste oil only. The correct figure for the estimated quantity of hazardous waste recycled in the Auckland region at the time of the survey was 91,792 tonnes. (P Blütner, Auckland Regional Council, pers comm).

21 The correct estimate in the Auckland survey for incinerated hazardous waste is 5,392 tonnes. (P Blütner, Auckland Regional Council, pers comm).

To determine the most significant components of hazardous waste streams, the Auckland survey revealed that 97.7% of the hazardous waste generated was in liquid form (mainly trade waste), and 2.3% was in solid or sludge form (MfE 1997b, p.67). In terms of the quantities of hazardous waste ending up at disposal facilities, the Auckland survey indicated that 98.8% was liquid trade waste, 1.15% was solid landfilled waste and 0.05% was incinerated. An investigation by Taranaki Regional Council (Taranaki Regional Council, 1991) found that more than 99.5% of the hazardous waste stream in South Taranaki was liquid while the proportion going to landfill (solids and sludges) was 0.15%. In Central Taranaki the figures were 95.8% and approximately 0.14% respectively.

This limited information would suggest that there is a generally greater acceptance of hazardous waste disposal via trade waste sewers. This raises the question of whether there is a greater risk, in terms of effects on the environment, from (diluted) trade waste discharges of liquid hazardous wastes than the disposal of (generally treated) solid hazardous wastes to landfill. **The potential effects on the environment depend not only on the type and 'strength' of the hazardous wastes, but also on the suitability and management of the waste water treatment plants, landfills or incinerators that receive the wastes.**

So what are the potential environmental consequences of discharging hazardous wastes via trade waste sewers? In the Auckland survey, it was estimated that liquid trade waste made up 10% of the total amount of sewage received and treated by the region's sewage treatment plants. Solid hazardous waste, on the other hand, comprised about 15% of the total waste deposited in Auckland's landfills in 1995 (MfE, 1997a, p.72). In terms of weight, a larger amount of liquid hazardous waste (over 9.5 million tonnes) went into the sewer compared to solid hazardous waste that went into landfills (about 110,605 tonnes). The estimated mass load of hazardous constituents (in the Auckland survey) amounts to approximately 13,390 tonnes (about 0.14% of the amount of trade waste discharged into the sewer) of which about 139 tonnes are solid inorganic components. **Although the National Waste Data Report points out that the trade waste discharges to sewer consist mainly of water, the report does not provide information on the effects that final discharges (particularly organic waste) from sewage treatment plants are having on ecosystems. There is no indication of relative toxicities and environmental effects – no comparative risk assessment.**

4.3 What mechanisms exist for assessing risks from hazardous wastes?

Local authorities have a number of duties and opportunities to gather information on the risks posed by hazardous wastes in their areas. Examples include:

- assessments of environmental effects (AEEs) accompanying resource consent applications for activities that generate, treat or dispose of hazardous wastes;
- applications to discharge trade wastes to sewer;
- reports on monitoring activities of local authorities carried out under s.35 of the RMA (duty to gather information, monitor, and keep records);
- information gathered during local authority schemes to collect, store, reuse and dispose of unused hazardous substances;
- surveys of contaminated sites;
- surveys of landfill sites and trade waste discharges;
- records of abatement notices or enforcement orders relating to hazardous waste disposal;
- self-monitoring records of industry submitted to regional councils as part of their resource consent conditions;
- dangerous goods licensing records;
- systems which track hazardous materials from the time they become waste to the time they are rendered non-hazardous or disposed of; and
- systems which monitor the effects on the environment of waste disposal methods (eg ambient air and water quality monitoring).

The Waste Analysis Protocol (WAP) (MfE, 1992a) provides local authorities with a system and methodology applicable to the generation, management, treatment and disposal of potentially hazardous wastes within the business sector (p.9). It includes a module with the following objectives:

- 'to identify where problems are likely to be occurring in the management of potentially hazardous wastes'; and
- 'to reliably classify and quantify the amount of hazardous wastes' (p.11).

The WAP's recommended methodology for gathering information on hazardous waste from the business sector comprises either informal or formal audits of waste generators' plants by skilled personnel, and filing of regular returns by operators of waste treatment or disposal facilities. This is intended to overcome any discrepancies between the quantities of waste generated and waste disposed of.

However, the report on the Auckland Region Hazardous Waste Survey (Environment and Business Group Ltd and Auckland Regional Council, 1996) is critical of the use of the New Zealand Waste Identification Code (NZWIC) adopted in the WAP as the base classification system for potentially hazardous wastes. The report points out (pp.96-97) that there is no requirement or real benefit for businesses to classify their wastes according to the NZWIC system. Also, focus on hazardous waste volumes alone, as is the case with the NZWIC classification system, can be misleading because no account is taken of the concentration of the wastes. This is considered inadequate in terms of the assessment of environmental effects under the RMA and the HSNO Act.

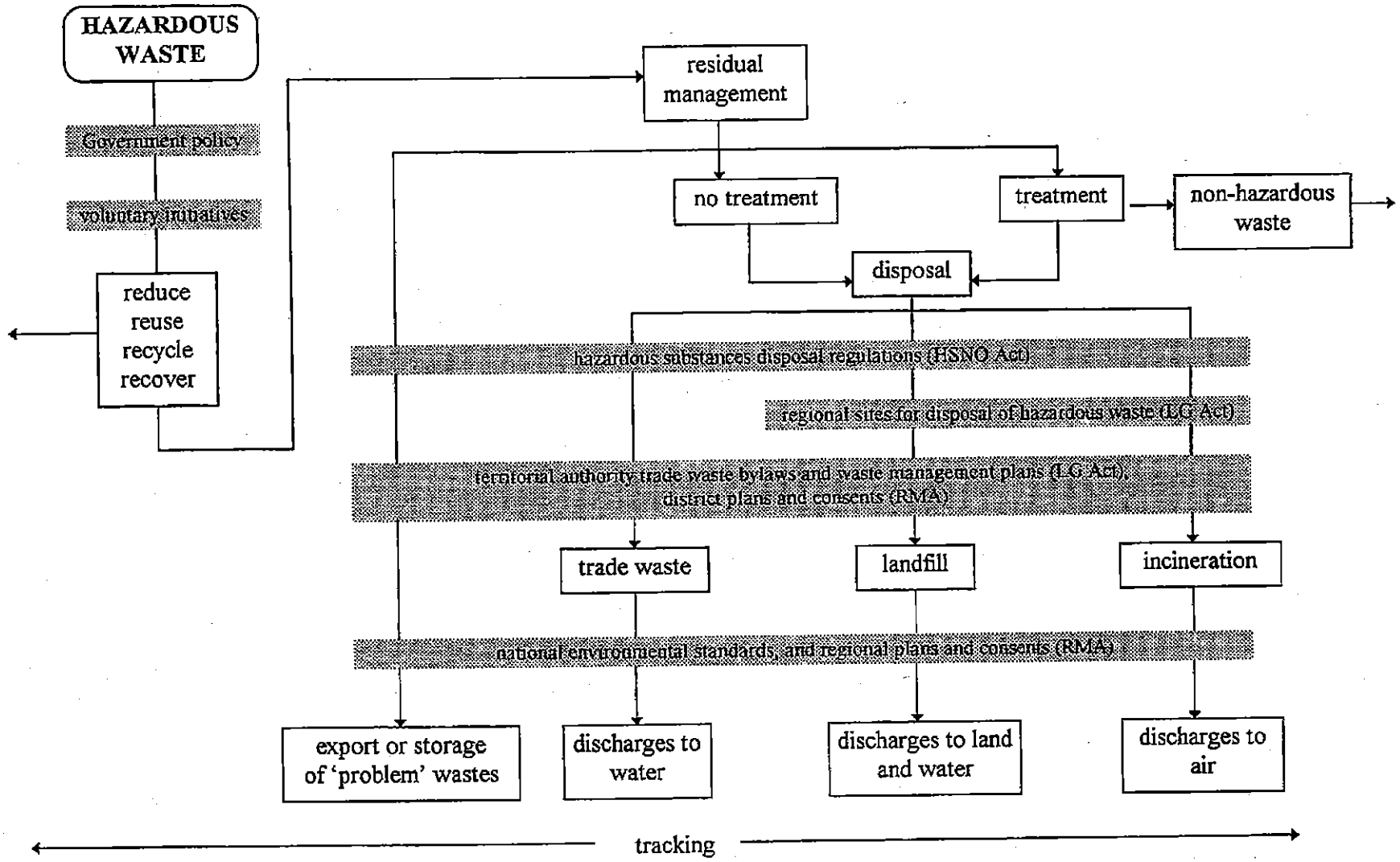
4.4 What mechanisms exist for managing risks from hazardous wastes?

