

# Contaminated Land Management Guidelines – Schedule B

## Hazardous Activities and Industries List (HAIL) with Hazardous Substances

February 2004

The Hazardous Activities and Industries List (HAIL) is a compilation of activities and industries that are considered likely to cause land contamination resulting from hazardous substance use, storage or disposal. The HAIL is a revision of the list of industrial activities first published in the ANZECC (1992) Guidelines. The HAIL is intended to identify most situations in New Zealand where hazardous substances could cause, and in many cases have caused, land contamination. This version of the HAIL has been modified to include a list of hazardous substances mainly taken from Table I1 in Australian Standards (1997), and Department of Environmental Protection (2001). Other substances have been added to the list based on the experience of New Zealand contaminated site practitioners.

From time to time the HAIL may be added to, so users should always check the latest version – available at [www.mfe.govt.nz](http://www.mfe.govt.nz). Whenever the HAIL is referenced it should be accompanied by the date of publication

In some cases a generic activity involving hazardous substances is listed, irrespective of the industry, for example, petroleum storage. In other cases, an industry is listed on the basis that certain activities typical of that industry involve storage, use, or disposal of hazardous substances, and therefore all sites within that industry should be considered – for example the timber treatment industry. In other cases, particular activities are a small part of a particular industry, with the activity generally localised within larger sites. For example, animal dip sites are listed, but farming is not, as dip sites are only a small part of a farm, and farming, in general, does not have a high potential to be contaminating over the complete farm.

The HAIL should be used for consistently reporting on site history and for identifying sites for inclusion on local government Land Use Registers.

### References:

Ministry for the Environment (2004). *Contaminated Land Management Guidelines Schedule A: Hazardous Activities and Industries List (HAIL)*. Ministry for the Environment, Wellington, New Zealand.

Australian Standards (1997) AS4482.1 – 1997. *Guide to the sampling and investigation of potentially contaminated soil - Non-volatile and semi-volatile compounds*. Australian Standards, Sydney, Australia.

Department of Environmental Protection (2001). *Potentially Contaminating Activities, Industries and Landuses*. Department of Environmental Protection, Perth, Australia.

ANZECC (1992), *Australian and New Zealand Guidelines for the Assessment and Management of Contaminated Sites*, Australian and New Zealand Environment and Conservation Council, National Health and Medical Research Council.

## **Hazardous Activities and Industries List (HAIL) with Hazardous Substances**

This Hazardous Activities and Industries List defines industries and activities which typically use or store hazardous substances that could cause contamination if these substances escaped from safe storage were disposed of on the site, or were lost to the environment through their use. The fact that an activity or industry appears on the list does not mean that hazardous substances were used or stored on all sites occupied by that activity or industry, nor that a site of this sort will have hazardous substances present in the land. The list merely indicates that such activities and industries are more likely to use or store hazardous substances and therefore there is a greater probability of site contamination occurring than other uses or activities. Conversely, an activity or industry that does not appear on the list does not guarantee such a site will not be contaminated. Each case must be considered on its merits, considering the information at hand.

In applying the list, it must be remembered that the activity may only have occupied a small part of the site, and therefore the possibility of contamination will also be for a small part of the site.

| <b>Activity or Industry</b>  | <b>Hazardous Substances</b>   |
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| 1. Abrasive blasting – carrying out abrasive blast cleaning (other than cleaning carried out in fully enclosed booths) or disposing of abrasive blasting material.                       | Dependent on material being removed, Heavy metals, iron   |
| 2. Acid/alkali plant, formulation and bulk storage.  | Mercury, sulphuric, hydrochloric and nitric acids, sodium and calcium hydroxide   |
| 3. Agrichemical spray contractor's premises used for filling and washing out tanks for commercial agrichemical application.  | Arsenic, lead, copper, organochlorine pesticides, organophosphate pesticides, herbicides, fungicides, carbamates, and synthetic pyrethroids |
| 4. Airports – fuel storage, workshops, washdown areas, stormwater runoff from hardstanding.  | Hydrocarbons, metals  |
| 5. Analysts – commercial analytical laboratory sites.  | Solvents, acids, mercury  |
| 6. Asbestos products production and disposal. Also sites with buildings containing asbestos products known to be in a deteriorated condition.  | Asbestos  |
| 7. Asphalt or bitumen manufacture or bulk storage – manufacturing asphalt or bitumen, or bulk storage of these products, other than at a single-use site used by a mobile asphalt plant. | Petroleum hydrocarbons, PAHs  |
| 8. Battery manufacture or recycling – assembling, disassembling, manufacturing or recycling batteries (other than storing batteries for retail sale).                                    | Heavy metals (lead, mercury, zinc, cadmium, nickel, antimony, silver, manganese), sulphuric acid,   |
| 9. Brake lining manufacturers, repairers and recyclers.  | Asbestos, copper  |
| 10. Cement or lime manufacturing – manufacturing cement or lime from limestone material using a kiln and storing wastes from the manufacturing process.                                  | Lime, calcium hydroxide, alkalis  |

