

Quality of Beach Water

What this is about...

Beach water quality is measured to ensure that the water is safe for human recreational use. Each city records the number of times the level of enterococci exceeds Ministry for the Environment and Ministry of Health guidelines in a summer bathing season at selected beaches and also monitors the seasonal median. Enterococci are bacteria that occur in the gut of humans and animals and indicate the presence of pathogens (illness-causing bugs). Usually, testing is done at selected sites over the summer months only.¹⁶³ If the guideline level of enterococci is exceeded two days in a row, warning signs should be posted.

The quality of beach water around the major cities is mainly affected by discharges from land, rather than discharges at sea. Probably the most important factors are the quality of a city's stormwater and sewage systems. Variables that can affect a single result include bacterial resuspension, dogs, birds, or even seaweed. Other variables that can affect test results are current flows, rainfall, tides and temperature.

The indicator highlights the frequency of serious water quality problems where remedial action is required. New Ministry for the Environment guidelines were introduced in 1999, including the requirement to erect warning signs when two consecutive samples show levels of enterococci greater than 277 per 100 ml. The sign remains until the level returns to below 277 (by comparison, raw sewage could be expected to have millions of enterococci per 100 ml).

At a level of 277 per 100 ml, the guidelines indicate that 19 people out of 1,000 may experience some illness. Pathogens in water used for recreation can cause stomach and intestinal illness (gastrointestinal illness), colds and flu (respiratory illness) and skin, eye and ear infections. The most common risks are of getting a mild diarrhoeal illness or a slight respiratory infection.

This is an important driver of local authorities' stormwater and sewage infrastructure improvement programmes, although it effectively cannot measure the success of them with such a small and occasional grab sample.

What did we find ?

- There have been a number of instances when the guideline level has been exceeded at several beaches throughout the six cities over the last two years.
- Although there are many causes of exceedance, beach water quality is largely affected by sewage overflows, infiltration of water into the sewage system and exfiltration from leaky pipes.

RATE OF EXCEEDANCE AT MONITORED SITES (NO. OF EXCEEDANCES ÷ TOTAL NO. OF SAMPLES)

	1998 / 99	1999 / 00
Auckland	n/m	2.5
Manukau	12.8	7.9
North Shore	2.7	3.2
Waitakere	n/m	4.0
Wellington	n/m	n/m
Christchurch	0.7	1.1

Data Source: Data supplied by each Council
N/m: not measured

Public health can be affected if people swim at beaches where the warning signs are posted. Affected beaches, due to poor water quality, can affect people's satisfaction with and perception of the way the city looks and feels, house prices and leisure activity options.

163 Samples of beach water were taken at those sites on a weekly basis (and if required on a daily basis). Sometimes water quality is tested year round, such as in North Shore City. Data prior to 1999 was analysed in accordance with previous guidelines. The water samples are sometimes analysed for other data besides enterococci, including salinity, turbidity (NTU), BODs, dissolved oxygen (% saturation), phosphate, inorganic nitrogen, free ammonia, and faecal coliforms. The regulatory or health section of each Council holds this information. Data prior to 1999 was analysed in accordance with previous regulations and standards. Councils often also undertake water samples at estuaries, rivers, and lakes. There are separate guidelines for fresh water.