Figure 1 illustrates a framework of decision-making and options for managing risks posed by hazardous wastes. It includes:

- Government policy (eg, the 1992 waste management policy (see section 3 above));
- voluntary waste reduction and other waste management initiatives by industry;
- hazardous substances disposal regulations made under the HSNO Act[22];
- establishment of sites for the regional disposal of hazardous wastes (s 37SB of the Local Government Act)
- territorial authorities' trade waste bylaws and waste management plans under the Local Government Act;
- resource management instruments such as national and regional policy statements, national environmental standards, regional and district plans, and individual resource consents (eg, land use consents and discharge permits);
- iwi and hapu resource management plans and policy statements;
- local authorities' collection, recovery, recycling and other programmes designed to minimise the amount of hazardous waste being disposed of;
- guidelines, training programmes and campaigns to improve public and industry awareness of the importance of good management of hazardous wastes;
- export of 'problem' wastes or their storage until appropriate treatment or destruction technology becomes available.

22 Hazardous substances provisions of the HSNO Act will be brought into force on 1 October 1998.

Figure 1 FRAMEWORK FOR THE MANAGEMENT OF HAZARDOUS WASTE



4.4.1 Unused chemicals collection schemes

Some regional councils have postponed their unused chemicals collection schemes until appropriate treatment or disposal options for problem wastes, such as organochlorines, become available. A significant advantage of these schemes is that they reduce the risk of waste chemicals being dumped in an uncontrolled manner resulting in contamination of land and water and creating hazards for people, the environment and livestock. Another advantage is that they provide an opportunity for some chemicals to be recovered and, where appropriate, reused.

Disadvantages include safety concerns when many different types of hazardous waste are stored in one place, and the liability that is transferred to councils when they accept responsibility for the waste.

Some regional councils regard the collection and storage of unused chemicals as a function of territorial authorities linked to their waste management functions under the Local Government Act. **Clearly the viability of unused chemical collection schemes needs to be closely examined in terms of the risks, the responsibilities and the liabilities involved, particularly in respect of 'problem' and 'orphan' (ie no identifiable owner) wastes.**

4.4.2 Treatment and disposal

The Ministry for the Environment's Hazardous Waste Management Handbook (MfE, 1994) is a resource intended for use by local authorities. It provides practical advice as well as information on reference documents on the management of hazardous waste, including identification, collection, storage, treatment and disposal options. The handbook was designed so that it could be regularly updated as new information became available.

Voluntary measures for managing hazardous wastes (eg, the New Zealand Chemical Industry Council (NZCIC) Waste Management Guidelines) is a recognition by manufacturers of the need to act responsibly in the handling, treatment and disposal of the hazardous waste they produce. However, it is not clear to what extent waste generators know how to effectively manage (including reduce) their own hazardous waste, or whether waste treatment or disposal operators are disposing of hazardous waste in the most appropriate manner. **The Auckland Region Hazardous Waste Survey indicated that, because there is no legal requirement to keep records, few companies know precisely how much hazardous waste they generate or dispose of, whether their wastes were hazardous, or how to manage or dispose of those they did consider hazardous.**

The State of the Environment Report reveals that an estimated 8 percent of the waste entering landfills is potentially hazardous (MfE, 1997b, p.3.42).

4.4.3 Access to facilities

Hazardous waste treatment and disposal facilities in New Zealand may not necessarily be within the district or region where the waste is produced. This gives rise to another aspect of risk management that needs closer examination – the effects (including costs) of transporting hazardous wastes which have been accepted for treatment or disposal in another district or region. With a large percentage of landfills unwilling or unable to accept hazardous waste and the lack of treatment facilities in some districts, waste generators are compelled to transport their solid wastes to regions or districts where suitable treatment or disposal facilities are available or, in some cases, to a location where acceptance criteria and costs of disposal are lower. In either case it could result in shifting and concentrating the problem in a particular area, and could give rise to inequities in the distribution of costs (risks) and benefits of hazardous waste disposal.

On the other hand, widespread unknown risks from uncontrolled disposal of hazardous waste need to be weighed against localised known risks from controlled disposal (eg, in a specially designed and constructed landfill or a purpose-built incinerator). The availability of suitable treatment or disposal facilities may be limited to metropolitan areas, but not all local authority or privately operated hazardous waste disposal sites are willing, or permitted, to accept waste from outside the district. **In addition to its proposals to introduce nation-wide standards for the disposal of waste and the discharge of contaminants, the Government may also wish to consider, with appropriate consultation, the costs and benefits of having fewer but more suitable facilities for the disposal of hazardous waste.**

4.4.4 Tracking hazardous wastes

Tracking the movement of hazardous wastes from the time they are generated through to their final treatment and/or disposal using a manifest system[23] is one approach to hazardous waste management adopted by some local authorities.

A tracking system enables waste disposal operators to readily identify the type and quantity of waste to ascertain whether it can be accepted at the disposal site. It also ensures that those who are responsible for the waste meet their obligations under the Health and Safety in Employment Act 1992 to identify and manage hazards to those who handle the waste. If there is any doubt about the suitability of the hazardous waste for disposal, prior approval of the waste disposal

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23 A document system for tracking hazardous waste (see Chapter 9 of MfE, 1994; and section 7.10 of NZCIC, 1991).

operator needs to be sought. **Training of waste operators in the management of hazardous waste, including familiarity with tracking systems and recording of data, is essential in ensuring the success of any such system.**

National data obtained from the tracking of hazardous waste would also assist in demonstrating compliance with international obligations such as the Basel Convention (see appendix 2, under 1994) to which New Zealand is a signatory.

4.5 Does the proposed hazardous waste programme address environmental and health risks?

The answer to this may become clearer when MfE receives submissions on its discussion paper. For example, the Government is considering introducing a regulatory approach to managing hazardous wastes through the use of national environmental standards. At this stage, however, it is not clear whether this will include a review of the purpose and value of territorial authorities' trade waste bylaws and waste management plans made under the Local Government Act. MfE's hazardous waste management discussion paper needs to address the likely impacts on trade waste bylaws and waste management plans of national environmental standards under the RMA, and any standards imposed by the Environmental Risk Management Authority under the HSNO Act (see figure 1).

On the basis of the Minister's announcement in September 1997 (Upton, 1997), the various elements of the programme together provide a framework for managing effects which is an improvement on the current piecemeal approach. Poorly managed discharges of hazardous waste to air, water or land are generally the causes of adverse effects on the environment and health. **National environmental standards for discharges of hazardous waste and a strategy for 'problem' wastes could be effective means for managing the risks identified earlier in this report provided such measures are developed with this purpose in mind. For this reason, the outcomes expected from the Government's proposals need to be clearly stated.**

4.6 Other issues that need to be considered

4.6.1 Minimising effects or minimising waste?

The hazardous waste surveys carried out by local authorities in New Zealand were good attempts to quantify the hazardous wastes being generated, and how and where they were being disposed of. Quantitative and qualitative information from surveys is valuable for identifying the pressures on environmental media (air, water or land) and, if carried out systematically and on a regular basis, can indicate trends in hazardous waste generation and disposal, as well as any changes in environmental effects. Proposals for the development of environmental performance indicators (MfE, 1997d) are intended to address such matters. Local authorities need trend analysis information to enable them to prepare or review policies, plans and programmes to

manage any adverse effects of waste disposal or to assess whether any waste reduction targets, for example, should be set and, if so, whether they are being achieved.

As an example, Wellington Regional Council (WRC) has acknowledged in its Regional Policy Statement (RPS) that there is 'a lack of reliable, comprehensive information on the quantities and components of the waste stream in the Wellington Region' (WRC, 1995, p.223). At a regional council level, this creates difficulties identifying the problems, priorities, management options and objectives for dealing with waste. Wellington's RPS advocates the adoption of the Waste Analysis Protocol (MfE, 1992a) as a tool for gathering information on the region's waste stream. The WRC RPS also proposes to investigate the use of appropriate incentives for waste reduction, including:

- positive incentives such as rewards, loans, rating relief and grants;
- disincentives such as increased charges for use of landfills and other mechanisms to transfer the costs of waste disposal to waste generators; and
- waste reduction targets (voluntary or mandatory).

