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Key messages

Overall story

- NZDF have found levels of soil and water contamination at Ohakea and Woodbourne Air Force bases from the historic use of firefighting foam.
- A range of government agencies are working together to understand if this contamination has spread beyond the base they are now testing water from neighbouring properties and provide support to the residents.
- We want to reassure local communities that the advice of health officials, based on what we know right now, is that there is no acute human health risk. But it is prudent to take a cautious approach, hence testing the water.

About PFAS

- PFAS are a large group of manufactured compounds that have industrial and consumer applications. There are more than 3,000 such substances, grouped in various subclasses. PFAS is an acronym for per- and poly-fluoroalkyl substances.
- Some of these substances – such as PFOS and PFOA - are of concern, but levels of contamination in New Zealand are expected to be low compared to other countries.

PFOS/PFOA in NZ

- Firefighting foam manufactured with PFOS and PFOA were the standard since the 1970s until the early 2000s in international aviation because these foams put out liquid fuel fires quickly, thus improving safety for passengers, air crew and fire fighters.
- No import, manufacture or use of PFOS compounds is permitted in New Zealand, other than for specified, identified uses, such as laboratory analysis.
- The NZDF has been advised by its suppliers that since 2002 they have not supplied to NZDF any foam products containing PFOS or PFOA.
- Fire and Emergency uses two types of foams to fight fires. Class A foams are used for vegetation fires and house fires and make up about 95% of all the foam used by Fire and Emergency at incidents. These foams contain wetting agents, similar to detergents, and do not contain fluorinated compounds.
- Class B foams are used for fighting fires involving flammable liquids such as petrol and crude oil. Fire and Emergency New Zealand has had the bulk of its Class B foam stocks chemically analysed, and has confirmed that none of these products contain any PFOS or PFOA.
- Fire and Emergency is taking a precautionary approach and instructing its personnel not to use the small amount of type of Class B foams that has not been tested as at this stage they can't be completely assured that they don't contain PFOS or PFOA.

Testing and investigation

- Testing at Ohakea and Woodbourne air bases has shown the presence of PFOS and PFOA compounds above interim guidelines recently adopted by the Ministry of Health. Further testing on areas outside these bases and on other bases will provide more information.
- Government agencies are working as a priority to fully understand the extent and possible impact of the problem. This will involve testing water outside defence areas.

- Affected organisations, communities and individuals are being actively kept informed of progress, especially once more information is available.
- We are not aware of testing being undertaken currently at commercial airports or other places where Class B firefighting foams are used but we will be talking with the owners over coming months.

Health

- Based on current information, the advice of health officials is that there is no acute health risk to people in the areas, but in specific instances more detailed local advice may be required.
- Currently there is no consistent evidence that environmental exposures at the low levels New Zealanders are generally exposed to will cause harmful health effects. The long-term accumulation of these chemicals in the body has prompted concerns about possible health effects.
- Long term the best way to avoid exposure to PFOS and PFOA is to limit their use in New Zealand. The Ministry supports action by MfE and EPA to achieve this.
- Ministry of Health is working closely with NZDF and the Ministry for the Environment to provide appropriate advice and support for actions planned by those agencies.
- MPI has conducted tests for PFOS and PFOA on milk produced from dairy farms neighbouring the Ohakea air base and none were detected above the laboratory's reporting limits.
- Three of the tests had PFAS detections at extremely low levels. These levels were so low that the laboratory would not in the normal course of events report them at all. These levels pose no food safety risk.
- To put it in context – an 82kg adult would have to drink, per day, every day, over their entire lifetime, more than 15 litres of milk containing PFOS or more than 100 litres of milk containing PFOA at the laboratory's reporting limits, to exceed health-based guidance values.
- Milk is a useful sign post to see if any contamination of productive land had occurred. These results mean there is highly unlikely to be a risk of PFAS transferring into wine grapes grown near Woodbourne base, or home grown fruit and vegetables in the regions around both sites.
- MPI will test other food types, as required if the results from ground water monitoring testing suggest any risk of food contamination.
- The Ministry of Health has accepted the Australian drinking-water quality values for PFOS and PFOA as interim guidance levels – as neither New Zealand, nor the World Health Organisation currently have set maximum acceptable values for these chemicals in drinking-water.
- These interim guidance levels will be reviewed as part of a wider review of Drinking-Water Standards, being undertaken as one of the actions arising from the Inquiry into the Havelock North Water Contamination Event.

