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Committee Environment
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CCA and formaldehyde monitoring at Railway Crescent, Masterton

1. Purpose

To present to the Committee the results of a targeted air quality monitoring study undertaken in Masterton from May to September 2004.

2. Strategic context

Investigations of this nature contribute to the achievement of the Take 10 target to have clean, fresh air to breathe.

3. Background

A targeted air quality monitoring programme was undertaken at Railway Crescent, Masterton during the winter of 2004.

The monitoring programme was initiated in response to local residents' concerns regarding emissions from a neighbouring timber mill and timber treatment facility. Resource Investigations Department staff carried out the three-month screening survey to determine whether there was any potential for offsite environmental effects. This included potential effects on public health.

Air quality monitoring for copper, chromium and arsenic (CCA) in airborne particles was undertaken as these elements are the main ingredients of certain timber treatment preparations and chromium and arsenic are known to have adverse health effects. Monitoring was also carried out for formaldehyde and other aldehydes as these species can also have adverse health effects and are known to be discharged to atmosphere during the kiln drying of timber.

4. Comment

The monitoring results show that CCA concentrations at Railway Crescent were similar to those measured at Greater Wellington's ambient air quality monitoring site at Wairarapa College. Ambient concentrations of chromium at Railway Crescent were found to be below air quality guidelines for the

protection of human health. Arsenic concentrations were found to be slightly elevated compared to the relevant guidelines at both the Railway Crescent and Wairarapa College sites. Research work on fine particle samples from the Wairarapa College site suggests that the arsenic may be associated with emissions from domestic fires. The comparison of the monitoring results for chromium and arsenic with the New Zealand ambient air quality guidelines for Cr VI and As-inorganic is considered conservative as the monitoring results include all forms of the contaminants (Chromium: Cr VI, Cr III, Cr metal; Arsenic (As): arsine, inorganic) which have higher guideline values (by an order of magnitude) than Cr VI or As-inorganic.

The results from the aldehydes monitoring showed that only formaldehyde, acetaldehyde and acrolein were present in detectable concentrations at Railway Crescent. Formaldehyde and acetaldehyde levels were found to be well below New Zealand ambient air quality guidelines for the protection of human health. Acrolein concentrations at Railway Crescent were found to exceed USEPA guidelines (there is no relevant New Zealand guideline for acrolein). Analysis of the sampling results alongside meteorological data shows that peak acrolein concentrations occurred during south-westerly winds indicating that emissions from the timber mill are unlikely to be the source. Acrolein emissions (along with formaldehyde and acetaldehyde) are also known to be associated with wood combustion such as domestic fires.

A site visit to the timber mill in February 2005 showed that there is the potential for nuisance dust emissions at times from the site, mainly from the unsealed yard and poorly maintained/designed air pollution control equipment for the pneumatic conveyance and collection of sawdust generated from milling activities. One of the particle samples collected at Railway Crescent showed evidence of wood fibre-like particles that may have originated from emissions at the timber mill. The timber mill operators should ensure that their activities on site are well controlled as part of best-practice environmental management.

The airborne particulate matter CCA and aldehydes monitoring results at Railway Crescent indicate that there is no measurable effect of emissions from the kiln drying operation on concentrations of those pollutants at the Railway Crescent site. In fact, comparison of the monitoring results obtained at Railway Crescent with results obtained at the Greater Wellington ambient air quality monitoring station at Wairarapa College suggest that emissions from domestic fires are likely to be the main source of the air pollutants monitored at Railway Crescent during winter.

5. Communication

The results of the CCA and aldehydes targeted monitoring survey have been provided to the residents of Railway Crescent, operators of the timber mill and officers at the Greater Wellington Masterton Office.

6. Recommendations

That the Committee:

1. *receive the report; and*
2. *note the contents.*

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