The WRC RPS acknowledges that, to be effective, the introduction of economic measures such as incentives and disincentives, and waste reduction targets, requires good information on the waste stream, consultation with affected parties and integration with other methods (eg, public and industry awareness and education campaigns).

Waste reduction targets

It is not clear how regional councils could set and implement mandatory waste targets under the RMA unless those targets were linked to the purpose of the Act, such as:

- safeguarding the life-supporting capacity of air, water, soil, and ecosystems; and
- avoiding remedying, or mitigating any adverse effects of activities on the environment (s 5(2)(b) and (c)).

Unlike territorial authorities, regional councils do not have waste management planning or bylaw-making powers under the Local Government Act that would enable them to establish mandatory waste reduction targets without reference to the effects that were intended to be controlled. Waste reduction targets may be justified under the RMA if there is sufficient information on the waste stream and a clear link exists between the type and quantity of waste discharged and its effects on the environment.

Regional councils could indirectly influence and encourage hazardous waste minimisation by placing resource management plan or consent restrictions on the type and amount of hazardous waste discharged by waste generators, waste treatment facilities or by waste disposal operators. But it is unlikely that regional councils could arbitrarily impose mandatory waste reduction targets *per se* under existing legislation.

The 'control of effects' provisions of the RMA incorporated into regional plans, for example, may not be sufficient to achieve waste reduction targets and may need to be supported by measures to encourage waste generators to produce less waste. **Disincentives such as charging waste generators the full costs of disposing of their wastes may be necessary, in which case territorial authorities would have to remove any existing subsidies on their charges for landfill or sewer disposal of hazardous waste.** Good consultation and co-operation between regional councils and territorial authorities, and between the councils and hazardous waste generators is necessary in order to establish a sustainable and equitable framework for managing hazardous waste.

Voluntary waste reduction/pollution prevention strategies can sometimes offer savings to waste generators, but only if the benefits are enough of an incentive to outweigh other corporate priorities. Waste reduction initiatives that offer savings to a waste generator may not necessarily be adopted if they are not considered significant relative to other core business decisions.

A good example of this was a case study completed in 1996 at a Dow Chemical facility in the United States of America. This showed that certain pollution prevention strategies would save the company more than US$1 million per year or approximately 10-20 percent of the existing environmental expenditures at the plant. Process changes would have eliminated approximately 227,000 kg of waste and allowed the company to shut down a hazardous waste incinerator. However, these benefits were rejected because there was not enough of an incentive to outweigh other business priorities and the potential loss of future business that might have accompanied the incinerator's shutdown (Greer and van Löben Sels, 1997).

Risk reduction targets

Another approach, additional or alternative to that for setting waste reduction targets, could be risk (or effects) reduction targets set by regional councils. **Targets for reducing the risks associated with hazardous waste disposal could be based on 'state of the environment' monitoring information gathered by councils on adverse effects and pressures on resources. This would be consistent with the 'effects-based' approach of the RMA and**

would influence decisions on methods of treatment and disposal of hazardous wastes.

Risk reduction targets based on 'avoiding, remedying or mitigating' adverse effects of hazardous waste activities on the environment could include targets to:

- avoid exposure to hazards likely to affect people, ecosystems, the sustainable management of resources, taonga and values of tangata whenua, food growing or gathering areas, and other private or public interests;
- reduce the toxicity or other hazardous properties of the waste (eg, by requiring treatment) prior to disposal; or
- minimise discharges of contaminants to air, water or land (eg, through resource consent conditions).

Such targets could be established following a comparative risk assessment in which priority for action is determined on the basis of reducing effects that have the highest actual or potential adverse consequences for the environment and public health.

4.6.2 Long term management of hazardous waste disposal facilities

Landfill sites which accept hazardous waste pose an unknown and potential long-term risk to the environment. If they are not properly designed, constructed and maintained, leachate may seep into and contaminate groundwater, surface water and land, and may have impacts on tangata whenua values. A long-term commitment to monitoring and maintaining sites may, therefore, be necessary, and existing and future owners of such sites need to be aware of this responsibility.

As pointed out in a recent PCE report on mine tailings dams (PCE, 1997), holders of resource consents for hazardous waste facilities such as landfills may be required to pay a bond in respect of the performance of any one or more conditions of those consents. This is becoming common practice especially for new landfills. A consent holder is not only liable for any breach of conditions before the expiry of the consent, but may also be liable for any adverse effects on the environment after the consent expires (s 108(1)(b) and (6)(c) RMA).

The Auckland Regional Council, in respect of the Whitford landfill[24], for example, has stipulated post-closure care periods of 30 years in discharge permit conditions. Among other things, conditions of the permit specify:

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[24] Under its present resource consent conditions, the Whitford landfill is not permitted to accept hazardous wastes. (N Thom, University of Auckland, pers. comm.).

- frequency of monitoring;
- review of monitoring requirements;
- a contingency sum (annually adjusted and reviewed) to provide for early closure, environmental remediation and post-closure care, and to ensure compliance with consent conditions; and
- in the event of the consent being transferred to another party, a bond (annually adjusted) payable by the new holder of the consent to provide security for early closure, and reviewed annually to ensure that the bond is appropriate to the level of risk (PCE, 1997, p.75).

The disposal of untreated hazardous waste to land can lead to the land becoming a contaminated site. The Government's proposals for a hazardous waste programme need to consider the links necessary with the contaminated sites programme, and examine the adequacy of existing legislation to provide for effective long-term management of hazardous waste disposal sites.

In particular, as pointed out in the tailings dam report (PCE, 1997), the practical effect of s 108(6)(c) of the RMA needs to be clarified.

4.6.3 Trade waste

Trade waste discharges to sewers can increase maintenance and replacement costs of the sewerage drains. Flows of trade waste can be sporadic, sometimes resulting in high volumes of hazardous waste through a waste water treatment plant or, in some cases, discharge directly into coastal waters. **It can be difficult to trace the source of a particular discharge that may affect a sewer system or treatment plant**. Charges under trade waste bylaws are usually made on the basis of flow rate, regardless of the hazardous nature or 'strength' of the waste. **While charges may be a disincentive to discharge large quantities of trade waste, they fail to control the quality and effects of hazardous wastes.**

Liability for the control of effects transfers to the local authorities who accept trade waste discharges into their sewer system. This is the case whether the trade waste discharge is a permitted one or not. Local authorities who accept such waste are subject to regional plans or resource consents which place conditions on the discharges from their treatment plants.

Permitting waste generators to discharge hazardous waste into sewers, irrespective of the dilution that takes place in the sewerage system, does not encourage waste generators to explore alternatives to disposing of their waste, as suggested in the Government's waste policy. Local authorities need to ensure that, if they accept hazardous waste for disposal, their disposal facilities (including landfills, sewers and sewage treatment plants) are suitable for that purpose, that the waste is treated before disposal (assuming

that there are no alternatives but disposal) and that their charges for disposal are consistent with the Government's policy on waste generators meeting the costs of the waste they produce.

4.6.4 Institutional framework

A variety of agencies have interests in, and responsibilities for, the management of hazardous wastes at various stages of their life-cycle and under various statutes. These include the Ministry for the Environment, the Environmental Risk Management Authority, the Occupational Safety and Health Service of the Department of Labour, the Ministry of Health, the Police and other emergency services, regional councils and territorial authorities, public health services and industry groups. Such a wide range of agencies involved in hazardous waste management creates the potential for conflicts of interest and priorities to arise if there is insufficient liaison among them.

Opportunities for agencies, as well as industries involved in waste management, to exchange information on health, safety and environmental effects of hazardous wastes, and a system for coordinating input to hazardous waste policy and programme development need to be encouraged.

4.6.5 Interim measures and priorities

Some of the processes involved in developing the Government's hazardous waste programme, particularly the introduction of regulations, involve lengthy periods of consultation and assessment of proposals (eg, the requirements of s 44 of the RMA in relation to the development of national environmental standards). **However, there are some key hazardous waste management issues that need to be addressed as matters of priority which do not totally rely on the need to meet statutory requirements and timeframes, the solutions to which could be regarded as interim stopgap measures.** These include:

- an agreement among central and local government agencies and hazardous waste industries on what constitutes 'hazardous waste';
- monitoring of hazardous waste generation, treatment and disposal, and gathering information on quantities and effects for policy development and review purposes; and
- encouraging the use of existing waste management guidelines (eg the NZCIC guidelines revised and updated, if necessary) until national environmental standards are introduced.