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| 11. Cemeteries   | Nitrates, lead, formaldehyde, biological hazards  |
| 12. Chemical manufacture and formulation and bulk storage such that land use consent is required.  | Wide range of organic and inorganic compounds – see AS 4482.1 Table II  |
| 13. Coal and coke yards.   | PAHs  |
| 14. Concrete manufacture and bulk cement storage.  | Cement, calcium hydroxide, alkalis  |
| 15. Defence works and defence establishments, including ordnance storage and training areas where live firing is carried out.                | Explosives, lead, copper, antimony (firing ranges), solvents and metals (workshops), hydrocarbon storage  |
| 16. Drum and tank reconditioning or recycling.   | Wide range of chemicals from drums  |
| 17. Dry cleaning plants – restricted to premises where dry cleaning is carried out and solvents are stored.                                  | Trichloroethylene, 1,1,1-trichloroethane, perchloroethylene, carbon tetrachloride, VOCs   |
| 18. Electrical transformers – manufacturing, repairing or disposing of electrical transformers or other heavy electrical equipment.          | PCBs, hydrocarbons, copper, tin, lead, mercury  |
| 19. Electronics – manufacturing, reconditioning  | Metals (e.g. Copper, Tin, Lead), Solvents   |
| 20. Engine reconditioning – use of solvents and degreasers   | Solvents, hydrocarbons, heavy metals  |
| 21. Explosive production or bulk storage   | Acetone, nitric & sulphuric acid, ammonium nitrate, fuel oil, PCP, nitroglycerine, lead, mercury, copper, aluminium, silver, sodium hydroxide, explosives       |
| 22. Fertiliser manufacture – manufacturing or bulk storage of agriculture fertiliser.  | Calcium phosphate, calcium sulphate, copper chloride, sulphur, sulphuric acid, molybdenum, selenium, boron, cadmium, nitrates, ammonia                          |
| 23. Foundry operations – commercial production of metal products by injecting or pouring molten metal into moulds and associated activities. | Metals, particularly (iron, aluminium, lead, zinc, copper, tin, nickel, chromium and oxides, chlorides, fluorides and sulphates of these. Acids, coke, fuel oil |
| 24. Gasworks – manufacture of town gas from coal or oil feedstocks.  | PAHs, phenolics, BTEX, metals (particularly arsenic, lead, copper, chromium), cyanide compounds, sulphides and sulphates, thiocyanates, ammonia, nitrates, coke |
| 25. Gun, pistol or rifle ranges  | Metals – lead, antimony, copper, zinc, tin, nickel  |
| 26. Iron and steel works   | BTEX, phenolics, PAHs, metals and oxides of iron, nickel, copper, chromium, magnesium and manganese   |

