



# ENVIRONMENT TOPICS

## AIR QUALITY MANAGEMENT

### Products of Combustion

#### **Introduction**

The Hawke's Bay region enjoys relatively clean air due to its geography, a low population density and only a few major industrial emissions. However, at certain times of the year, and as a result of certain activities, products of combustion can become a problem.

#### **What are Products of Combustion?**

Burnt material or waste can give rise to the following:

- smoke
- odour
- ash
- carbon dioxide
- carbon monoxide
- other pollutants, some of which may be toxic such as dioxins.

These are collectively referred to as the *Products of Combustion*.



*Open burning of rubbish using tyres.*

#### **Sources of Combustion**

Apart from natural forest fires and geothermal activities, combustion is the result of people's activities. Industrial sources include:

- boilers for heat generation (hot water and steam), drying, and cooking. The source of fuel is usually wood, coal, diesel or gas
- direct fired driers (usually gas)
- electricity generation
- waste incineration
- burning of road tar.

Other sources of combustion products are:

- internal combustion engines - e.g. lawnmowers, motorbikes, trucks, cars, buses, trains, aeroplanes, etc
- burning for land clearance and rubbish disposal purposes - in rural areas it is common practice to burn vegetation and other wastes, while in residential areas some 'backyard burning' occurs
- home heating, using wood, gas or coal.



*Burning on the road surface to remove excess tar.*

### ***Why are we worried?***

Depending on the material burnt and the nature of burning, the products of combustion can contain large particulate matter that will fall out of the air close to the source, and finer matter that will remain suspended in the air and can be transported for considerable distances. These particles can cause health problems, soiling of properties and reduction in visibility.

Emissions from backyard fires, open fires, and landfill fires can cause a nuisance and, in cases where material such as plastic or other hazardous waste is burnt, a potential health problem. Smoke generated from burning waste is a major source of public complaint.

Solid fuel burners are commonly used for heating homes, usually using wood. During winter, particularly in the Hastings area, there are periods of calm weather when a warm layer of air forms, called an inversion layer. At these times the smoke from fires rises until it reaches the inversion and spreads out in a layer that can be seen from kilometres away.

Open burning is often used for land clearance purposes, in association with orcharding, farming or forestry activities. These burn-offs can cause a short-term but quite marked deterioration in air quality, both in terms of visibility and aesthetic effects.

Vehicle emissions can have a detrimental effect on the environment, both locally and globally, through the production of carbon monoxide. Carbon monoxide is absorbed from the lungs into the bloodstream where it can impair physical and mental activity. Diesel engines are known to produce very small particles that can enter the lungs and therefore aggravate any existing medical problem. They are also responsible for soiling buildings.

### ***How can products of combustion be controlled?***

Burning in the open can cause adverse effects on human health and the environment. Therefore, the following wastes are prohibited from being burnt in the open in the Regional Air Plan:

- animal waste (except on production land)
- tyres
- rubber
- waste oil
- treated wood
- plastics
- asbestos
- medical waste
- chemical waste.

The Regional Air Plan is one of the key mechanisms available to the Regional Council to control the emission of products of combustion. For information on rules in the Regional Air Plan, see the Air Management Environment Topic relating to this or contact the Regional Council to obtain a copy of the plan.

Local City and District Councils also have their own regulations and by-laws relating to burning. They should be contacted if you wish to burn in a residential or rural situation. Sometimes there are fire bans when weather conditions have been hot and dry.

### ***Other Air Management titles in the Environment Topic series:***

- Agrichemical Spray Drift
- Dust
- Odour
- Regional Air Plan

#### **For further information:**

Please contact Regional Council Environmental Officers for information or advice on any air issues, or to obtain a copy of the Regional Air Plan.

Phone	06-835 9200
Fax	06-835 3601
Toll Free	0800 108 838