5 ASSESSING PROGRESS, EFFECTIVENESS AND PRIORITIES OF GOVERNMENT'S HAZARDOUS WASTE PROGRAMME

Government's hazardous waste programme offers an opportunity to establish a comprehensive and sustainable hazardous waste management system in New Zealand, and to address the OECD's Environmental Performance Review criticisms of New Zealand's poor performance in this area. It is important, therefore, that progress on the reform of hazardous waste management and meeting the objectives of the Government's programme are monitored to ensure that momentum is maintained and that the outcome is an effective hazardous waste management system.

5.1 Monitoring progress of the hazardous waste programme

In order to monitor progress of the hazardous waste programme, the PCE intends to review the stages reached in the reform process, as well as assessing the final outcome. Subject to the availability of resources, the following reviews and reports to Parliament's Transport and Environment Committee (or any future equivalent) will be undertaken by the PCE:

Report No.	Stage	Date
1	Submission of this report and recommendations to the Transport and Environment Select Committee.	May 1998
2	a) Review of the hazardous waste programme discussion paper. b) Review of: (i) the analysis and response to submissions on the discussion paper; (ii) advice to Government on the hazardous waste management reforms; and (iii) the timetable for the implementation of reforms.	During 1998/1999
3	Evaluation of Government's adoption of advice and its commitment to completing the hazardous waste management reforms, including the adequacy of resources.	During 1999/2000
4	Assessment of the effectiveness of the completed reforms.	At the completion of the 3-year hazardous waste programme (2000/2001)

5.2 Assessing the effectiveness of the hazardous waste reforms

To assess the outcome of the hazardous waste programme, the PCE proposes to adopt the following criteria:

Effectiveness criteria

- The programme addresses the criticisms and recommendations on New Zealand's management of hazardous wastes outlined in the 1996 OECD Environmental Performance Review.
- The programme addresses the hazardous waste monitoring problems identified in the National Waste Data Report (MfE, 1997b) and in the 1997 State of the Environment Report (MfE, 1997c).
- The programme is adequately resourced, and achieves its objectives and targets within its specified timeframe.
- 'Hazardous waste' is clearly defined and consistently used in hazardous waste management policies and plans.
- The statutory and other responsibilities of those who generate, transport, handle, treat or dispose of hazardous waste are clear and include matters outlined in the Government's waste management policy.
- Adequate incentives are established which encourage waste generators to reduce the amount of hazardous waste generated, to treat hazardous waste before disposal, and to reduce the environmental effects of disposal. Alternatively, suitable measures are introduced which act as disincentives to generate hazardous waste or to dispose of untreated hazardous waste.
- No gaps, or significant overlaps that cannot be effectively managed, exist in the roles and responsibilities of central and local government or other public authorities involved in the management of hazardous wastes.
- Quantities, types, methods of disposal and environmental effects of hazardous wastes are monitored by territorial authorities and regional councils, in consultation with tangata whenua. Monitoring information is provided to, and coordinated at the national level by, the Ministry for the Environment (where appropriate, in conjunction with the Environmental Risk Management Authority in relation to waste hazardous substances).
- Waste reduction and risk reduction targets for hazardous wastes are established by central government for matters of national significance, and local government for discharges to the environment and trade waste.

6 CONCLUSION

Previous reports mentioned in this paper have already concluded that New Zealand's record of managing hazardous waste is poor. Problems stem from inadequacies such as:

- the lack of data on hazardous wastes linking quantities and types generated with means of disposal and effects on the quality of the environment (including long-term risks);
- the lack of adequate legislative provisions for managing waste, including the lack of a definition of 'hazardous waste' and requirements for tracking hazardous waste movements;
- the lack of, or inconsistent, hazardous waste policies among local authorities; and
- the lack of incentives to reduce the amount of hazardous waste generated and disposed of.

Generally, the management of hazardous waste in New Zealand has been carried out in a piecemeal fashion without any overall strategy or commitment to monitor and review the existing system. The Government has acknowledged the need to address these issues and is embarking on a major programme to improve the management of hazardous wastes. This report has outlined some additional measures that the Government may wish to consider in the development of its programme.

The Government's hazardous waste programme needs to have at least a two-pronged approach in which minimising both the generation of hazardous waste (waste reduction) and the effects on the environment and public health of its disposal (risk reduction) are the key objectives. These two aspects of hazardous waste management are linked but the current system of collecting data, where it occurs at local government level, is limited to identifying quantities of hazardous waste generated or disposed of. There is no evidence of the risks having been assessed, or that waste management decisions are based on risk reduction.

To ensure that the development of the hazardous waste programme can be monitored and its outcome assessed, the PCE has proposed an auditing process. This will consist of reviews of the programme during its development and at its completion so that progress can be measured against its timetable, and an assessment of its effectiveness is based on a set of pre-determined criteria.

7 RECOMMENDATIONS

It is recommended that:

1 The Transport and Environment Committee note the findings and recommendations of this report and, in particular, the proposal by the PCE to establish an audit process to measure the progress and assess the effectiveness of the Government's proposed hazardous waste programme.

2 The Minister for the Environment, when developing the discussion paper and subsequent proposals for the management of hazardous wastes:

Objectives, policies, legislation

i) outlines the objectives, targets and dates for completion of the stages of the hazardous waste programme, clearly states the outcome(s) expected, and reviews progress towards achieving the outcome(s) once the reforms are in place;

ii) promotes an integrated approach to the management of hazardous waste which encourages reductions in both the quantities of waste generated and the effects on the environment and people (eg, combining waste and risk reduction strategies);

iii) with regard to Government's current or future waste management policy, clarifies and, where necessary, introduces legislative provisions necessary to:
- define 'hazardous waste';
- implement Government's policy relating to hazardous wastes;
- enable local authorities to set hazardous waste reduction targets;

iv) assesses the extent to which hazardous waste management reforms, as well as controls on waste hazardous substances determined by the Environmental Risk Management Authority, are likely to affect territorial authorities' trade waste bylaws and waste management plans under the Local Government Act;

v) assesses the adequacy of provisions in the RMA to enable the long-term risks from hazardous waste disposal sites (including those sites declared to be 'contaminated sites') to be effectively managed;

vi) establishes a system to coordinate the roles and responsibilities of various agencies involved in aspects of the management of hazardous wastes;

vii) (a) undertakes consultation with iwi and hapu to identify the particular concerns and priorities for tangata whenua with regard to the management of hazardous wastes;
(b) establishes and encourages procedures for tangata whenua participation, in accordance with the principles of the Treaty of Waitangi, in order to constructively address those concerns;

viii) adopts, as a matter of priority, interim measures to:
(a) define 'hazardous waste';
(b) monitor hazardous waste generation, disposal, and effects;
(c) encourage hazardous waste generators to adopt a waste tracking system, in consultation with their local authorities and private landfill operators;

Guidelines

ix) develops guidelines for:
(a) waste generators on options for managing hazardous waste other than by disposal;
(b) private and local authority waste disposal operators on the handling and disposal of hazardous waste;
(c) the public on the disposal of hazardous waste;
(d)local authorities on a range of methods (including incentives, rules and environmental education) for implementing Government's waste management policy;

x) ensures that sufficient resources are available to create, update, widely distribute and actively promote guidelines on the management of hazardous waste;

xi) develops standards, capable of being consistently applied and enforced, for the design, construction and performance of facilities for the treatment and/or disposal of hazardous wastes;

Information

xii) establishes an information management system at central government level to advise on, and to coordinate, data collection from regional hazardous waste surveys;

xiii) develops, as a matter of priority and part of the Environmental Performance Indicators programme, indicators for hazardous waste;

xiv) publishes an annual update on how the Government has responded to the waste management recommendations of the OECD's 1996 Environmental Performance Review of New Zealand (and any subsequent review);

xv) updates the Hazardous Waste Management Handbook (MfE, 1994);

Other relevant matters

xvi) assesses the adequacy of hazardous waste disposal charges (including trade waste charges) to ensure that hazardous waste generators, as far as practicable, meet the costs of the wastes they produce;

xvii) assesses the suitability of the New Zealand Waste Identification Code (NZWIC) as a means of classifying and managing hazardous waste;

xviii) evaluates the existing capabilities and effectiveness of hazardous waste treatment and disposal facilities in New Zealand to meet present and future needs.

