

HAZARDOUS SUBSTANCE INCIDENTS

New Zealand imports, uses, stores, and transports hazardous substances to a similar extent to most other developed countries. There is less primary manufacturing of hazardous substances in New Zealand compared to other countries, but New Zealand does have a significant petrochemicals industry, based on oil and gas resources in the Taranaki region, and a large-scale oil refinery at Marsden Point. Storage and usage quantities are generally smaller than other countries because of the low population.

Hazardous substances in New Zealand

Many different hazardous substances are used, stored, transported and, to some extent, manufactured in New Zealand.

Petrochemicals, including petrol, diesel, aviation fuel, and natural gas-based products and solvents are manufactured, transported, used, and stored. Pesticides are widely stored and used, although not generally manufactured in New Zealand. Pesticide use is highest in timber treatment, antifouling treatments for boats, agriculture, and horticulture.

Explosives are both imported and manufactured in New Zealand and are extensively stored and used in mining, quarrying, tunnelling, demolition and military operations.

Industrial chemicals are widely used, typically in urban industry and within specific zones. For example, resins are used in manufacturing plastics and other polymers, inks are used in printing, and specialty

chemicals are used in research and diagnostic laboratories. Paints are used in the industrial, motor vehicle, and domestic sectors. Domestic products, such as cleaners and detergents, that incorporate hazardous substances are widely used.

The use of hazardous substances has many benefits, but New Zealand experiences day-to-day adverse effects of hazardous-substance use on people, property, and the natural environment. There is no readily available data that gives the precise extent of these impacts, but there is sufficient information to show that death and illness from acute and chronic exposure to hazardous substances affect many thousands of people each year.

Most adverse health effects arise from exposure to hazardous substances in the workplace. Other common incidents result from LPG use, and children swallowing household products. There are about 8000 chemically contaminated sites in New Zealand, and about 800 of these are timber industry sites.

Hazardous substance incidents

A hazardous substance incident is an unplanned or uncontrolled release of hazardous substances such as fuels, flammable substances, explosives, toxic chemicals, pesticides, radioactive material, or micro-organisms, including contaminated waste products. The New Zealand Fire Service attended more than 1750 hazardous substances incidents in 2003/04.

Hazardous substance incidents can be caused by a natural hazard affecting a production and storage site, transport vehicle or end-user site, a transportation accident, lack of care during use, criminal activity, or inadequate storage or disposal. Hazardous substance releases can cause large explosions or toxic gas plumes and can, therefore, affect large areas. The consequences of hazardous

substance incidents can include death, illness (potentially long-term), evacuations, environmental contamination and economic losses for businesses involved from damage and site clean-up. The effects of a hazardous substance release can be worsened if two hazardous substances stored near each other trigger a chemical reaction.

However, large-scale hazardous substance incidents that would require mass evacuations and coordinated CDEM involvement are uncommon. The most likely cause of an incident would be the release of a hazardous substance during transit, either at a port or from a road transport accident in an urban area, or a large fire ignited by, or near, chemicals.

1973 PARNELL DEFOLIANT LEAK

One of New Zealand's largest hazardous substance incidents occurred in February 1973 when drums which were leaking cotton defoliant were unloaded from the ship *Good Navigator* in Auckland.

The boat had encountered a storm en route from San Francisco to Auckland, which had damaged some of the drums and washed off the toxic warning labels. Twenty-five drums were unloaded from the boat when it berthed on 26 February and taken to two storage facilities in Parnell. By the following morning fumes were affecting people in the vicinity, and the leaking drums were discovered. A state of emergency was declared, which lasted 6 days. Parts of Parnell were evacuated and several hundred people required medical attention.

A commission of inquiry found that several factors had contributed to the incident, in particular the actions of the ship's captain and the removal of drums from the port contrary to New Zealand Customs Service and Ministry of Health instructions. However, the response to the incident was effective. This hazardous substance incident led to the establishment of emergency services coordinating committees to assist in the coordinated response to emergencies.



The New Zealand fire service removing drums after the 1973 Parnell defoliant leak. 4000 families were evacuated from the area during a six-day Civil Defence emergency. *New Zealand Herald*.

Managing hazardous substances

The response to hazardous substance incidents is managed by the New Zealand Fire Service. Hazardous substance technical liaison committees provide expertise in managing hazardous substance emergencies. The Environmental Risk Management Agency (ERMA) is the principle agency implementing the Hazardous Substances and New Organisms Act 1996 (HSNO Act).

Risk reduction and readiness

Most hazardous substances are regulated under the HSNO Act. The purpose of the Act is, among other things, to protect the environment and people by preventing or managing the adverse effects of hazardous substances. All hazardous substances in New Zealand must be approved and used in accordance with risk management controls set by ERMA.

Other agencies manage specific substances, many of which are also regulated under the HSNO Act. The Ministry of Health approves medicines and regulates radioactive substances (under the Radiation Protection Act 1965), and the New Zealand Food Safety Authority registers agricultural compounds and veterinary medicines. The Department of Labour enforces provisions of the HSNO Act in the workplace.

Regional councils are responsible under the RMA for controlling the discharge of hazardous substances and territorial authorities are responsible for managing land use to prevent or mitigate the adverse effects of storing, using, transporting and disposing of hazardous substances.

Response and recovery

The New Zealand Fire Service is responsible for managing the response to a hazardous substance incident. Other agencies such as the Police and health organisations may also need to assist with response and recovery, particularly if many people are affected or evacuated, or if a large cleanup is necessary.

Any CDEM response to hazardous substance incidents follows generic response and recovery procedures set out in CDEM Group plans, the National CDEM Plan and the Guide to the National CDEM Plan.

HAZARDOUS SUBSTANCES TECHNICAL LIAISON COMMITTEES

Hazardous substances technical liaison committees (HSTLCs) have been established in many parts of New Zealand. These voluntary groups are chaired by local New Zealand Fire Service representatives and include people from other emergency services, health organisations and CDEM Groups. HSTLCs provide technical information on a 24-hour basis for controlling, neutralising and disposing of hazardous substances and decontaminating affected sites. HSTLCs also catalogue hazardous substance information and provide advice for hazardous substance emergency planning.



FURTHER INFORMATION

GENERAL HAZARDOUS SUBSTANCES INFORMATION
ENVIRONMENTAL RISK MANAGEMENT AUTHORITY
www.ermanz.govt.nz/hs/index.html



Unknown hazardous substances leaking from unlabelled, unsealed drums into a drain, Christchurch. *Environment Canterbury.*

