

12. AGRICULTURAL CONTAMINANTS

12.1 Introduction

There are three main types of agricultural discharges:

1. Discharges of agricultural effluent from the concentration of animals or animal wastes in a small area; for example dairy sheds, piggeries, wintering pads, and feedlots.
2. The discharge of other contaminants to land in association with agricultural activities; for example offal pits, silage stacks, and farm tips.
3. Discharges resulting from the storage and use of fertilisers and agricultural chemicals, including pesticides and herbicides

Agricultural Effluent

Through good management, the fertiliser value of agricultural effluent can be realised. However, agricultural effluent discharged to land can have adverse effects on the land itself (e.g. by changing the soil structure), and on plant growth. Agricultural effluent can have adverse effects on water quality because of its relatively high levels of suspended solids, nutrients and pathogens. These can have some or all of the following adverse effects:

- **Biological Oxygen Demand (BOD₅):** Agricultural effluent has a high organic content which, as it decays, reduces the dissolved oxygen levels in the receiving water. The organic content can cause excessive growths of bacteria and fungi (commonly referred to as sewage fungus). These growths and their associated effects, can change the structure of aquatic ecosystems, and raise the pH of the water.
- **Nutrients:** High nutrient concentrations, particularly of nitrogen compounds (including nitrates and ammonia) and phosphorus compounds, from agricultural effluent and fertilisers can contribute to excessive algal and plant growths in waterways. Ammonia has toxic effects on organisms such as fish and macroinvertebrates. Nuisance growths can affect aquatic ecosystems and the aesthetic values of water.
- **Suspended Solids:** Inorganic and organic materials suspended in the water can affect the clarity and turbidity of water during times when water is naturally clear. This affects aquatic ecosystems and the aesthetic appeal of water. Suspended solids reduce light infiltration (affecting photosynthesis and potentially smothering organisms and habitats).
- **Pathogens:** Animals excrete high levels of bacteria and viruses. While only some of these are pathogenic, animals and humans can contract diseases from agricultural effluent in water which is used for recreation or consumption.

Offal Pits, Silage Stacks, and Farm Tips

The Council needs to ensure that other farm wastes are being disposed of appropriately, so that discharges do not result in adverse effects on the environment. If offal pits and farm tips are located too close to water they have the potential to adversely affect water quality.

Agricultural Chemicals

The safe storage, transportation and use of agrichemicals on farms are largely a matter of good practice. However, poor storage facilities, or practices can result in contamination of soil and water, and risks to human, animal and plant health. Other concerns regarding the use of agrichemicals include the damage to non-target areas, the potential effects on the health of humans and animals and possible contamination of groundwater and surface water due to spray drift. The disposal of agrichemical containers and unwanted agrichemicals is also an issue, particularly when they are disposed of by way of burning, or in farm tips where leachate could enter waterways.

Application of Fertiliser

Fertiliser is applied throughout the region to increase the productivity of land. Apart from the geologically most recent soils (such as those in the Grey Valley and the Kokatahi area) many soils in the region are impoverished with regard to nutrients. These soils need to be supplemented to maintain production; however, improper application of fertiliser resulting in entry into water can degrade aquatic ecosystems.

Stock Carcasses near Waterbodies

Occasionally stock carcasses are stranded along river banks and in the coastal marine area after flood events in the region. The main adverse effects of this are the odour emitted from the rotting carcass, and the threats to human health. The Council works in conjunction with the territorial authorities to remove any such carcasses.

12.2 Objective

12.2.1 To ensure that the adverse effects from the discharge of agricultural contaminants into or onto land, on water and soil quality, social, cultural, and amenity values, and human health are avoided, remedied, or mitigated.

12.3 Policies

12.3.1 To ensure that the discharge of agricultural contaminants to land is conducted in such a way that any adverse environmental effects are avoided, remedied, or mitigated.

Explanation

This Policy applies to the treatment or disposal of waste from agricultural effluent, offal pits, silage stacks, or farm tip activities. This Policy reflects the need to ensure that any adverse effects can be avoided, remedied, or mitigated through appropriate management techniques.

12.3.2 To promote the discharge of agricultural effluent to land, provided any adverse effects on the environment are avoided, remedied, or mitigated.

Explanation

The discharge of agricultural effluent can have adverse effects on water quality. The Council is therefore encouraging the discharge of agricultural effluent to land rather than to water.