Appendix 1

CURRENT HAZARDOUS WASTE DEFINITIONS, CHARACTERISTICS AND CLASSIFICATIONS

Waste

Waste is broadly defined as unavoidable materials for which there is no current nor near future economic demand, and for which treatment and/or disposal may be required (CAE, 1992, p.166; also quoted in MfE, 1994, p.35; NZCIC, 1991, p.4; and used in MfE, 1992a, p.3).

The draft Australia/New Zealand Standard (Env/6): Waste Management (February 1998) defines waste as materials and energy which have no further use and are released to the environment as a means of disposal.

Problem wastes (also referred to in the CAE, 1992 report as intractable waste)

Those waste hazardous substances which will not break down to non-hazardous residues over time when released into the environment and for which there are no proven destruction or treatment processes currently available in New Zealand (MfE, 1994, p.35).

Hazardous substance

Means, unless expressly provided otherwise by regulations, any substance–

(a) with one or more of the following intrinsic properties:
- (i) explosiveness:
- (ii) flammability:
- (iii) a capacity to oxidise:
- (iv) corrosiveness:
- (v) toxicity (including chronic toxicity):
- (vi) ecotoxicity, with or without bioaccumulation; or

(b) which in contact with air or water (other than air or water where the temperature or pressure has been artificially increased or decreased) generates a substance with any one or more of the properties specified in paragraph (a) of this definition (Hazardous Substances and New Organisms Act 1996, s.2).

The RMA's definition of 'hazardous substance' includes, but is not limited to, any substance defined in s.2 of the HSNO Act as a hazardous substance (s.2 RMA).

Hazardous waste

Table 1 is a summary of various approaches to defining hazardous waste since 1987.

Hazardous waste poses a present or future threat to man or the environment. To minimise risk, all waste should be considered hazardous unless specifically known to be safe (CAE, 1992, p.166). The CAE report also defines non-hazardous wastes as those that do not pose any significant health or environmental threat.

The Basel Convention developed by the United Nations Environment Programme (UNEP) and the OECD define hazardous waste as 'waste that contains substances that are toxic to humans, plants or animals, are flammable, corrosive or explosive, or have high chemical reactivity'. This definition excludes radioactive substances (MfE, 1997b, p.8).

Characteristics of hazardous waste

The CAE report classifies hazardous waste according to the hazardous characteristics listed in the United Nations Recommendations on the Transport of Dangerous Goods (ST/SG/AC.10/1/Rev.6, United Nations, New York, 1989) (see CAE, 1992, Part 3, Appendix B, pp.242-243; also referred to in NZCIC, 1991, pp.30-31).

Classification of hazardous waste

The classification system based on the OECD International Waste Identification Code (IWIC) has been generally accepted and adopted (with slight modifications) in New Zealand (MfE, 1994).

The Waste Analysis Protocol (MfE, 1992a, pp.A1-A3) points out the strengths and weaknesses of the IWIC, but on balance endorses in principle a version modified for New Zealand conditions.

The National Waste Data Report (MfE, 1997b, p.8-9) lists the range of hazardous waste classification systems currently in use in New Zealand. These include:

- the OECD IWIC;
- the system used in the Basel Convention which is based on the OECD system;
- the New Zealand Waste Identification Code (NZWIC), also based on the OECD system;
- the United States Environmental Protection Agency (USEPA) Regulations for hazardous waste;
- the Hazardous Substances and New Organisms Act 1996 definition of 'hazardous substance'.

Radioactive wastes

The management of radioactive wastes comes under the responsibility of the National Radiation Laboratory (NRL) of the Ministry of Health. Except for some small quantities of radioactive material which are exempt from most controls, radioactive material can only be used by a person holding a licence issued by the NRL under the Radiation Protection Act 1965.

NRL's policy and practices for the management of radioactive wastes are outlined in a NRL report (NRL, 1996a). This includes limits on unsealed waste radionuclides which are based on the International Basic Safety Standards for Radiation Protection of the International Atomic Energy Agency (NRL, 1996b). In general, NRL will receive any sealed radioactive sources (apart from some high activity sources) which become surplus to requirements. Such sources are immersed in concrete in 20 litre drums and kept in long-term storage. High activity sources (eg, Cobalt-60) have always been exported back to the supplier of the replacement source. In some cases, there is a contractual obligation on the supplier to do this.

Table 1: New Zealand Approaches to Hazardous Waste Definitions (source: Ministry for the Environment)

Name	Approach to Definition
A Strategy for Hazardous Wastes 1987 MfE	No definition "It is considered non-productive for New Zealand to attempt to define hazardous wastes except by general concepts of toxic, corrosive, inflammable and intractable. Waste production should be viewed as a continuum from harmless to highly dangerous and waste does not become hazardous at one clear cut-off point."
NZCIC Code of Practice 1991	"Waste which poses a present or future threat to man or the environment. To minimise risk, all waste should be considered as hazardous unless specifically known to be safe." The Code of Practice provides a list of hazardous characteristics.
The New Zealand Waste Identification Code (NZWIC)	The NZWIC is a slightly modified and truncated version of the OECD International Waste Identification Code. It was jointly developed by the New Zealand Chemical Industry Council and Centre for Advanced Engineering.
Centre for Advanced Engineering (CAE) Our Waste: Our Responsibility 1992	"... any waste that poses a present or future threat to humans or the environment. More specifically, hazardous wastes are unwanted materials that exhibit hazardous characteristics such as corrosivity, explosiveness, reactivity, flammability or radioactivity, or otherwise have the potential to damage human, animal and other species." This document also refers to the NZWIC (above).
Waste Analysis Protocol (WAP) 1992, Module A,	Waste "is broadly defined as unavoidable materials for which there is currently, or no near future, economic demand and for which treatment and/or disposal may be required". This definition was taken from NZCIC, 1991, p.4. The WAP also set out an approach to classify hazardous wastes which is largely based on the International Waste Identification Code (IWIC).
Landfill Guidelines 1992 Ministry for the Environment	'Hazardous wastes' are 'those unwanted materials which exhibit hazardous characteristics such as corrosivity, explosiveness, reactivity, flammability or radioactivity, or otherwise have the potential to damage human, animal or other species' - 'special wastes' are 'those requiring special handling or disposal'.
Hazardous Waste Management Book 1994 Ministry for the Environment	The handbook defines waste hazardous substances using the NZCIC Code of Practice definition for waste and the HSNO definition for a hazardous substances.

Name	Approach to Definition
Hazardous Facilities Screening Procedure 1995	HSNO definition for hazardous substances and no definition for waste.
The 1995 National Landfill Census	Ministry for the Environment surveyed landfill operators at 271 landfills across NZ and found they interpreted hazardous waste in a widely differing manner.
The 1996 Auckland Region Hazardous Waste Survey	Used the NZWIC.
HSNO Act 1996	"Hazardous substance" means, unless expressly provided otherwise by regulations, any substance- (a) With one or more of the following intrinsic properties: (i) Explosiveness: (ii) Flammability: (iii) A capacity to oxidise: (iv) Corrosiveness: (v) Toxicity (including chronic toxicity): (vi) Ecotoxicity, with or without bioaccumulation; or (b) Which on contact with air or water (other than air or water where the temperature or pressure has been artificially increased or decreased) generates a substance with any one or more of the properties specified in paragraph (a) of this definition.
Australia/New Zealand Standards Organisation Draft Glossary of Terms for Waste Management 1997	Component of the waste stream which by its characteristics poses a threat to public health, safety or to the environment. Note: Includes substances which are toxic, infectious, mutagenic, carcinogenic, teratogenic, explosive, flammable, corrosive, oxidising and radioactive.

Appendix 2

CHRONOLOGY OF POLICIES, REPORTS, AND PROGRAMMES ON WASTE, PARTICULARLY HAZARDOUS WASTE, SINCE 1990

1990

The (Labour) Government announces a national waste management policy, including the target of reducing solid wastes to 20 percent below 1988 levels by 1993 (MfE, 1997c, p.3.37).

1991

Up to and including 1991, the Department of Health publishes six waste management guides covering:

- Treatment and disposal of timber preservative wastes (1986);
- Safe management of PCBs (1988);
- Treatment and disposal of leaded petrol sludges (1988);
- Electroplating wastes (1989);
- Pesticide wastes (1991); and
- Acid and alkali wastes (1991).

