

13 February 2024

Dear J Wilson

Official information request for information on the presence and levels of chemicals, metals, micro-plastics and nanoparticles in New Zealand soil.

I refer to your official information request to the National Institute of Water & Atmospheric Research Limited ("NIWA") dated 21 December 2023. On 12 January 2024, NIWA partially transferred your request to us under section 14 of the Official Information Act 1982 ("the Act"). Below are our responses to those questions transferred to us:

1. What chemicals and metals can be found in New Zealand soil?

Many of the metals listed in your email (namely copper, mercury, lead, cadmium, aluminium, barium, iron, and strontium) occur naturally. Therefore our scientists have advised that these metals and any others which are naturally occurring are present in New Zealand soil in some quantity depending on where the sample was taken. The types of chemicals that are not naturally occurring that may occur in soils is highly dependent on the use of the land, and to a lesser extent transport through atmospheric processes.

2. What are their levels in the past five years?

There are no monitoring programmes that have been established in New Zealand that adequately answer this question at a national scale. Manaaki Whenua does hold some information on soil concentrations of selected elements in specific locations or some regions. This information has been provided to MFE and local and regional councils, which is publicly available at the various links provided below, and includes some information on changes in levels over time (see the MFE Soil quality dataset below). Manaaki Whenua have also developed some models that predict the naturally occurring concentrations of a selected number of metals based on existing data. This is publicly available (see the link to the LRIS portal below).

For this reason, we must decline your request for information under s18(g) of the Act on the basis that this information is not held by us, and we have no grounds to believe that the information is either:

- a. Held by another agency; or
- b. Connected more closely with the functions of another agency.

Below are several publicly available reports and databases which could assist you in finding this information for yourself, which you can access using the links below:

- MFE Report: [Our Land 2021](#)
- MFE Soil Quality data: [Soil quality, state, 1996 - 2018 | MfE Data Service](#)
- LRIS Portal: [PBC - Predicted Background Soil Concentrations, New Zealand \(H3 resolution 9\) | LRIS Portal \(scinfo.org.nz\)](#)
- Forest, soil and LiDAR data: [Forest, soil and LiDAR data | Ministry for the Environment](#)

- [Auckland soil geochemical baseline - Mendeley Data](#)
 - [Minerals Exploration Data Pack - New Zealand Petroleum and Minerals \(nzpam.govt.nz\)](#)
- 3. Do different bodies of soil in New Zealand have different levels of metals and chemicals? Please can you detail regional differences.**

Yes, as mentioned in our responses to question 1 and 2 many metals and chemicals are found in New Zealand soil in varying amounts. The presence of these metals and chemicals will vary due to regional and intra-regional differences in geology, soil type and land use and may be highly variable even within the same paddock. The best information we can offer you in relation to regional differences is the publicly available information noted above.

- 4. Are there any micro-plastics or nanoparticles found in the soil? If so, what are they and what are their levels over the past five years? And if so, where do these items come from?**

Micro-plastics and nanoparticles are present in New Zealand soil, but their presence type and quantity and origin will vary depending on where the sample is taken.

Micro-plastics are extremely small pieces of plastic debris in the environment resulting from the disposal and breakdown of consumer products and industrial waste. A nanoparticle or ultrafine particle is a particle of matter 1 to 100 nanometres (nm) in diameter.

We hold no data specifically on the levels of micro-plastics or nanoparticles or on their levels over the past 5 years. We are unaware of any single agency which would hold this information at a national level, therefore we must decline your request under section 18(g) of the Act on the basis that this information is not held by us, and we have no grounds to believe that the information is either:

- a. Held by another agency; or
- b. Connected more closely with the functions of another agency.

Below are a number of publicly available resources which may be of assistance but unfortunately do not fully answer your request.

- [Microplastics in the NZ environment: Current status and future directions \(A research paper by Auckland University\)](#)
- [The Mobility of Silver Nanoparticles and Silver Ions in the Soil-Plant System \(lincoln.ac.nz\)](#)
(Current research on microplastics in soil being undertaken at the University of Canterbury. It includes sporadic research on nanoparticles but no information on changes over time).
- [A review of microplastics risk – implications for Environment Southland: \(waikatoregion.govt.nz\)](#)
- [Microplastics in the soil are penetrating the plants we eat | Stuff.](#)
- [Microplastics in wastewater in New Zealand: current data and knowledge gaps: Water New Zealand \(waternz.org.nz\)](#)

You have the right to seek an investigation and review by the Ombudsman of this decision. Information about how to make a complaint is available at www.ombudsman.parliament.nz or freephone 0800 802 602.

Yours sincerely,

Kate Dougherty (*she/her/ia*)
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Manaaki Whenua – Landcare Research