Questions and answers

About PFAS

What is PFAS?

PFAS is an acronym for a group of chemical compounds known as per- and poly-fluoroalkyl substances. They are a class of man-made chemicals that have been used since the 1950s in the production of a wide range of products that resist heat, stains, grease and water, including furniture protectants, floor wax and specialised firefighting foam. PFOS (perfluorooctane sulfonate) and PFOA (perfluorooctanoic acid) are compounds in the PFAS family. One characteristic that differentiates one PFAS from those of another is the molecular chain length, or the number of carbon atoms, in the molecule. For example, both PFOS and PFOA have eight carbon atoms, which is why they are sometimes referred to as C8 PFAS.

How widely is PFAS found?

PFAS have been widely used globally, and last for a long time before breaking down. Because of this they are found in the environment world-wide, including in humans and animals. People are exposed to small amounts of some PFAS in everyday life, through food, dust, air, water and contact with consumer products that contain these compounds. Most people have small amounts of these substances in their systems and this is not known to cause a health risk.

What have PFOS and PFOA been used for?

PFOS and PFOA are two types of PFAS compounds that have been used in the production of firefighting foams for quelling flammable liquid fires. PFOS and PFOA have also been used in the production of commercial and consumer products such as oil and water resistant coatings on textiles and upholstery, carpets, leather and paints and inks, ant insecticides, aviation hydraulic fluids, some medical devices, and parts for colour copiers and printers. This does not mean that PFOS and PFOA are necessarily found **in** these products, as often they are used in the manufacturing process, rather than being a component of the finished article.

What are the environmental concerns about PFOS and PFOA?

The use of PFAS substances (including PFOS and PFOA) commenced in the 1950s, but only in the late 1990s were they identified as substances of environmental concern. Originally, all PFAS were considered relatively inert and non-hazardous substances. Most instances of contamination overseas have arisen from the normal or expected use of firefighting foams in fighting fires or firefighter training.

Both PFOS and PFOA are persistent in the environment and in the human body, and so are of concern nationally and internationally. They are resistant to environmental degradation. They also bioaccumulate in the tissues of living organisms for long periods of time.

Where can I go to for information on PFAS?

Up-to-date information will be available on this website.

Any questions that are not answered here can be directed to the following 0800 numbers.

- Specific animal health or food safety questions can be directed to 0800 00 83 33
- Specific health questions can be directed to your GP or Healthline on 0800 611 116

PFOS/PFOA in NZ

What might have caused contamination in New Zealand?

The source of the contamination is thought to be specialised firefighting foam manufactured from PFOS and PFOA, which have historically been used to fight fires involving highly volatile liquid fuels (e.g. oil or petrol). It is not used for fighting other forms of fire, e.g. buildings, forests etc.

Who uses PFOS/PFOA firefighting foams?

Until recently foams manufactured from PFOS or PFOA were widely used internationally particularly for training purposes because they were the most effective means of extinguishing highly volatile liquid fuel fires and there were no effective alternatives. These are now no longer used in training by NZDF and NZDF has been advised by its suppliers that since 2002 they have not supplied to NZDF any foam products containing PFOS or PFOA above trace levels. FENZ has been actively investigating the presence of PFOS and PFOA in the foams they would use in an emergency.

The use of these foams has been standard in international aviation. Organisations include the military, emergency services, commercial firefighters (at airports or oil refineries).

What is the NZDF doing about firefighting foams with PFOS/PFOA?

NZDF personnel no longer train with firefighting foam manufactured with PFOS and PFOA.

The NZDF has been advised by its suppliers that since 2002 they have not supplied to NZDF any foam products containing PFOS or PFOA above trace levels.

What has been done to reduce their impact?