The New Zealand Chemical Industry Council publishes its Waste Management Guidelines (NZCIC, 1991) intended for use by generators of chemical waste to assist them in developing waste management plans for their own operations. Local authorities also use it as a guide to managing their landfills. The guidelines introduce the concept of 'Responsible Care', a programme intended to improve the performance of the chemical industry in the fields of health, safety, environment, product safety, distribution, emergency response and public relations.

The Resource Management Act 1991 is enacted. Although the Act does not define waste or hazardous waste, it places responsibilities on regional councils such as 'the control of the use of land for the purpose of ... the prevention or mitigation of any adverse effects of the ... disposal ... of hazardous substances' (s.30(1)(c)(v)), and a similar requirement in respect of the coastal marine area (s.30(1)(d)(v)). Regional councils also have responsibility for 'the control of discharges of contaminants into or onto land, air or water' (s.30(1)(d)(iv) and (f)). Territorial authorities have a responsibility for 'the control of any actual or potential effects of the use, development, or protection of land including for the purpose of ... the prevention or mitigation of any adverse effects of the ... disposal ... of hazardous substances' (s.31(b)).

1992

The (National) Government issues a revised waste policy which drops the previous Government's waste reduction target and instead emphasises the importance of waste management programmes. These programmes would place responsibility on waste generators to meet the costs their waste imposes on the rest of the community, and would promote the internationally recognised waste management hierarchy of reducing, reusing, recycling, recovering, treating and disposing of waste.

Publications:

1 The New Zealand Waste Analysis Protocol (MfE, 1992a) introduces a system and methodology for gathering data on wastes, including the management of potentially hazardous wastes within the business sector.

2 The Landfill Guidelines (MfE, 1992b) provide advice on the design and operation of landfills that accept hazardous wastes.

3 'Our Waste: Our Responsibility', published by the Centre for Advanced Engineering, includes detailed practical information on the management of hazardous waste (CAE, 1992).

3 The Parliamentary Commissioner for the Environment releases a report which reviews Government systems for the management of hazardous waste disposal (PCE, 1992).

1993

The Parliamentary Commissioner for the Environment publishes a report on four case studies of local authority waste reduction initiatives. The report identifies the fact that many councils' landfill charges are based on landfill operating costs. They do not attempt to assess the indirect or social costs of landfills or the worth of the landfill asset, resulting in hidden costs and cross-subsidisation of costs.

1994

The Hazardous Waste Management Handbook (MfE, 1994) is published as a guide for local authorities and others involved in hazardous wastes management practice.

New Zealand ratifies the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal.

1995

The Ministry for the Environment publishes its Environment 2010 Strategy (MfE, 1995) – a statement of the Government's strategy on the environment to the year 2010. It includes goals and priorities for the management of waste, contaminated sites and hazardous substances.

1996

The OECD publishes its Environmental Performance Review of New Zealand (OECD, 1996) which is critical of the way that wastes, particularly hazardous wastes, are managed.

The Ministry for the Environment publishes its Landfill Full Costing Guide. Its purpose is 'to provide a model to assist landfill managers to determine the full costs of landfill development, operation and aftercare in a uniform and consistent manner' (MfE, 1996, p.6).

The Minister for the Environment publishes an update on the Government's response to the OECD's Environmental Performance Review of New Zealand (Upton, 1996).

The Government's Coalition Agreement between the New Zealand First and New Zealand National parties is signed on 11 December 1996. It includes key policy initiatives on waste.

1997

Publications:

1 The 1995 National Landfill Census (MfE, 1997a) includes responses to questions covering the subject of hazardous or special wastes management. The census indicates that 92 percent of landfills do not accept 'hazardous waste' (p.14), although there is a lack of consistency in how operators classify hazardous or special wastes.

2 The National Waste Data Report (MfE, 1997b) is the first attempt to present quantitative waste data available in New Zealand. It draws attention to deficiencies in the collection of data, and limitations in interpreting the data.

3 The first State of New Zealand's Environment Report is published (MfE, 1997c). It contains a section on waste generation and disposal in New Zealand, and concludes that landfill management practices are generally poor, as are our practices and attitudes towards managing hazardous waste (p.10.16).

4 The Ministry for the Environment's proposals for developing environmental performance indicators (EPIs) includes preparing and implementing EPIs for waste and hazardous waste by the turn of the century (MfE, 1997d, p.22).

Hazardous waste programme

In its work programme for 1997/98 the Ministry for the Environment's activities in the areas of pollution and waste focus on hazardous waste management, waste monitoring and improving waste management. This includes developing a framework for hazardous waste management.

1998

The Ministry for the Environment publishes an 'Environment Infosheet' (March 1998) updating the issues and process for the hazardous waste programme. The questions to be addressed by the programme include:

- what is a hazardous waste?
- what hazardous waste is generated in New Zealand?
- what adverse effects/risks are posed to people and the environment?
- what are the most cost-effective ways to avoid or minimise risks posed by the disposal or treatment of hazardous waste?

The process for addressing these questions involves the preparation of a discussion paper to be released for comment in August 1998. The discussion paper is to include:

- options for defining hazardous wastes;
- options for tracking hazardous wastes;
- options for managing the discharge of hazardous wastes to land, air and water;
- an analysis of the environmental and economic costs and benefits of proposed options for hazardous waste management in New Zealand.

Appendix 3

LEGAL BACKGROUND

1 Legislation dealing with hazardous waste

The two main pieces of legislation which deal with the disposal of hazardous waste are the Resource Management Act 1991 and the Hazardous Substances and New Organisms Act 1996 (HSNO), both of which are administered by the Ministry for the Environment, although the Environmental Risk Management Authority is charged with the implementation of HSNO. In addition, local authorities have functions, duties, and powers relating to waste management, disposal and public health under the Local Government Act 1974 and the Health Act 1956. Other aspects of hazardous waste are dealt with by the Radiation Protection Act 1965 and the Transport Act 1962 (as to the transport of hazardous waste).

1.1 The Resource Management Act 1991 (RMA)

The purpose of the RMA is to promote the sustainable management of natural and physical resources. "Sustainable management" as defined in s 5(2) requires, inter alia, the safeguarding of the life-supporting capacity of air, water, soil, and ecosystems. In achieving the purpose of the RMA, every person who exercises functions and powers under it is required to recognise and provide for the matters of national importance listed in s 6, have particular regard to the matters listed in s 7, and take into account the principles of the Treaty of Waitangi under s 8.

Local Government responsibilities

The RMA authorises regional councils to prepare regional policy statements (s 60) and regional plans (s 65); and district councils to prepare district plans (s 73). Regional policy statements (RPSs) are to contain the objectives which the RPS seeks to achieve, the policies and methods supporting the objectives, reasons for adopting the objectives, policies and methods, and the environmental results anticipated from the implementation of the policies and methods. Regional plans and district plans are to fulfil similar requirements but may also contain rules which prohibit, regulate or allow activities. District plans may not be inconsistent with the relevant RPS or regional plan.

Regional councils have the functions set out in s 30 RMA, which include:

- the establishment, implementation, and review of objectives, policies, and methods to achieve integrated management of the natural and physical resources of the region (s 30(1)(a));

- control of the dumping and incineration of waste or other matter and the dumping of ships, aircraft, and offshore installations (s 30(1)(c)(iva));[25]
- the control of the use of land for the purpose of the prevention or mitigation of any adverse effects of the storage, use, disposal, or transportation of hazardous substances (s 30(1)(c)(v)); and
- the control of discharges of contaminants into, or onto land, air, or water and discharges of water into water (s 30(1)(f)).

The definition of "contaminant"[26] is wide enough to cover any hazardous substance, including waste which may be hazardous.[27]

Territorial authorities have the functions set out in s 31, including the control of any actual or potential effects of the use, development, or protection of land, including for the purpose of ... the prevention or mitigation of any adverse effects of the storage, use, disposal, or transportation of hazardous substances (s 31(b)).

There appears to be no real difference between the functions of regional councils and territorial authorities in relation to hazardous wastes. Wording similar to that used in ss 30(1(c)(v) and 31((b) is used in the context of the control of natural hazards, so that s 30 empowers regional councils to control the use of land for the avoidance or mitigation of natural hazards and s 31 similarly empowers territorial authorities to control *the effects* of the use of land for the avoidance or mitigation of natural hazards. In considering the relative jurisdictions of regional councils and territorial authorities over natural hazards, the Court of Appeal has acknowledged that they may have overlapping jurisdiction, but noted that territorial authorities' power to make rules is subject to s 75(2) RMA which provides that a district plan shall not be inconsistent with the applicable regional plan.[28]

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25 The provision enacting this paragraph has yet to be brought into force. See also s 15A which will prohibit such dumping or incineration unless expressly allowed by a resource consent.