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| 27. Landfill sites  | Dependent on original waste composition, Hydrocarbons, BTEX, PAHs, metals, organic acids, landfill gas, ammonia   |
| 28. Livestock dip or spray race operations  | Arsenic, organochlorines and organophosphates, carbamates, and synthetic pyrethroids.   |
| 29. Market gardens, orchards, glass houses or other areas where the use of persistent agricultural chemicals occurred.  | Arsenic, lead, copper, mercury, organochlorines and organophosphates, carbamates, and synthetic pyrethroids   |
| 30. Metal treatment or coating – including polishing, anodising, galvanising, pickling, electroplating, heat treatment using cyanide compounds and finishing. curing works or commercially finishing leather.   | Metals (zinc, aluminium, cadmium, chromium, lead, copper, tin), acids (sulphuric, nitric, hydrochloric, phosphoric), sodium hydroxide, solvents and degreasers, cyanide                                 |
| 31. Mining and extractive industries and mineral processing – including chemically or physically extracting metalliferous ores, exposure of faces or release of groundwater containing hazardous contaminants and storing hazardous wastes, including waste dumps and tailings dams, but not gravel extraction.           | Arsenic, mercury, cyanides, sulphides, metals – also workshop activities, fuel storage  |
| 32. Motor vehicle workshops   | Hydrocarbons, PAHs, solvents, metals  |
| 33. Paint manufacture and formulation   | Solvents, resins, heavy metals  |
| 34. Pest control – commercially operating premises (or former pest destruction board, now regional council sites) where storage and preparation of pesticide occurs, including preparation of poisoned baits and filling or washing of tanks.   | Arsenic, cyanide, strychnine, mercury, phosphorus, 1080, organochlorines and organophosphates, carbamates, and synthetic pyrethroids  |
| 35. Pesticide manufacture (including animal poisons, insecticides, fungicides and herbicides) – commercially manufacturing, blending, mixing or formulating pesticides.   | Wide range of insecticides, herbicides and fungicides, including Arsenic, lead, mercury, copper, tin, chromium, organochlorines, organonitrogens, organophosphates, acid herbicides, dioxin, carbamates |
| 36. Petroleum or petrochemical industries or storage, including oil production and operating a petroleum depot, terminal, blending plant or refinery, retail or commercial refuelling facility, and facilities for recovery, reprocessing or recycling petroleum based materials and bulk storage above and below ground. | Hydrocarbons, including BTEX, PAHs, solvents, lead  |
| 37. Pharmaceutical manufacture – commercially manufacturing, blending, mixing or formulating pharmaceuticals, including animal remedies.  | Solvents  |
| 38. Port activities – including dry docks and ship and boat maintenance facilities.   | Metals, paint residues (tin, lead), fuel storage  |

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| 39. Power stations and switchyards  | PCBs , asbestos, metals (in fly ash), water treatment chemicals (thermal stations)  |
| 40. Printing – commercial printing, using metal type, inks and dyes, or solvents.   | Solvents, acids, alkalis, heavy metals  |
| 41. Railway yards – operating a railway yard including goods-handling yards, workshops, refuelling facilities and maintenance areas.  | Hydrocarbons, heavy metals, solvents, creosote  |
| 42. Sawmills – use of antisapstain chemicals during milling.  | Antisapstain fungicides, PCP, hydrocarbons  |
| 43. Scrap yards – operating a scrap yard including automotive dismantling or wrecking yard or scrap metal yard.   | metals, hydrocarbons, solvents  |
| 44. Service stations  | Hydrocarbons, lead, copper  |
| 45. Smelting or refining – fusing or melting metalliferous ores or refining the metal.  | Metals and oxides, fluorides, and chlorides thereof   |
| 46. Tannery, fellmongery or hide curing – operating a tannery or fellmongery or hide curing works or commercially finishing leather.  | Chromium, manganese, copper, ammonia, sulphides, acids, sodium hydroxide, lime, formaldehyde, solvents, cyanide             |
| 47. Transport depots  | Dependent on products being transported, hydrocarbons, metals and solvents in workshops                                     |
| 48. Storage tanks and drum storage for fuel, chemicals and liquid waste.  | Wide range of chemicals, biological hazards   |
| 49. Waste storage, treatment and/or disposal including land disposal of wastes, but not the use of biosolids as soil conditioners.  | Depends on type of waste – biological hazards (bacteria, viruses), metals, PAHs, semi-volatile organic compounds, solvents. |
| 50. Wood treatment and preservation and bulk storage of treated timber.   | PCP, copper, arsenic, chromium, boron organo-tin, PAHs and phenolics (creosote), organochlorine pesticides.                 |
| 51. Wool, hide and skin merchants (e.g. drying, scouring).  | Detergents, Pesticides, Bleaching agents (e.g., hydrogen peroxide)  |
| 52. Any site that has been, or could be, subject to the migration of hazardous substances from hazardous substances present in soil or water on adjacent sites.   | Dependent on contaminants associated with adjacent property   |
| 53. Any other facility or activity that stores, uses or disposes of hazardous substances in sufficient quantity that intentional or accidental discharge of the substance could be a risk to human health or the environment. |   |