In 2001 The Stockholm Convention on Persistent Organic Pollutants was adopted and put into effect by the United Nations Environment Programme. New Zealand is a party to the Convention. PFOS was listed as a POP under the Stockholm Convention in 2009, with effect from August 2010. Consequential amendments to the HSNO Act were made in August 2011. This means that no import, use or manufacture of PFOS compounds is permitted, other than for specific, identified uses, such as for laboratory analysis.

In New Zealand, PFOS had already been excluded from EPA's Firefighting Chemicals Group Standard in 2006, which meant there was no standing authority to use it.

PFOA was also excluded from the 2006 Firefighting Chemicals Group Standard. There are currently no other restrictions on the use of PFOA as a component of substances or articles under the HSNO Act. However, PFOA does not itself have an approval under the HSNO Act, so it cannot be imported or manufactured as a stand-alone chemical compound.

PFOA is currently being assessed by the Stockholm Convention Persistent Organic Pollutants (POP) Review Committee, on which New Zealand has a member, and is likely to be listed as a POP in 2019. This would likely lead to a prohibition in New Zealand in 2020, meaning all uses of PFOA would be restricted, as for PFOS.

Who monitors compliance with these restrictions on POPs?

The EPA became responsible for these provisions from 1 December 2017, as a result of amendments to the HSNO Act made by the HSNO Amendment Act 2015. Prior to this, WorkSafe and its predecessors were responsible for enforcement.

What type of foams does Fire and Emergency New Zealand use to fight fires?

Fire and Emergency uses two types of foams to fight fires. Class A foams are used for vegetation fires and house fires and make up about 95% of all the foam used by Fire and Emergency at incidents. These foams contain wetting agents, similar to detergents, and do not contain fluorinated compounds.

Class B foams are used for fighting fires involving flammable liquids such as petrol and crude oil. Fire and Emergency New Zealand has had the bulk of its Class B foam stocks chemically analysed, and has confirmed that none of these products contain any PFOS or PFOA

Fire and Emergency is taking a precautionary approach and instructing its personnel not to use the small amount of type of Class B foams that has not been tested as at this stage they can't be completely assured that they don't contain PFOS or PFOA.

How long have you been investigating?

Defence Forces worldwide, including Australia, have found PFOS and PFOA contamination in soils and groundwater associated with firefighting foam practice areas. This prompted NZDF to include testing for this when undertaking investigations on its bases.

PFOS and PFOA are considered emerging contaminants and the international knowledge has been evolving.

NZDF received the first results of its current, ongoing investigation about the fire training area at RNZAF Base Ohakea in April 2015.

There were no New Zealand standards at that time and NZDF sought technical expertise to develop standardised investigation and reporting specifications. In carrying out testing, priority was given to NZDF locations where there were active training facilities and where drinking water was potentially affected.

In April 2017, the Australian Department of Health issued health based drinking guidance values for use in site investigations. These guidance levels, which have now been accepted as interim guidance levels by New Zealand's Ministry of Health, was based on a report prepared by Food Standards Australia New Zealand. NZDF's tests confirmed concentrations of PFOS and PFOA compounds above these guidelines.

In September 2017 modelling of groundwater flows indicated the potential for PFOS and PFOA concentrations in groundwater in an area beyond the Ohakea base boundary, and NZDF commenced planning to consult with potentially affected landowners to test water on their properties, and included neighbouring land around Woodbourne to gain more information there.

We have been getting the technical and government help needed to provide advice and inform those potentially affected.

Is this the same as the situation in Australia?

The situation in New Zealand is on a much smaller scale both in area and concentration.

At just one Australian airforce site (RAAF Williamtown) the Australian Defence Force used on average 74,000 litres of PFOS/PFOA firefighting foam per year for almost 30 years.

For comparison, NZDF estimates that usage of PFOS/PFOA firefighting foam at each of Ohakea and Woodbourne site was on average 1,000 litres per year over a similar period.

A 2013 study found that New Zealanders generally had PFOS levels in their blood that were lower than found in the blood of people in the USA, Canada, Germany and Australia and PFOA levels were similar or lower.

Testing and investigation

Where is environmental testing being undertaken?