12.3.3 To promote land management practices which minimise the effects on surface and ground water of runoff and leachate from discharges of agricultural contaminants to land, including:

- (a) Management of riparian margins to reduce surface water pollution from animal residues and fertilisers; and**
- (b) Applying fertilisers and agrichemicals at rates which are appropriate to site and weather conditions.**

Explanation

Discharges from agricultural activities can contribute to non-point source pollution. This Policy reflects the direction taken in the Regional Policy Statement to promote land management practices that minimise adverse effects.

13. LIQUID CONTAMINANTS

13.1 Introduction

Discharges can contaminate soil and water potentially having adverse effects on water quality and the health of plants, animals, humans, ecosystems, and aesthetic degradation, and impacts upon mahinga kai resources and the relationship of Maori to their ancestral land, water and other taonga. Contamination can arise from:

- Lack of, or inappropriately, designed, installed, or maintained on-site and reticulated domestic effluent treatment systems;
- The presence of industrial wastes in sewer systems and stormwater systems. These can contaminate the receiving environment, and may also damage biological treatment systems.

The disposal of human effluent from settlements and towns in the region is primarily by reticulated sewerage systems. In rural areas disposal is chiefly via on-site domestic effluent treatment systems, in particular septic tanks. The treatment and disposal of human effluent by on-site effluent disposal systems results in a final discharge to land, with sewage from reticulated systems being mostly discharged to water.

The Disposal to Land of Sewage from Fixed Sources

Given the rural and dispersed nature of the region's population, and the lack of reticulated systems (mainly in rural areas), on-site effluent treatment is often the only option. On-site effluent disposal systems also have problems associated with their operation, including:

- Poorly drained underlying soils, especially clays, becoming saturated (perched water tables);
- The high water table in parts of the region causing problems with soakage;
- System overload from the increased use of household appliances; and
- Lack of maintenance.

Inappropriate system design, bad installation practice, and poor or no system maintenance all contribute to increased levels of nutrients and pathogens on water quality. Elevated pathogen levels increase the chances of disease transmission, particularly skin and gut infections.

Other liquid contaminants that may be discharged to land include unprocessed milk, and discharges from mining and exploration. These contaminants can have adverse effects if they are discharged to land. They may contain hazardous substances, pathogens, or elevated organic loadings, and therefore, may require adequate treatment prior to disposal. In particular, land-based treatment and disposal systems need to be appropriate to the site and to the type of waste to be disposed of.

13.2 Objective

13.2.1 To ensure that the adverse effects from the discharge of liquid contaminants into or onto land, on water and soil quality, social, cultural, and amenity values, and human health are avoided, remedied, or mitigated.

13.3 Policy

13.3.1 To ensure that the discharge of liquid contaminants into or onto land is of a nature or at a rate that does not exceed the ability of the land to assimilate the contaminant, and does not result in soil contamination.

Explanation

The discharge of contaminants such as sewage to land relies upon the soil system to assimilate the contaminants. Where the soil cannot assimilate the contaminant, the contaminant is likely to reach water and may also have adverse effects on human health, cultural or amenity values. Effects of soil contamination include, for example, loss of capacity for pasture, crop or vegetation growth, rendering crops or pasture unsuitable for human or stock consumption, or loss of microbial activity and natural biodiversity in soil.

14. SOLID CONTAMINANTS

14.1 Introduction

In New Zealand, the use of land as a repository for solid wastes is common practice. There are positive aspects of landfills in that they concentrate waste in one area providing for more effective management. However, such use can cause the pollution of groundwater and surface water from leachate, and reduction in air quality in part due to odour. Poorly sited landfills can also have an adverse effect on social, cultural and amenity values. The management of hazardous substances at such facilities is also an issue.

14.2 Objective

14.2.1 To ensure that the adverse effects from the discharge of solid contaminants into or onto land, on water and soil quality, social, cultural and amenity values, and human health are avoided, remedied or mitigated.

14.3 Policies

14.3.1 To ensure that solid waste disposal facilities are sited, designed, constructed and managed to avoid, remedy, or mitigate any adverse effects on the environment.

Explanation

If not properly managed, solid waste disposal facilities may generate harmful environmental effects such as contamination of the site on which the activity is carried out, or contamination of groundwater and surface water. This Policy reflects the need to ensure that any adverse effects can be avoided, remedied or mitigated.

