

“We must look after the atmosphere we share”

Dr Murray Poulter
Chief Scientist – Atmosphere

NIWA's National Centre for Atmosphere – desired outcome

New Zealand reduces emissions of greenhouse gases, ozone depleting substances, and local air pollutants to mitigate long-term climate change and human health impacts, and contributes to international understanding of these issues

Reducing commuters' exposure to traffic fumes

Many people don't think about how much harmful material they are inhaling inside their car, in buses, or on the train. But the time spent near transport emissions is a major cause of illness, with a burden on society as great as that from traffic accidents. Research into the exposure of Auckland commuters to traffic fumes may pave the way for cost-effective, sustainable measures to reduce the adverse effects of air pollution.

In 2007, NIWA tested mobile monitoring techniques to help get a realistic picture of where and how people are exposed to traffic pollution. Conventional air quality equipment is normally fixed in one place. Thanks to some clever adaptations, our team carried this equipment in cars, buses, and trains, and even in a pushchair along Queen St in Auckland's central business district.

"Essentially, we can now predict people's exposure to particulates when they drive down a road," says NIWA's Senior Urban Air Quality Scientist Dr Ian Longley. "The second major result, which we didn't expect, is that the highest particle exposures we measured anywhere in Auckland were on the diesel trains."

Further studies are now underway. An 18-month project, funded by the NZ Transport Agency, will look in greater depth at the exposure of commuters to road traffic emissions in Auckland and Christchurch. The research aims to develop analytical tools to assess exposure, case studies of best practice in integrated environmental and health impact assessment, and generic guidelines to inform the design of key transport schemes.

Research overseas shows that living near traffic increases the risks of ill health. A joint, one-year feasibility study with the Universities of Auckland and Canterbury, funded by the Health Research Council, will trial techniques to identify where and when people (especially children) are most exposed to traffic pollutants.

The researchers will measure pollutants in the homes, neighbourhoods, and workplaces of the eight participants.



Alan Blacklock, NIWA

Of course you don't stand in one place all day. NIWA is using portable monitoring equipment to get a realistic picture of people's exposure to traffic pollution. Now we can predict individual exposure for particular roads or types of transport around Auckland.

They will take blood samples and analyse them for carbon monoxide, a 'biomarker' of exposure to traffic exhaust. The study will show us how best to design the large-scale studies necessary to help policy makers and planners target effective interventions.

In addition, NIWA's Healthy Urban Atmospheres project, funded by the Foundation for Research, Science and Technology, will extend these studies and make policy recommendations.

FUNDERS:

- Foundation for Research, Science and Technology
- NZ Transport Agency
- Health Research Council

COLLABORATORS:

- University of Auckland School of Population Health
- University of Canterbury