Date: 7 Oct

Media Release

**EMBARGOED 10am Monday 7 October**

**Groundwater Pesticide Survey finds organic contaminants**

A four yearly nationwide assessment of New Zealand’s groundwater resources has found very low concentrations of organic contaminants in close to two thirds of the wells tested.

ESR has been co-ordinating the groundwater survey since 1990 on behalf of 12 regional and unitary councils. The latest survey was conducted from September to December 2018.

As well as pesticides, the survey for the first time tested for glyphosate (the active ingredient in Roundup, a popular weed killer) as well as a suite of Emerging Organic Contaminants (EOCs) for all of the councils, with the exception of Hawke’s Bay, West Coast and Waikato Regional Councils, and Nelson City Council.

ESR principal scientist Murray Close says glyphosate was found in only one well from the 135 wells tested – and the level detected was well below (over 400 times lower) WHO recommended health based value.

“The majority of the wells in the current survey showed no change in the amount of pesticides present compared to previous surveys with less than a quarter of the wells having low levels of pesticides detected.”

“None of the sampled wells exceeded safe drinking water standards, with most pesticides detected at less than 0.5% of the maximum acceptable value (MAV).”

Wells were also tested for the first time for a range of emerging organic contaminants (EOCs) using a highly sensitive analytical technique that measures EOCs at extremely low concentrations (parts per trillion).

There is growing concern about EOCs and their potential impact on human and aquatic health, including groundwater.

Mr Close says EOCs are a class of compounds used for everything from the production and preservation of food to personal care products, as well as human and animal healthcare.

The survey tested for close to 30 of these compounds including a diverse range of products such as caffeine and artificial sweeteners along with pharmaceuticals such as pain relief products, contraceptive pills and sunscreen.

“We found these compounds in 70 per cent of wells, and detected 25 of the 29 compounds we tested for.”

Overseas research links the discovery of EOCs in groundwater to wastewater sources including municipal treatment plants, septic tanks, farming activities, as well as indirectly from surface water.

Mr Close says there are no known health or environmental risks, however there are generally no health guidelines associated with EOCs. The contaminants are widely used and do make their way into the environment in low concentrations.”

The survey recommends that monitoring of groundwater resources is extended and that research is carried out to investigate the likely risks for the EOCs detected in this study including any impacts on ecological systems.

**ENDS**

0800 ESR MEDIA (0800 377 633) or [media@esr.cri.nz](mailto:media@esr.cri.nz)

*ESR is the Crown Research Institute that keeps New Zealand communities safe and healthy through intelligent science.*

**2018 Groundwater Pesticide Survey Factsheet**

**Well Selection**

Wells were selected based on the importance of an aquifer to a region, known application and storage of pesticides in the area, and the vulnerability of the aquifer to contamination.

The survey recognised that shallower, unconfined aquifers would be more at risk than deeper aquifers.

If possible, where a well had been sampled during previous surveys, it was included in the current survey to give a temporal comparison. The majority of the selected wells were from unconfined aquifers.

**Pesticides:**

There were a total of 279 wells sampled and analysed for the suite of about 90 pesticides.

There were 68 wells (24.4%) with pesticides detected, with 28 of these wells having two or more pesticides detected. The maximum number of pesticides detected in one well was six. Herbicides were the most frequently detected pesticide group with 98 detections (88%) of 17 different herbicides and their metabolites. There were three pesticide detections exceeding 1 mg m-3 with none of the sampled wells exceeding the MAV for drinking water. The highest detection as a percentage of the MAV was dieldrin which was detected at a concentration of 0.025 mg m-3 which was 62.5% of the MAV of 0.04 mg m-3 (Ministry of Health 2018). Most pesticide detections were less than 0.5% of the MAV.

**Glyphosate**

135 wells were analysed for glyphosate, glufosinate and their principal metabolites. There was only one detection of glyphosate at a concentration of 2.1 ppb.

This well showed evidence of poor well-head protection and the contamination likely came from containers that were stored near the well.

No maximum acceptable value (MAV) for glyphosate in drinking water has been set in NZ. NZ follows WHO guidelines when setting its MAVs but there is currently no WHO guideline; however, WHO does have a Health Based Value for glyphosate of 900 ppb (WHO 2017). The detected level of 2.1 ppb is far below this value (more than 400 times).

**Emerging Organic Contaminants**

121 wells were sampled and analysed for a suite of EOCs, with a total of 227 EOCs detected in the 85 wells (70%).

The most commonly detected EOC was bisphenol-A (BPA) which was detected in 40 wells, with the UV filter compounds, OMC and BP3 next most common with 33 and 24 detections, respectively. Sucralose, an artificial sweetener, was next most common with 18 detections. The highest concentration measured was 655 ng/L for sucralose.

All regions that had samples analysed for EOCs had at least three wells with EOCs present. There were 29 different EOCs in the analytical suite and 25 different EOCs were detected in at least one well. The maximum number of EOCs detected in a single well was 13.

Most EOCs are used extensively by people or are produced by people (eg estrogenic steroid hormones) and most do not have significant human toxicity when used under normal conditions.

There are no MAVs for drinking water associated with these EOCs. However, some of these compounds have shown some endocrine disrupting effects in surface waters and the main concerns with these EOCs are environmental or ecological impacts.

There are no or very few guideline values for EOCs regarding ecological impacts. Some EOCs, such as sucralose and caffeine, can act as tracers of the presence of human activities or wastewater impacts in the groundwater system.

0800 ESR MEDIA (0800 377 633) or [media@esr.cri.nz](mailto:media@esr.cri.nz)

*ESR is the Crown Research Institute that keeps New Zealand communities safe and healthy through intelligent science.*