A comparison of the microbiological quality of drinking-water of urban and semi-urban dwellings in the Richmond district of New Zealand

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Abstract

This study aimed to determine if residents of Richmond, Nelson, with an on-demand, mains pressure, and metered drinking-water supply had the same microbiological drinking-water quality at the kitchen tap as dwellings with a restricted, low-flow supply. Both dwelling types were supplied with water from the same untreated, reticulated water supply scheme. The results from this study provide information for both consumers and the supplier regarding the microbiological quality of drinking-water supplied at the kitchen tap.

A cross-sectional, interviewer administered survey of 50 dwellings with a metered supply and 61 dwellings with a restrictor supply was conducted during May-July 2012. Microbiological water quality of each dwelling was ascertained by testing water samples from the kitchen tap for the presence of indicator organisms, using the Colilert®-18 method.

When total coliforms were used as an indicator, metered dwellings did not have the same water quality as restrictor-only dwellings ($p<0.0005$): more restrictor-only dwellings were contaminated than metered dwellings. Drinking-water at the kitchen tap for 84% of metered dwellings and 48% of restrictor-only dwellings complied with the microbiological criteria set in the DWSNZ 2005 (Revised 2008) of <1 total coliform per 100 ml. When *E.coli* was used as an indicator, metered dwellings were found to have the same water quality as restrictor-only dwellings ($p=0.242$). Drinking-water for all metered dwellings and 94% of restrictor-only dwellings complied with the microbiological criteria set in the DWSNZ 2005 (Revised 2008) of <1 *E.coli* per 100 ml. Supplementing the reticulated water supply with water from another source was undertaken by 18% of participants with a restrictor supply and it appeared to cause a reduction in the microbiological quality of drinking-water.

The results for *E.coli* have demonstrated that it is possible to provide a potable supply of drinking-water from an untreated, reticulated supply to dwellings with either a metered or a restrictor-only supply. The total coliform results indicated that there might be issues with the use of restrictor drinking-water supplies, in particular the use of private water storage systems. Owners of restrictor supplies need to be provided with more information on the set-up, design, and maintenance of these water storage systems.

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