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CONTACT:

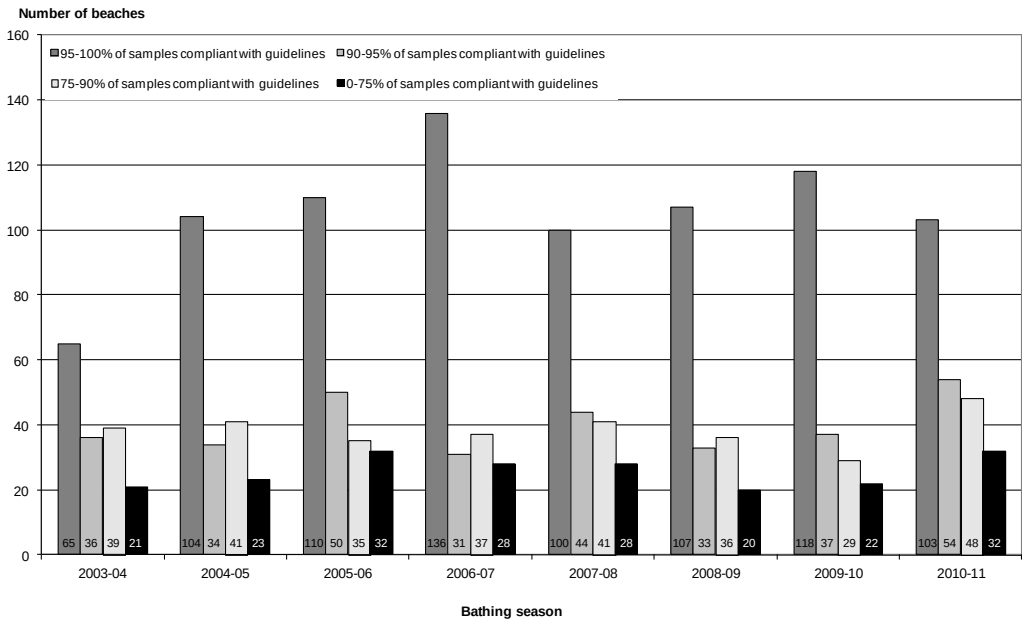
Samuel Keer
s.keer@massey.ac.nz

EXCEEDANCES OF BACTERIAL GUIDELINES AT RECREATIONAL BEACHES – FRESHWATER SITES

Recreational contact with polluted water, for example through swimming, can have health effects such as water-borne diseases. Water-borne diseases are caused by ingesting pathogens, which can originate from animal or human faeces, and can be transmitted through drinking-water or recreational water (Ball 2006). In New Zealand, guidelines have been set for water quality at recreational marine and freshwater beaches to protect human health, as part of the Microbiological Water Quality Guidelines for Marine and Freshwater Recreational Areas (Ministry for the Environment and Ministry of Health 2003). *The* bacterium *E. coli* is used to indicate the presence of faeces in recreational freshwater (including rivers and lakes) and therefore an increased risk of water-borne infection. Councils monitor coastal and freshwater beaches during the swimming season, usually from November to March (Ministry for the Environment 2007).
Contamination of recreational freshwater is mainly caused by discharged human sewage and animal and livestock effluent from agricultural and urban areas. Faecal contamination of waterways is generally correlated with rainfall events, which cause much higher levels of run-off.

Studies have shown that exposure to contaminated freshwater (indicated by high levels of *E. coli*) can have adverse health effects, including gastrointestinal and respiratory diseases (Ministry for the Environment and Ministry of Health 2003).

Figure 1 : Number of recreational freshwater sites exceeding guidelines for *E. Coli*, 2003-2004 to 2010-2011

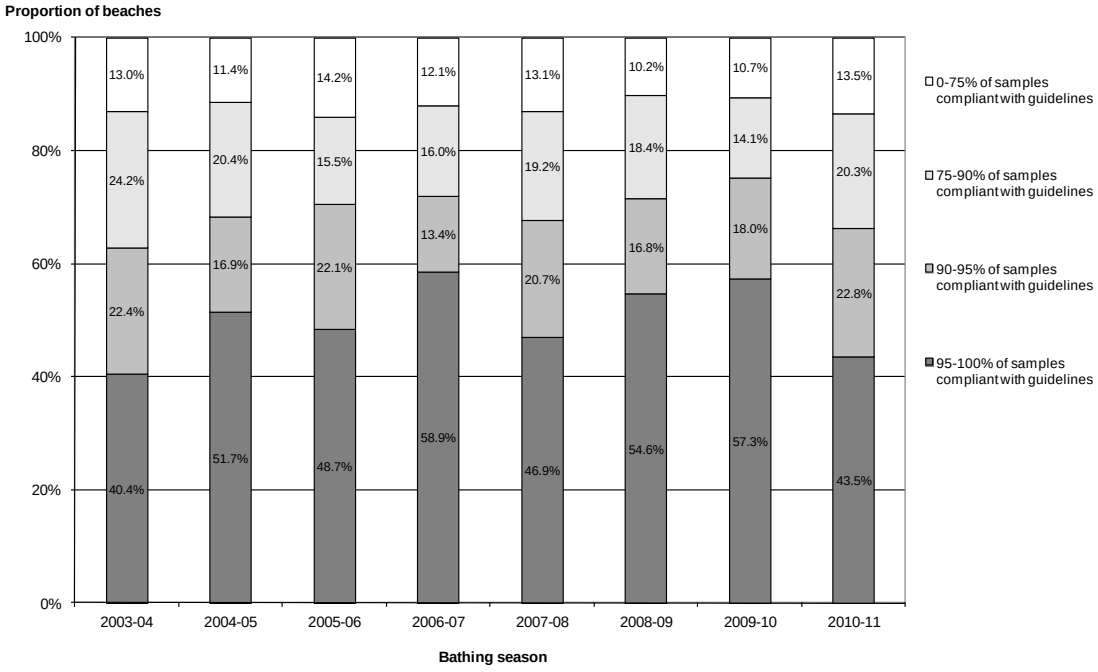


Source: Ministry for the Environment ; B King, Personal communication, 4th November 2011

RECREATIONAL WATER QUALITY – FRESHWATER SITES

Between the 2003–2004 and the 2006–2007 bathing seasons the number of monitored freshwater beaches increased from 161 to 232, and then decreased in subsequent years (Figure 1).

Figure 2 : Proportion of recreational freshwater sites exceeding guidelines for *E. Coli*, 2003-2004 to 2010-2011



Source: Ministry for the Environment ; B King, Personal communication, 4th November 2011

RECREATIONAL WATER QUALITY – FRESHWATER SITES

The proportion of freshwater beaches suitable for swimming 'almost all the time' (ie, 95% to 100% of samples complying with guidelines) remained relatively constant between the 2003–2004 and the 2009–2010 bathing seasons (Figure 2). In 2010-2011 a decrease in the number of coastal beaches suitable for swimming occurred, with only 43.5% of sites being suitable for swimming "almost all of the time", the lowest proportion since the 2003-2004 season. This is 10% lower than the average for the previous 5 years of 53% (2005-06 to 2009/10) the lowest proportion since the 2003-2004 season. This may be in part due to the nature of the monitoring activities undertaken by the individual councils, although this is unlikely to be wholly responsible for a decrease of this magnitude.

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