The New Zealand Defence Force (NZDF) is undertaking detailed testing at Ohakea and Woodbourne air bases. Preliminary testing is also underway at Whenuapai air base and Devonport Naval Base.

Testing at Ohakea and Woodbourne air bases has shown the presence of PFOS and PFOA above recently-adopted interim New Zealand guidelines. Further testing on areas outside these bases will provide more information.

What has the testing found?

NZDF's tests to date have found varying concentrations of PFOS and PFOA in water on some bases and in some areas these warrant further investigation.

What will this testing involve?

The NZDF is seeking permission from landowners and occupiers to undertake water tests at privately-owned properties neighbouring its Ohakea and Marlborough air bases to gain more information on the potential spread of the PFOS and PFOA compounds.

How long will testing take?

It is expected to take several weeks to contact property owners and conduct the testing. It is expected that results will be available around mid-January.

What if a landowner says no to testing?

Then no testing will take place.

I live in the area but haven't received a letter. Should I still be concerned?

If you haven't received a letter and you live in the Ohakea or Woodbourne areas then we expect you are outside the potentially affected area. If you want to be sure of this you can contact 0800 668 766. If you are still concerned your property may be affected you can call 0800 668 766 and they will talk to you about testing options. Note this number is only reserved for residents and landowners in the Ohakea and Woodbourne areas.

Who will be given the test results? Will they be public?

The results will be provided to affected landowners and statutory agencies who are working on the issue. The results will be treated as confidential and not disclosed unless required to by law.

What about old NZDF sites, FENZ training sites, other airports or anywhere else that may be contaminated through the use of PFOS/PFOA foam?

The focus has been on Defence land where levels of PFOS and PFOA warrant further study.

As responsible agencies we are looking into other areas where foams with PFOS and PFOA compounds may have been used in firefighting foam in the past.

NZDF is testing to investigate the presence of PFOS and PFOA compounds in the environment on NZDF bases where firefighting training has been carried out in the past. Tests on areas outside some bases will provide further information.

Fire and Emergency New Zealand is engaging consultants to provide advice on what investigations should be undertaken to determine whether there is any contamination at its training sites.

The current evidence shows that contamination is likely through repeated application. Where the foam has been used at incidents, the risk of significant contamination is low but we will be working with our partner agencies to keep updated on evidence on the potential effects of PFOS and PFOA compounds.

Health

Will an alternative water supply be provided to affected people?

Bottled water will be available to households whose drinking water source is a bore that is being tested for PFOS and PFOA concentrations until such time that the bore water is known to meet the Ministry of Health's interim drinking-water guideline values for PFOS and PFOA. This approach is a precautionary health measure and not based on a known health risk.

If PFOS and PFOA compounds are suspected in the water I am drinking what should I do?

While you are waiting for test results for drinking water sourced from bores in the area identified by NZDF as potentially affected, as a precaution use the bottled water that has been made available. This advice applies to water used for drinking, food preparation, cooking, brushing teeth or any activity that results in ingestion of water.

Is it safe to swim and shower in potentially affected water?

Yes. The risks to health come from the ingestion of PFOS and PFOA compounds. Any water ingested in any activities not listed above would be minimal.

What health support will be provided if the results show levels of PFOS and PFOA above guidelines in the water?

The form of health support will depend on what the tests results show. If residents are concerned about their health now, they should seek advice from their GP.

What is meant by “no acute health risk”?

No acute health risk means that exposure to PFOS and/or PFOA will not pose any significant health effects today. Our approach is a pre-cautionary one because we know these compounds accumulate in the body but we don't fully understand the effects this could have on human health in the long-term; therefore limiting any further exposure is the best course of action for reducing any long-term health risk.

Are there any health effects linked to PFOS and PFOA compounds in humans?

The potential effects of exposure to PFOS and PFOA to human health continue to be studied. These studies involve laboratory animal studies, as well as occupationally exposed workers, residents in communities with higher exposure and studies of the general population in the USA and other countries.

Adverse health effects have been demonstrated in animals exposed to much higher levels of PFOS and PFOA than are known to occur in people. Changes in the liver, thyroid, and pancreatic function, and some changes in hormone levels have been reported. However, the results of these animal studies and their relevance to humans are not always clear.