26 "Contaminant" is defined in s 2 as including "any substance (including gases, liquids, solids, and micro-organisms) or energy (excluding noise) or heat, that either by itself of in combination with the same, similar, or other substances, energy, or heat –

(a) When discharged into water, changes or is likely to change the physical, chemical, or biological condition of water; or

(b) When discharged onto or into land or into air, changes or is likely to change the physical, chemical, or biological condition of the land or air onto or into which it is discharged.

27 The RMA also contains a definition of "hazardous substance" which encompasses the definition of that term in the Hazardous Substances and New Organisms Act 1996, but is wider than that definition. See Appendix 3 of this report.

28 *Application by Canterbury Regional Council* [1995] NZRMA 452.

The Court observed that it was difficult to see how a territorial authority could control the effects of a use of land without regulating the use itself.

Notwithstanding this overlap in jurisdiction, s 62(1)(ha) RMA clarifies the situation by enabling the regional council to provide which local authority shall have responsibility within its area for controlling the use of land for the prevention or mitigation of any adverse effects of the storage, use, disposal, or transportation of hazardous substances, and failing any allocation of responsibility in the RPS provides that the regional council retains primary responsibility for the hazard or hazardous substance. This situation will change once s 149 of the Hazardous Substances and New Organisms Act is brought into effect. This provision will amend the RMA so that the default position will be that territorial authorities shall be primarily responsible for the hazardous substance. However, regional councils will remain responsible for the control of discharges of contaminants, some of which will be hazardous waste.

Central Government responsibilities

The Minister for the Environment may appoint a board of inquiry to inquire into and report on a proposed national policy statement (s 46). In determining whether it is desirable to prepare a national policy statement, the Minister may have regard to a number of matters, including –

(b) New Zealand's interests and obligations in maintaining or enhancing aspects of the national or global environment;

(d) Anything which affects or potentially affects more than one region.

National environmental standards (s 43) may be used to prescribe technical standards for the use, development, and protection of natural and physical resources and methods for implementing such standards. Standards may be made in respect of contaminants such as hazardous wastes. To date, no national environmental standards have been prescribed. Section 360(1)(h) enables regulations to be made exempting discharges of contaminants from the operation of s 15 (which prohibits discharges unless they are expressly allowed by a rule in a plan, a resource consent or regulations). The making of national environmental standards is subject to a public process (s 44).

In 1994, new provisions were inserted in the RMA to address marine pollution, although these provisions are yet to be brought into force by Order in Council. The provisions will empower regional councils to regulate the dumping or incineration of waste in the coastal marine area (s 15A), and the Governor-General in Council to make regulations allowing discharges of harmful substances from ships or off-shore installations into the coastal marine area (s 15B).

Section 15C will prohibit the dumping or storing of radioactive waste or other matter in the coastal marine area. These provisions are intended to correspond to the marine protection rules to be made under the Maritime Transport Act 1994, which will apply beyond the coastal marine area. "Toxic or hazardous waste" for the purpose of these provisions is to be defined by regulations.

1.2 Hazardous Substances and New Organisms Act 1996 (HSNO)

Environmental Risk Management Authority responsibilities (central Government)

The purpose of the Hazardous Substances and New Organisms Act 1996 is stated in s 4 as "to protect the environment, and health and safety of people and communities, by preventing or managing the adverse effects of hazardous substances and new organisms". The Act sets up a regime for the assessment of hazardous substances and new organisms in order to enable a decision to be made as to whether or not approval should be granted for the importation, or manufacture of hazardous substances, and the importation, manufacture, development, field testing and release of new organisms.

All persons exercising functions, powers and duties under the Act are required to recognise and provide for the principles set out in s 5, and take into account the matters in ss 6, 7 and 8.

The Environmental Risk Management Authority (ERMA) was established by s 14 of HSNO to undertake the assessment of hazardous substances and new organisms. The ERMA's functions include advising the Minister for the Environment on matters related to the Act and monitoring the effect of the Act.

In respect of hazardous substances, the focus of HSNO is on assessing and approving (or otherwise) hazardous substances for importation or manufacture (s 28) and on setting controls on hazardous substances throughout their life cycles. The applicant for approval to import or manufacture a hazardous substance is required to provide the ERMA with certain information, including information on all methods for disposal of the substance (s 28).

"Disposal" is defined as meaning –

(a) in relation to a hazardous substance, –
  (i) Treating the substance in such a way that it is no longer a hazardous substance; or
  (ii) Discharging the substance into the environment as waste; or
  (iii) Exporting the substance as waste from New Zealand.

Once a hazardous substance is approved for importation or manufacture, it is assigned a hazard classification and becomes subject to the same controls as other hazardous substances of that classification. Regulations will be made setting the controls which will be performance-based and set standards relating to the substances at all stages of their life cycles (s 75). The controls will address the effects of hazardous substances on health and safety. Regulations setting controls have yet to be made.

Currently, only the philosophical provisions of HSNO and those establishing ERMA are in force.[29] When HSNO is fully in force,[30] it will repeal a number of specialist Acts dealing with specific hazardous substances,[31] although the transitional provisions of HSNO will apply until 1 January 2000.[32]

1.3 Agricultural Compounds and Veterinary Medicines Act 1997

Director-General of Agriculture

The Agricultural Compounds and Veterinary Medicines Act 1997 was enacted to prevent or manage risks associated with the use of agricultural compounds, to ensure that the use of compounds does not result in breaches of domestic food residue standards and to ensure the provision of sufficient customer information about agricultural compounds (s 4). The Act incorporates the definition of "hazardous substances" provided for in HSNO and any agricultural compounds which are also hazardous substances require the approval of the ERMA before they can be registered in New Zealand (s 21(5)).

1.4 Local Government Act 1974

Territorial authorities' responsibilities

Territorial authorities have the functions, duties and powers set out in s 37T of the Local Government Act 1974 (LGA), namely those conferred by the LGA or any other public Act, and any local Act applying to a particular territorial authority.

Part XXXI of the LGA enables territorial authorities to undertake the function of waste management. In the context of waste management by territorial authorities "disposal" means the final deposit of waste on land set apart for the purpose (by implication landfills). It is the duty

29 Hazardous Substances and New Organisms Act Commencement Order 1996/217, with effect from 8 August 1996.

30 The provisions relating to new organisms will be brought into force on 1 July 1998, and those relating to hazardous substances will be brought into force on 1 October 1998.

31 The Pesticides Act 1979, the Toxic Substances Act 1979, the Dangerous Goods Act 1974, and the Explosives Act 1957.

32 This date may be extended by one year by Order in Council: s 152 HSNO.

of every territorial authority to encourage efficient waste management (s 538), and in doing so to –

(a) have regard to environmental and economic costs and benefits for the district; and

(b) ensure that the management of waste does not cause a nuisance or be injurious to health.

Territorial authorities are required to adopt a waste management plan to make provision for the collection and reduction, reuse, recycling, recovery, treatment, or disposal of waste in the district (s 539). They are permitted to make grants to encourage the reduction, reuse, recycling, recovery, treatment, or disposal of waste (s 543). Territorial authorities may allocate the costs incurred in the implementation of a waste management plan in a way which promotes the objectives of the plan effectively and appropriately. Such objectives may be promoted by establishing economic incentives and disincentives (s 544).

Subject to the RMA and the Health Act, Part XXVIII LGA authorises territorial authorities to undertake trade waste disposal (by discharging waste into sewers) and make bylaws regulating the disposal of trade wastes. Bylaws may be made, inter alia, requiring any specified constituent of the trade waste to be reduced to a prescribed level before discharge, and determining the maximum quantity of trade wastes that may be discharged from trade premises on any one day without the consent of the territorial authority.

