

**BEFORE THE CANTERBURY REGIONAL COUNCIL
HEARING COMMISSIONERS**

IN THE MATTER of the Environment Canterbury (Transitional
Governance Arrangements) Act 2016

AND

IN THE MATTER of submissions on Proposed Plan Change 7
to the Land and Water Regional Plan and
Proposed Plan Change 2 to the Waimakariri
River Regional Plan

**SUMMARY OF EVIDENCE OF DR TIM CHAMBERS FOR
CHRISTCHURCH CITY COUNCIL**

6 November 2020

INTRODUCTION

1. My name is Tim Chambers. I here summarise key points of my evidence, highlighting areas of agreement and disagreement between my opinion and that expressed by or on behalf of submitters and in the officer's report.

OVERVIEW

2. My evidence focused on the growing body of epidemiology evidence demonstrating a positive association between nitrate ingestion from drinking water and colorectal cancer. The evidence provided is from high quality academic articles from large epidemiological studies. The evidence shows a singular focus on the short-term effects of nitrate contamination in the current maximum acceptable value is outdated.
3. The epidemiological evidence supports the CCC's desire to see considerably lower nitrate levels in city drinking water. Increased risk of developing colorectal cancer has been observed at exposure levels as low as 0.87 mg/L nitrate-nitrogen.
4. In rebuttal evidence by Dr John Black, there is an implicit suggestion that New Zealand should not act on setting new nitrate limits for drinking water in advance of the World Health Organization Guidelines on Drinking Water Quality, which was last updated in 2016. Firstly, while the WHO performs many vital functions for health protection across the globe, it is also historically slow and sometimes overly cautious on issues of great public health importance. For example, WHO staff have advised nations at times to avoid the use of lockdowns, closing borders and mass masking – the very measures New Zealand has adopted to lead one of the best Covid-19 responses in the world.
5. Second, the WHO Guidelines on Drinking Water Quality do not take into account the most recent (beyond 2016), methodologically robust, epidemiological studies that are the basis of my evidence (Schullehner (2018) and Espejo-Herrera (2016)) and 2019 meta-analysis summarising the epidemiological evidence.

6. Third, in these guidelines, the authors do acknowledge a mechanism for ingested nitrate to be converted to carcinogenic N-nitroso compounds, albeit cautiously. That is, they state “ingested nitrate or nitrite under conditions that result in endogenous nitrosation is probably carcinogenic to humans (Group 2A), but not nitrate alone”. This is discussed and acknowledged in my original evidence.
7. In 2020, the Ministry of Health has commissioned a report into the health effects of nitrate in drinking water. It is thought the report will help inform the drinking water standards in New Zealand.
8. In summary, epidemiological evidence estimates between 1-8% of colorectal cancers are attributable to nitrate in drinking water (Temkin, 2019). Canterbury will likely bear a disproportionate burden of the economic and health costs given its relatively high rates of colorectal cancer and high nitrate concentrations in drinking water compared with national averages.
9. I acknowledge and support the intent of ECan’s proposal to introduce nitrate limits that are below the MAV. However, I consider the proposed PC7 which expects to achieve a target of 3.8 mg/L nitrate-nitrogen for deeper aquifers in the Christchurch – West Melton groundwater system is too high to protect human health.

Dated at Wellington this 6th day of November 2020



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Dr Tim Chambers