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Report to the Environment Committee
from John Sherriff, Manager Resource Investigations and Mary Manastyrski, Resource
Quality Officer

Heavy Metal Contamination of Surface Water

1. Purpose

To respond to the following notice of motion put to the Council meeting on 4 November 1999 by Cr Shaw.

“That the Wellington Regional Council urgently receives a report from Council’s advisors on:

- (a) The level of heavy metals, including mercury, in the region’s freshwater waterways, seawater and the marine substrate.*
- (b) The range of likely point sources of heavy metals.*
- (c) Resource consent and other regulatory mechanisms in place to eliminate heavy metal contamination of waterways and the coast.*
- (d) Practical steps, which the Regional Council could take to ensure dental practices and other point sources, are adequately monitored.”*

2. Existing Knowledge About Heavy Metal Contamination

The Council does not routinely monitor heavy metal contamination of water or sediment in either marine or freshwater environments. Our current knowledge of this issue arises from a limited number of targeted investigations by the Council and from the results of several investigations undertaken by other parties.

In 1997, the WRC investigated polycyclic aromatic hydrocarbon, organochlorine and heavy metal contamination in sediment and shellfish in Porirua Harbour. The results showed that levels in sediment near the mouth of Porirua Stream exceeded aquatic ecosystem guidelines. These contaminants were thought to have been carried into the harbour by stormwater.

In 1998, an investigation of water quality in Waiwhetu Stream confirmed that levels of heavy metals (lead and copper) exceeded aquatic ecosystem guidelines. The re-suspension of previously contaminated sediments was suspected to be the cause. These sediments were originally contaminated when the Waiwhetu Stream received trade waste from the surrounding industries.

The Council monitored water bodies downstream from several closed landfills from the mid 1980's to 1998. These investigation confirmed heavy metal contamination in many small waterbodies downstream of operational and closed landfills.

An extensive investigation of heavy metal levels in sediment in Porirua Harbour was completed by the DSIR in 1990. This identified elevated levels of lead, zinc and to a lesser extent copper, adjacent to Porirua City.

Investigations (undertaken by the Institute of Geological and Nuclear Sciences) found heavy metal contamination in sediments in Waiwhetu Stream (lead & copper) and in a tributary of the Hutt River (lead).

A PhD student is currently working on a project that is examining the effect of stormwater discharges into Wellington Harbour. This work is focussing on heavy metal contamination of sediment around stormwater discharge points. No results have been received by the WRC.

3. Sources of Heavy Metal Contaminants

Possible sources of heavy metal contaminants in the Region include:

- Sewage and stormwater discharges;
- Landfills and cemeteries;
- Incinerators and crematoria;
- Motor vehicles; and
- A range of activities including:
 - Electroplating
 - Lead smelting
 - Dentists
 - Laboratories
 - Timber preservation
 - Drum reconditioning
 - Waste storage and treatment
 - Metal treatment,
 - Sheep and cattle dips
 - Scrap metal yards
 - Tanning
 - Chemical manufacturers

4. **Regulation**

The extent to which heavy metal discharges are controlled varies according to their source and fate.

Most territorial authorities in the Region have Trade Waste By laws which control the quantities and concentrations of contaminants which can be disposed of into the sewer system.

The discharge of sewage from these systems is in turn controlled by resource consents issued by the WRC. Conditions on these resource consents limit the quantities of heavy metal contaminants allowed in the discharge.

Most other heavy metals are controlled by resource consents. The major exceptions are emissions from motor vehicles and stormwater discharges. Mobile emission sources are not subject to resource consents and stormwater discharges are permitted activities in both the Proposed Regional Freshwater Plan and the Proposed Regional Coastal Plan.

5. **Practical Steps To Ensure Adequate Monitoring**

There are a number of practical steps available to ensure that point sources of heavy metal are adequately monitored. Those that are already in place include:

- Resource consents issued for discharges of heavy metals are subject to conditions that require monitoring of the discharge to ensure that it meets the appropriate discharge standard.
- Territorial authorities monitor trade wastes being discharged into their sewer systems.

Other possible monitoring measures are:

- Activities that could potentially discharge heavy metal contaminants into the environment could be targeted in pollution prevention programmes. A regional pollution prevention programme is part of the environmental education strategy being considered in the LTFS process.
- The existing water quality baseline monitoring programmes could be augmented by including monitoring for heavy metals in both water and sediment in the receiving environments.
- Industries that could potentially discharge heavy metals could be encouraged to develop and adopt industry codes of practice. Such a code of practice could include requirements for self-monitoring.

6. Recommendation

That the information be received and noted.

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