14.4 Methods

14.4.1 The Council will encourage the establishment and development of recycling facilities in the region.

15. HAZARDOUS SUBSTANCES

15.1 Introduction

Hazardous substances have the ability to impair human, plant, or animal health, or may adversely affect the environment. Examples of hazardous substances include liquid fuels, agricultural sprays, paint strippers, solvents, batteries, transformer oils, asbestos, and timber treatment chemicals.

It is important for the protection of public health and environmental quality that hazardous substances are properly managed.

The transportation, storage and use of hazardous substances

Poor storage practices and spills of hazardous substances can create contaminated sites and can also have adverse effects on freshwater quality, air quality, human health, ecosystems and the coastal environment.

The primary concern with the use of hazardous substances is the unauthorised discharge of a hazardous substance to land and/or water. Planned discharges of hazardous substances where there is potential for significant adverse effects will be controlled through the resource consent process.

15.2 Objective

15.2.1 To ensure that the adverse effects from the discharge of hazardous substances into or onto land, on water and soil quality, social, cultural, and amenity values, indigenous flora and fauna, and human health are avoided, remedied, or mitigated.

15.3 Policy

15.3.1 To avoid inappropriate disposal or discharge of hazardous substances to land.

Explanation

The disposal of hazardous substances in the region is an issue of concern. Avoiding uncontrolled or inappropriate discharges of hazardous substances to land involves the provision of alternatives for safe collection, storage, treatment, and disposal. If not properly managed the discharge of hazardous substances may result in harmful environmental effects such as the contamination of the site where the activity is carried out, or contamination of water. This Policy reflects the need to ensure that any adverse effects can be avoided, remedied, or mitigated.

15.3.2 To recognise, where appropriate, relevant industry codes of practice or guidelines relating to the management of hazardous substances and potential associated discharges.

16. SITES ASSOCIATED WITH HAZARDOUS SUBSTANCES AND CONTAMINATED LAND

16.1 Introduction

The Council maintains an inventory of sites in the region that have either been used in the past and/or are presently being used for activities and industries that are likely to have used, stored or disposed of hazardous substances, and are included within the Ministry for the Environment (MfE) 'Hazardous Activities and Industries List' (HAIL). The HAIL helps identify sites where contamination might have occurred. Listing of a site on the Council inventory, because of a HAIL activity, does not indicate that the specific activity has resulted in the contamination of that site. This inventory is known as the 'Sites Associated with Hazardous Substances' (SAHS) database. Sites are classified according to the Contaminated Land Management Guidelines No. 4: Classification and Information Management Protocols, or CLMG#4 (MfE 2006), and include three categories: Contaminated Land; Land use information; and Error. The 'land-use information' category includes both historical or current land use and information about hazardous substances, where available. The 'contaminated land' category describes sites that are contaminated according to the definition of contaminated land in the RMA. The 'error' category is for sites that were mistakenly entered on the database. Site classification information relates to identifiable parcels of land, as defined by legal descriptions or part of a legal description.

Contaminated land includes sites where there are hazardous substances present that have, or are reasonably likely to have, significant adverse effects on the environment. Determining whether a site is contaminated involves a thorough assessment of all exposure pathways in order to determine that the site has hazardous substances present and that those hazardous substances have, or are reasonably likely to have, significant adverse effects on the environment. The evidence required (such as a site investigation) and sampling and analysis should be in keeping with MfE guidelines.

16.2 Objective

16.2.1 To avoid, remedy, or mitigate risks to the environment presented by discharges from contaminated land, including risks to human health, social, cultural, and amenity values, and soil and water quality.

16.3 Policies

16.3.1 To locate and maintain information on sites fitting the HAIL criteria in the West Coast region.

Explanation

These sites pose a potential threat to human health and the environment. It is important that people are aware of the risk and can plan their activities accordingly.

16.3.2. To contain and remediate, or appropriately manage, contaminated land that is causing significant adverse effects on the environment.

Explanation

When contaminated land is identified, it will be necessary to determine the degree to which the contaminants are contained within that site, and the risks posed by the site. Part of this risk assessment includes assessing the significance of adverse effects, and the mobility and toxicity of any discharge. Work may then be required to avoid, remedy, or mitigate any adverse effects on the environment.