

Health Effects of PFAS

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Dr Caroline McElnay, Director of Public Health, MOH
Dr Rob Weir, Medical Officer of Health, MidCentral DHB

PFAS

Per- and poly-fluorinated alkyl substances (PFAS) are a group of man-made chemicals.

Widely used since the 1950s in household and industrial products that resist heat, oil, stains, grease and water.

Include PFOS (perfluorooctane sulfonate), PFHxS (perfluorohexane sulfonate) and PFOA (perfluorooctanoic acid).



Why the concern about PFAS?

- These substances don't break down in the environment
- They can travel long distances through soil and water and can get into groundwater.
- They can accumulate in animals, including humans.
- More recently, PFAS have been found to have contaminated sites where there has been historical use of fire-fighting foams

General Population Exposure

- Everyone everywhere
- Sources – air, water, soil, food, indoor dust, PFAS-containing consumer products
- Routes – ingestion (main), inhalation
- Long term continuous exposure is main concern

NZ Background Exposure

- Included in adult (19-64 years) population serum survey (2011-13) of persistent organic pollutants
- Pooled samples
- PFOS concentration lower than USA, Canada, Germany & Australia
- PFOA, & PFHxS generally similar to or lower than USA, Canada, Germany & Australia

NZ Interim Drinking-water Guidance Levels

- The interim guidance levels for PFOS and PFOA in drinking water were derived from effects found at certain doses in animal studies. The calculation of the guidance levels included appropriate uncertainty factors to take account of issues like differences between humans and animals. The guidance levels are based on a person weighing 70 kg drinking 2 litres of water every day over a lifetime without any significant risk to health.

PFOS +PFH_xS = 0.07 µg/L

PFOA =0.56 µg/L

PFAS Expert Health Panel (Australia)

- To advise on the potential health impacts associated with PFAS exposure
- To identify priority areas for further research

Comprehensive review of recently published studies

- 307 scientific studies 1980-2013
- 8 key international and national reports
- 12 systematic reviews

14 Health outcomes assessed

- Cancer
- Cholesterol / triglycerides
- Liver function
- Kidney function
- Thyroid effects
- Neonatal, infant and maternal outcomes
- Reproductive outcomes
- Immunological effects
- Neurodevelopmental effects
- Diabetes
- Obesity, overweight, BMI
- Cardiovascular effects
- Respiratory effects
- Skeletal effects

Findings

- There is no current evidence that supports a substantial impact on a person's health from PFAS exposure.
- There are a number of consistent reports of several biological effects associated with PFAS exposure – however these effects are generally small and are still within the normal (usual) ranges.
- PFAS have not been proven to cause any specific illnesses in humans but research continues around the world. To date there is not enough information available to definitely say what if any health effects may be caused by exposure to PFAS

Observed effects but no evidence of clinical disease / harm

- Increased level of cholesterol in the blood
- Increased level of uric acid in the blood
- Decreased kidney function
- Alterations in some indicators of immune function
- Altered levels of thyroid hormones and sex hormones
- Later age of menstruation and earlier menopause
- Lower birth weight in babies

Blood PFAS Testing

- All New Zealanders are expected to have some amount of PFAS in their blood due to the wide range of things they have been used for. A broad range of levels would be expected in all communities due to background exposure.
- There is no level of PFAS that is considered 'normal' or 'abnormal' - most people will have detectable levels in their blood
- Results cannot be used to predict whether health effects will develop or not, or to manage current health conditions

Blood PFAS testing

- Blood testing cannot be interpreted to predict or rule out any current or future health problems
- Of use in studies to compare different populations or monitor baselines over time
- Currently funded for those whose drinking water is above the Interim guideline levels and **if recommended** by GP.

Health Support

- If your drinking- water is above the interim guideline levels for PFOS and PFOA
- Meeting with local Medical Officer of Health
- Free consultation with your GP - general examination and testing as required. PFAS blood test if GP considers this would be of benefit despite the limitations of the test.