Air quality and health in Marlborough

Key facts

- Air pollution is a major environmental risk to health. By reducing air pollution levels, towns and cities can reduce the burden of disease from stroke, heart disease, lung cancer, and both chronic and acute respiratory diseases, including asthma.
- The lower the levels of air pollution, the better the cardiovascular and respiratory health of the population will be, both long- and short-term.
- Ambient (outdoor air pollution) in both cities and rural areas was estimated to cause 3.7 million premature deaths worldwide in 2012.
- Policies and investments supporting cleaner transport, energy-efficient housing, power generation, industry and better municipal waste management would reduce key sources of urban outdoor air pollution.
- Marlborough's air quality is poor, with emissions of Nitrogen dioxide being above the safe limit.

Background

A 2013 assessment by WHO's International Agency for Research on Cancer (IARC) concluded that outdoor air pollution is carcinogenic to humans, with the particulate matter component of air pollution most closely associated with increased cancer incidence, especially cancer of the lung. An association also has been observed between outdoor air pollution and increase in cancer of the urinary tract/bladder.

Ambient (outdoor air pollution) in both cities and rural areas was estimated to cause 3.7 million premature deaths worldwide per year in 2012; this mortality is due to exposure to small (invisible) particulate matter of 10 microns or less in diameter (PM_{10}), which cause cardiovascular and respiratory disease, and cancers.

There are many examples of successful transport policies that can improve air quality, such as prioritising public transport (buses and trains), walking and cycling networks; shifting to cleaner heavy duty diesel vehicles and low-emissions vehicles and fuels, including fuels with reduced sulphur content.

The two most harmful traffic emissions in Marlborough are:

- Particulate matter (PM)
- Nitrogen dioxide (NO_2)

Particulate matter (PM)

PM affects more people than any other pollutant. The major components of PM are sulphate, nitrates, ammonia, sodium chloride, black carbon, mineral dust and water. It consists of a complex mixture of solid and liquid particles of organic and inorganic substances suspended in the air. The most health-damaging particles are those with a diameter of 10 microns or less, (≤ PM_{10}) which can penetrate and lodge deep inside the lungs. Chronic exposure to particles contributes to the risk of developing cardiovascular and respiratory diseases, as well as of lung cancer.

Small particulate pollution have health impacts even at very low concentrations – indeed no threshold has been identified below which no damage to health is observed. Marlborough does not yet have a PM monitor.

Nitrogen dioxide (NO_2)

At short-term concentrations exceeding 200 µg/m^3, NO_2 is a toxic gas which causes significant inflammation of the airways. Epidemiological studies have shown that symptoms of bronchitis in asthmatic children increase in association with long-term exposure to NO_2 (i.e. above 40 µg/m^3 annual mean). Reduced lung function growth is also linked to NO_2 at concentrations currently measured (or observed) in towns and cities. In Marlborough NO_2 levels are continuously monitored by diffusion tubes at 7 sites.

Monitoring Nitrogen dioxide in Marlborough in 2014

(data taken from *2015 Updating and Screening Assessment for Wiltshire Council*)

http://www.wiltshireairquality.org.uk/assets/documents/council-reports/2015_USA_30-4-15.pdf

Five out of six sites that were monitored in 2014 had annual NO_2 means of more than 40 µg/m^3

Site of diffusion tubes	Data capture in 2014 (Number of Months)	2014 annual mean concentration (µg/m^3)
6 Herd Street	12	**54**
27 Herd Street	12	**47**
6 Barn street	12	**44**
13 Salisbury Road	12	**41**
War Memorial, London Road	12	33
115 London Road	12	**41**
Lloyds Bank bus stop, High Street	No results given	?

Activities that risk inhaling high levels of NO2 and particulates in Marlborough

- Spending time at bus stops where diesel engines are running.
- Spending time in out-door cafes near the High Street.
- Cycling in heavy traffic, particularly in Herd Street, Barn Street and London Road.
- Jogging alongside busy roads, particularly Herd Street, Barn Street and London Road.
- Loitering near road junctions and pedestrian crossings with stop-start traffic.

PM monitor in Calne