

Annual average concentrations of carbon monoxide

HIGHLIGHTS:

- Carbon monoxide increases the risk of heart disease.
- Road vehicles and home heating are the main sources of carbon monoxide.
- There were no breaches of carbon monoxide in 2013.
- Selected transport sites have higher carbon monoxide concentrations than urban sites.



Source: <http://ourauckland.aucklandcouncil.govt.nz/articles/news/2015/10/keeping-auckland-s-air-clean/>

Health effects from carbon monoxide

Carbon monoxide is a colorless gas formed by incomplete burning of fuels such as petrol (from motor vehicles) and wood and coal (from home heating and industry). It reduces the blood's ability to carry oxygen and this can have adverse effects on your brain, heart and general health (Bascom et al, 1996). Middle-aged and elderly people with heart disease and unborn babies are most vulnerable to carbon monoxide (Ministry for the Environment, 2016).

The national environmental standard for carbon monoxide is 10 mg/m³ as an 8-hour average (Ministry for the Environment and Statistics New Zealand, 2014).

Motor vehicles and home heating are the main sources of carbon monoxide

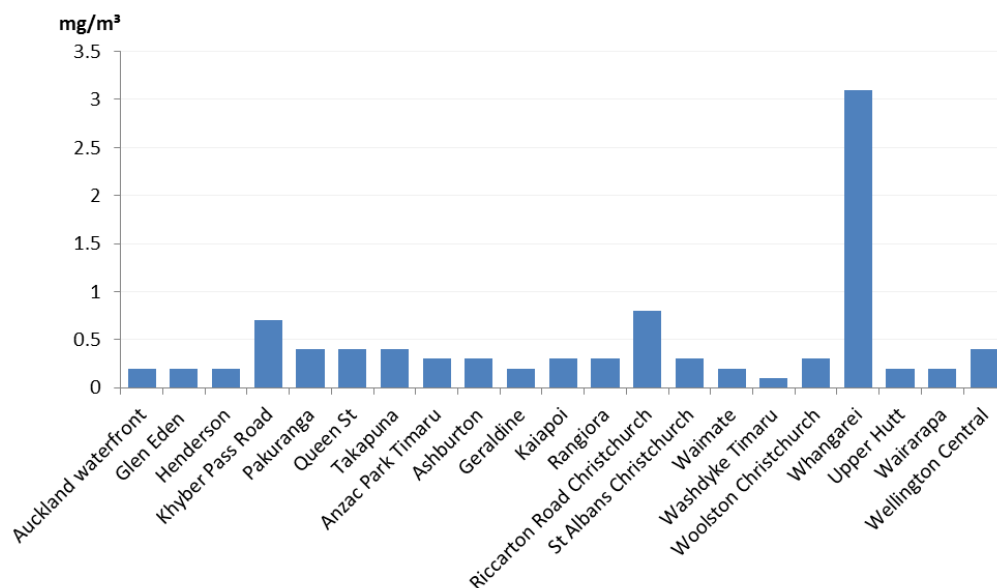
Motor vehicles and home heating (from burning wood and coal) are the predominant sources of carbon monoxide. They contribute 50 and 43 percent respectively of the total carbon monoxide emissions produced over a year (Ministry for the Environment and Statistics New Zealand, 2015).

There were no breaches of carbon monoxide in 2013

Carbon monoxide levels at all 21 monitored sites met the national short-term (8-hour) standard (of 10 mg/m³) in New Zealand in 2013 (Figure 1). Many of these sites were peak sites, suggesting that carbon monoxide levels were low elsewhere.

Of the 21 sites, Whangarei had the highest concentrations (3.1 mg/m³) of carbon monoxide in 2013.

Figure 1: Annual average carbon monoxide concentrations at 21 monitored sites, 2013

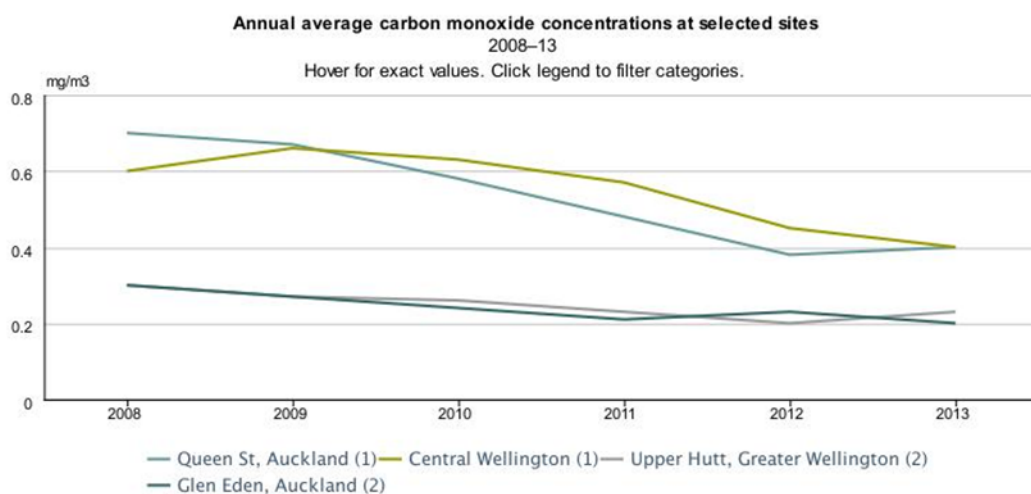


Source: Ministry for the Environment and Statistics New Zealand, 2015

Selected transport sites have higher carbon monoxide concentrations than urban sites

Since 2008, annual average carbon monoxide concentrations at selected transport sites (Queen St, Auckland and central Wellington) were higher than selected urban sites (Glen Eden, Auckland and Upper Hutt, greater Wellington) (Figure 2). However, annual average concentrations have decreased at selected transport sites while concentrations have remained stable at selected urban sites.

Figure 2: Annual average carbon monoxide concentrations at selected sites, 2008-2013



Source: Auckland Council; Greater Wellington Regional Council

Source: Ministry for the Environment and Statistics New Zealand, 2015

REFERENCES:

- Bascom, R., Bromberg, P.A., Costa, D.A., Devlin, R., Dockery, D.W., Frampton, M.W., Lambert, W., Samet, J.M., Speizer, F.E., and Utel, M. (1996). Health effects of outdoor air pollution: parts I and II, *American Journal of Respiratory Critical Care Medicine*, Vol. 153, pp 477-498.
- Ministry for the Environment. (2016). Carbon Monoxide. Retrieved from <http://www.mfe.govt.nz/air/specific-air-pollutants/carbon-monoxide-on-23/05/2016>.
- Ministry for the Environment and Statistics New Zealand (2014). *New Zealand's Environmental Reporting Series: 2014 Air domain report*. Available from www.mfe.govt.nz and www.stats.govt.nz
- Ministry for the Environment and Statistics New Zealand (2015). *New Zealand's Environmental Reporting Series: Environment Aotearoa 2015*. Available from www.mfe.govt.nz and www.stats.govt.nz

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