Potential adverse health effects in humans cannot be excluded but further research is needed to understand whether the adverse effects seen in animals have any implications for human health.

How can I be exposed to PFOS and PFOA compounds?

PFOS and PFOA are found in the blood of people and animals all over the world and are present at low levels in a variety of food products and in the environment (air, water, soil, etc.). Therefore, completely preventing exposure to PFOS and PFOA is unlikely, and no effective recommendations can be made for reducing individual exposures in the general population.

A variety of consumer products such as surface-protective coatings on clothing, carpets, and paper packaging have contained different types of PFAS in the past. Recent efforts to remove PFAS in many of these products have reduced the likelihood of PFOS and PFOA exposure. In addition, research has suggested that exposure from consumer products is usually low.

Could my existing health problems be caused by PFOS and PFOA exposure?

If you are unwell for any reason see your doctor.

Are there future health problems which may occur because of PFOS and PFOA exposure?

There is no conclusive evidence that PFOS and PFOA exposure will result in future health problems. The evidence of health effects is not clear, and some effects may not be clinically significant. Talk to Healthline on 0800 611 116 about your concerns.

Should I get my blood tested? Will affected residents be given free blood tests or other support?

Tests for measuring levels in people are not routinely available. Individual blood testing is not recommended. The results only indicate if you have been exposed to PFOS and PFOA, but everyone will have had some exposure. It cannot tell you if you will develop health effects because of the exposure.

How will exposure to PFOS and PFOA compounds affect my pregnancy?

There is no consistent evidence of effects in pregnancy. For specific advice talk to your doctor.

Should I continue to breastfeed?

Yes. While some PFOS and PFOA compounds have been detected in breast milk overseas, the proven health benefits associated with breastfeeding outweigh any potential health risk to an infant from the transfer of PFOS and PFOA compounds through breast milk. For specific advice talk to your doctor.

How long does it take for PFOS and PFOA to leave my system?

In humans, studies suggest that the half-life (the time it takes for the amount to be reduced by half) of PFOS and PFOA compounds could range from two to nine years. The time it takes for PFOS and PFOA compounds to be excreted from the body is the same for adults and children.

The advice about health risks from PFOS and PFOA exposure is very uncertain. How do I deal with this?

Keep yourself informed and use the resources offered. If you have questions contact Healthline on 0800 611 116.

What about the health of NZDF staff who have had direct contact with PFOS/PFOA foam?

Direct exposure through skin contact carries low risk to human health. Additionally, staff wear protective clothing during training exercises, further limiting their exposure to PFOS or PFOA. The greatest risk to human health from PFOS and PFOA is from ingesting contaminated food and drink. Therefore staff on the affected sites are considered to be at the same level of risk as residents.

Are there health risks to firefighters?

We believe the risk of harmful effects to firefighters is very low, as 95 percent of foam historically used by Fire and Emergency does not contain PFOS or PFOA. In terms of historic use of foam containing PFOS or PFOA, health officials advise the greatest risk they present to human health is from ingesting contaminated food and drink. Direct exposure through skin contact carries low risk to human health.

Safety of people - both the community and firefighters – is Fire and Emergency's number one priority. Fire and Emergency will be working closely with its people, stakeholders and government partners to monitor progress on investigations into the potential effects of PFOS and PFOA, and offers assistance if any of its people are concerned.

How will I know if the advice changes?

Government agencies will continue to assess the situation, undertake comprehensive health risk assessments and testing of water to update this advice.

What standards is the government applying?

In April 2017, the Australian Department of Health issued health based drinking guidance values for use in site investigations. This guideline was based on a report prepared by Food Standards Australia New Zealand, and NZDF's tests confirmed concentrations of PFOS and PFOA compounds above these guidelines. In November this year, the Ministry of Health accepted the Australian drinking water quality values for PFOS and PFOA as interim guidance levels, as neither New Zealand nor the World Health Organisation currently have set maximum acceptable values for these chemicals in drinking water.

Should I continue to use my home fire extinguisher?

Yes.