

# National Centre for Water Resources

*making every drop count*

## Getting to the core of the matter

A bit of digging has unmasked a major source of contaminants at the bottom of some Christchurch streams.

It's been widely believed that emissions from domestic heating were responsible for high levels of 'polycyclic aromatic hydrocarbons' (PAHs) in sediment in streams around the city. We suspected, however, that past use of coal tar binders in road construction might be the chief culprit.

In December 2004, we worked with the Christchurch City Council to analyse samples from some city streets. The PAH levels in the subsurface layers of coal tar sealed roads were more than 1000 times higher than for modern roads made with bitumen-based binders. We have

since shown that coal tar is a major source of the elevated PAH levels in roadside soil, runoff, and stream sediment.

The levels of PAHs pose a potential risk to stream ecosystems. Coal tar, on the other hand, is a carcinogen and, accordingly, exposure to it should be minimised. Although the coal tar has been overlaid with more modern materials over the years, it is uncovered during road reconstruction. The city council has responded proactively, reviewing procedures for the handling and recycling of old roading material and looking at ways to reduce the ongoing release of coal tar-derived PAHs.

providing tools and information for the sustainable use of water

- water allocation
- water quality
- environmental monitoring & modelling
- pollution control & prediction
- lake & river restoration
- flow forecasting
- land-use effects
- wastewater treatment

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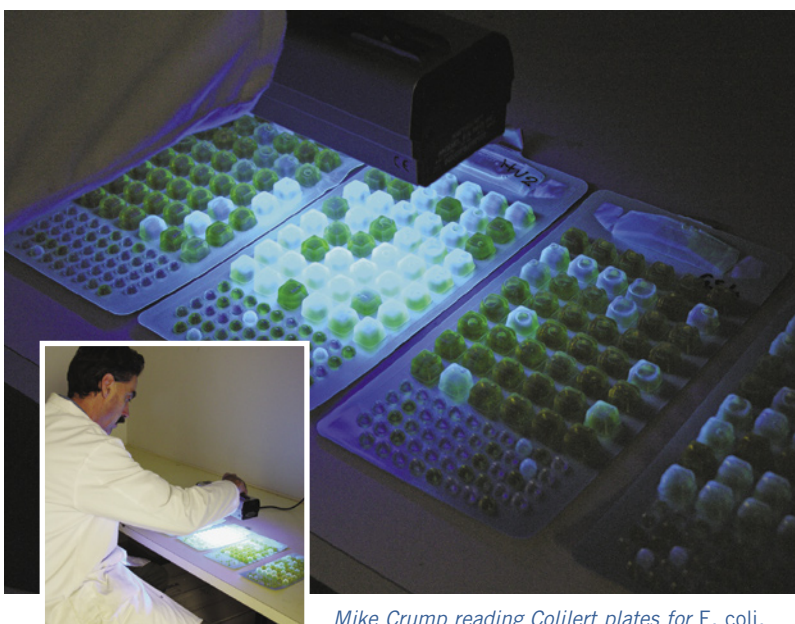


## Water quality lab a busy place

NIWA's water quality laboratory in Hamilton conducts about 60 000 analyses on about 12 000 samples a year.

A significant amount of this work is done for outside clients, notably regional councils. The results are used in a variety of projects, including improving the performance of dairy farm wastewater ponds, monitoring the effects of marine aquaculture, and measuring the effects of land-use changes on water quality.

Our laboratory has facilities for water and sediment samples from marine, freshwater, and effluent sources. We analyse the water samples for a wide range of parameters, including chlorophyll, phosphorus, nitrate, ammonia, total organic carbon, coliforms/*E. coli*, blue-green algae, and rhodamine. We also analyse total carbon and total nitrogen in sediments.



Mike Crump reading Colilert plates for *E. coli*.

great services