"Trade wastes" is defined as "any liquid ... that is or may be discharged from trade premises in the course of any trade or industrial process or operation but does not include condensing water, surface water, or domestic sewage" (s 489). For the purposes of Part XXVIII LGA "waste" is defined as including "any matter that, when added to or mixed with any natural water will contaminate the water so as to change the physical or chemical condition thereof in such a manner as to –

(a) Make the water unclean, noxious, or impure; or

(b) Be detrimental to the health, safety, or welfare of persons using the water; or

(c) Render the water undrinkable to farm animals; or

(d) Be poisonous or harmful to animals, birds, or fish around or in the water.

"Waste", as defined above, appears to fall completely within the meaning of "contaminant" in the RMA and therefore the discharge of any waste (and any trade waste) to the environment will be subject to s 15 RMA. A territorial authority may refuse to allow trade waste of any type or class to be disposed of through its sewers where the territorial authority is of the opinion that waste of that type or class is not suitable for discharge into the territorial authority's system (s 490(3)).

Charges for the treatment or reception or disposal of trade wastes are to be in accordance with a scale of charges prescribed by the territorial authority by special order (s 494). Charges may not exceed the amount of costs which the territorial authority estimates it would reasonably incur in treating, receiving or disposing of an equivalent amount of domestic sewage of an equivalent strength and may be made only in respect of the amount by which the trade wastes discharged from a premises exceeds the amount of domestic sewage that would normally be discharged from other premises having substantially the same rateable value. Presumably any trade wastes disposed of through the sewer receive the same treatment, if any, that domestic sewage receives, in which case the charging regime appears to be adequate to enable local authorities to recover their costs. However, although the local authorities may not be out of pocket, it may be that the disposers of the trade waste do not face the true cost to the environment of the disposal of the waste.

Regional councils' responsibilities

Under the LGA, regional councils have the functions, powers, and duties specified in s 37S. Section 37S lists a number of Acts under which regional councils have powers, including the RMA and the LGA itself. Under s 37SB, regional councils are authorised to fund, establish and manage sites for the regional disposal of hazardous waste. This recognises that it may not necessarily be practical or efficient to establish sites in every district.

1.5 Health Act 1956

Under the Health Act 1956 the Ministry of Health has the function of improving, promoting, and protecting public health (s 3A). The Act establishes a division called the Public Health Group within the Ministry (s 3E). Local authorities also have powers and duties under the Health Act, namely to improve, promote, and protect public health within their respective districts, and for that purpose every local authority is empowered and directed to –

- appoint Environmental Health Officers
- cause regular inspection of its district to be made to ascertain the existence of any nuisance, or any conditions likely to be injurious to health or offensive
- cause all proper steps to be taken to secure the abatement of such nuisance or the removal of such condition
- make bylaws for the protection of public health, including for the purpose of regulating the handling and storage of noxious substances or goods which are, or are likely to become, offensive.

The nuisances with which the Act is concerned are largely those relating to lack of sanitation, or unhealthy working conditions. The Health and Safety in Employment Act 1992 requires employers to

identify workplace hazards (including hazardous substances), and to eliminate or isolate the hazard, or take steps to protect their employees or visitors to the workplace (ss 7-10).

Regulations may be made under the authority of the Health Act in relation to any matter affecting public health in respect of which any local authority is empowered by that or any other Act to make bylaws (s 117(2)). Section 119 authorises regulations to be made providing for noxious substances (including disposal).[33] The Hazardous Substances and New Organisms Act 1996 amends s 122 of the Health Act by adding a new subsection (6) which requires the Minister of Health to consult with ERMA about the contents of such regulations and take into account ERMA's submission before recommending the making of any regulations under ss 117 or 119 relating to hazardous substances as defined in HSNO.

Ministry of Health (National Radiation Laboratory)

1.5 Radiation Protection Act 1965

Although radioactive material would be commonly regarded as a hazardous substance, it is not included in the definition of "hazardous substance" in the HSNO. A separate regime exists for the control of radioactive substances through the grant of licences. The Radiation Protection Regulations 1982/72 provide for the disposal of waste products and containers (regs 14 and 15). Written notice of conditions imposed by the Minister of Health on any consent relating to radioactive material "which is also a hazardous substance (as defined in s 2 of the HSNO)" shall be given to the ERMA.

1.6 Discussion

Some control in respect of hazardous substances and hazardous waste should be exerted at the national level. It is appropriate that there should be consistent treatment throughout the country of public health issues, transportation of hazardous wastes, workplace safety, and that there should be national policy or standards concerning the appropriate disposal methods for hazardous wastes. National agencies involved are the Ministry of Health (including the National Radiation Laboratory), the Ministry for the Environment, ERMA, the Ministry of Transport, and the Department of Labour (OSH).

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[33] Regulations made under the Health Act include the Asbestos Regulations 1983/70, regulation 27 of which addresses the disposal of asbestos. The regulation provides that pending disposal all asbestos waste is to be kept in closed containers that are impermeable to asbestos dust and are conspicuously marked with a warning. Paragraph (2) of regulation 27 requires the asbestos waste to be dampened and then tipped in a place approved by the Medical Officer of Health, and then covered with not less than 25 cm of earth, or in any other manner approved by an inspector.

At the sub-national level, regional councils and territorial authorities have potentially overlapping responsibilities as both are responsible under the RMA for controlling the use of land to prevent or mitigate the effects of the disposal of hazardous substances.[34] In addition, regional councils are responsible for the control of discharges of contaminants to the environment. However, the RMA provides a mechanism for determining which authority is to be primarily responsible for the management of hazardous substances through the control of land.

The issues in terms of the appropriate management of hazardous waste relate to the number of agencies at each level (central and local) which have responsibilities. The division between central Government and local government responsibilities is appropriate. Within central Government there are six agencies with responsibility; whereas at the local government level there are potentially two agencies with responsibility in a geographical area, one having primary responsibility.

At the central Government level, the HSNO will provide for the amendment of the Health Act to ensure that where the Ministry of Health intends to exercise regulation-making powers which overlap with those of the ERMA, the Ministry will consult with the ERMA. The ERMA will be required to advise the Minister for the Environment on inconsistencies and conflicts in relation to controls imposed by other Acts (s 11(a)(ii)). Any person exercising functions and powers under the RMA will be required to comply with the HSNO (s 142). The HSNO provides the minimum level of regulation, but more stringent controls may be imposed for RMA purposes. The Radiation Protection Act 1965 is essentially a code applicable to radioactive material. However, as radioactive material would be a contaminant for the purposes of the RMA, the RMA regulates the discharge of radioactive material to the environment and the construction of any facility for the disposal of such material.

Local authorities may authorise the use of land for the disposal of hazardous waste, that is, the local authority's responsibility in respect of the disposal of hazardous waste is site-specific. Under the LGA, regional councils are authorised to fund, establish, and manage sites for the regional disposal of hazardous waste, thus acknowledging that it may not be necessary or appropriate for every territorial authority to provide a site for the disposal of hazardous waste. Given the nature of the waste being disposed of, it may be more efficient and less harmful

34 Section 30(1)(c)(v): Regional councils' control of the use of land for the purpose of the prevention or mitigation of any adverse effects of, inter alia, the disposal of hazardous substances (ie hazardous waste) and s 31(b): territorial authorities' control of the effects of the use etc of land for the purpose of the prevention or mitigation of any adverse effects of, inter alia, the disposal of hazardous substances (ie hazardous waste).

to the environment if there are fewer disposal facilities and they service large areas.

Given the potential for a local authority to be held liable for the discharge of contaminants from its sewers into the environment, it is appropriate that local authorities are able to decide what substances may be disposed of through their sewage systems. However, because of difficulty in tracing the source of any waste illegally disposed of through the sewage system, local authorities may not be able to enforce bylaws and may remain liable for the illegal discharge despite their best efforts to avoid such an event.

1.7 Summary of key points

1. A number of separate pieces of legislation control different aspects of hazardous waste disposal.
2. There is no definition of "hazardous waste" common to all the relevant legislation.
3. The disposal of hazardous waste by discharge to the environment is subject to the RMA and is a local government responsibility.
4. The manner of disposal appropriate to particular classes of hazardous waste will be controlled by the HSNO and is a central Government responsibility.
5. Local government both regulates the disposal of hazardous waste (usually regional councils) and provides waste disposal services and facilities (usually territorial authorities).
6. The provisions of HSNO and the amendments it will make to other Acts are intended to ensure that there is no conflict between these Acts and HSNO, however better clarification of the roles and responsibilities of the various public authorities is desirable.
7. The issue of local authorities' liability for waste discharged through their sewers or deposited at their landfills, whether legally or illegally, requires attention.

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