About the Investigation

In March 2017, Defence commenced a detailed environmental investigation to identify the nature and extent of per- and poly-fluoroalkyl substances (PFAS) on, and in the vicinity of, RAAF Base Amberley (the Base) as a result of the historical use of legacy firefighting foams.

The investigation will identify whether the use of these foams has resulted in exposure to people, animals and the environment, and will help develop strategies to minimise exposure, should it be required.

Human Health Risk Assessment

As part of the environmental investigation, a Human Health Assessment (HHRA) has been completed. Further sampling of soil, sediment, surface water, groundwater and biota (eggs, fish, fruit and vegetables) has also been conducted as part of the HHRA. The aim of the HHRA was to better understand the potential PFAS exposures to people within the Investigation Area.

How are PFAS exposure risks to people assessed?

Food Standards Australia and New Zealand (FSANZ) have determined how much PFAS a person can be exposed to every day of their lifetime without long-term risk to their health. This is known as the Tolerable Daily Intake (TDI).

Risks to human health are assessed by calculating how much PFAS people are exposed to each day from different scenarios, based on the concentrations of PFAS detected in soil, water, seafood or vegetables. This figure is then compared to the TDI to identify a specific risk rating.

Where exposures are lower than the TDI, the level of exposure risk is considered to be *low and acceptable*.

Where exposures are higher than the TDI, the level of exposure risk is considered to be *elevated*. This does not mean that adverse health effects will occur, but action may be required to reduce risk.
Summary of HHRA findings

Figure 1: HHRA Areas and PFAS source areas

The findings of the HHRA have been presented by Area. There are no findings to report for Area 5 (the Purga Creek). These Areas have been defined based on a number of factors including their position in relation to waterways, concentrations of PFAS measured in the environment and the number of samples analysed in each Area.

Legend:

- ✔️ Low and acceptable exposure risk
- 🚨 Potentially elevated exposure risk

Investigation Area on-base assessment

<table>
<thead>
<tr>
<th>Type of exposure</th>
<th>Exposure risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incidental contact with PFAS in soil and sediment</td>
<td>❗️ Potential to be elevated for people who undertake regular soil disturbance works in the PFAS source areas marked A and N on Figure 1</td>
</tr>
<tr>
<td>Incidental contact with water in stormwater drains and perched groundwater near PFAS source area M on Figure 1</td>
<td>✔️ Low and acceptable exposure risk</td>
</tr>
</tbody>
</table>
### Investigation Area off-base assessment

<table>
<thead>
<tr>
<th>Type of exposure</th>
<th>Exposure risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incidental contact with soil and sediment</td>
<td>![ ]</td>
</tr>
<tr>
<td>Drinking water from rainwater tanks</td>
<td>![ ] Further monitoring being conducted at one property to confirm this conclusion</td>
</tr>
<tr>
<td>Incidental contact with and recreational use of surface water (Warrill Creek in <strong>Area 1</strong> and Bremer River in <strong>Area 2</strong>)</td>
<td>![ ] Biota and soil sampling in <strong>Area 6</strong> will be conducted and potential health risks assessed as part of an addendum to the HHRA</td>
</tr>
<tr>
<td>Eating homegrown fruit and vegetables on properties where PFAS is present in soil / sediment, or where water containing PFAS is used for irrigation</td>
<td>![ ]</td>
</tr>
<tr>
<td>Eating fish caught from the Bremer River and Warrill Creek</td>
<td>![ ] Potential to be elevated in <strong>Areas 1, 2, 3 and 4</strong> ¹,²</td>
</tr>
<tr>
<td>Children eating eggs from chickens on properties where chickens have regular access to PFAS in soil or where water containing PFAS is used for irrigation</td>
<td>![ ] Potential to be elevated in <strong>Area 1</strong> for children (zero to six years, assuming a child weighs 15kg in weight or less). ¹,³</td>
</tr>
<tr>
<td>Adults eating eggs from chickens on properties where chickens have regular access to PFAS in soil or where water containing PFAS is used for irrigation</td>
<td>![ ]</td>
</tr>
<tr>
<td>Eating home-slaughtered beef meat on properties where cattle have regular access to PFAS in soil / sediment / pasture, or where water containing PFAS is used for irrigation</td>
<td>![ ] Potential to be elevated in <strong>Area 1</strong> for adults and children ¹</td>
</tr>
<tr>
<td>Eating home-slaughtered beef offal (liver and/or kidney) on properties where cattle have regular access to PFAS in soil / sediment / pasture, or where water containing PFAS is used for irrigation</td>
<td>![ ] Potential to be elevated in <strong>Area 1</strong> for adults and children ¹</td>
</tr>
<tr>
<td>Eating home-produced eggs and beef products, consumption of fish from waterways, incidental direct contact with water and swimming in waterways</td>
<td>![ ] Potential to be elevated in <strong>Areas 1 and 2</strong> where multiple exposures occur for adults and children ¹</td>
</tr>
</tbody>
</table>

**Notes:**

¹ - Other defined Areas within the Investigation Area not referenced in the table above have been assessed as low and acceptable for the exposures indicated.

² - Current Queensland Health advice was updated in March 2019 and states not to consume fish caught from the Bremer River in areas adjacent to RAAF Base Amberley and downstream to Cribb Park, Ipswich (catch and release only); and not to consume fish caught from Warrill Creek adjacent to RAAF Base Amberley (catch and release only).

³ - The potential for elevated exposure applies to a child consuming one or more large eggs every day, with 100% of those eggs being produced at the property. Risks for light and medium egg consumption for children in Area 1 have been calculated to be low and acceptable.
Sale of primary produce from areas affected by PFAS

There are currently no standards set for PFAS in agricultural products or food in Australia. FSANZ has recently completed a review of risks associated with PFAS in human diets and has not recommended any food regulatory measures at this stage.

The Queensland Department of Agriculture and Fisheries states that there is no evidence that suggests that PFAS have a detrimental effect on animal or plant health at levels likely to be found in PFAS affected areas.

There are currently no restrictions in place in Queensland on the sale or movement (nationally and internationally) of plant or animal products produced in PFAS affected areas.

Further information can be found at the following website: https://www.daf.qld.gov.au/business-priorities/agriculture/disaster-recovery/perfluorinated-chemical-site-contamination

Next Steps

An Addendum to the HHRA is being developed to incorporate the results of additional soil and biota sampling from the expanded Investigation Area which now includes part of the suburb of Leichhardt that was historically irrigated with water from the Bremer River before it was developed.

An Ecological Risk Assessment (ERA) is currently underway and is expected to be completed in the last quarter of 2019. The aim of the ERA is to better understand the potential PFAS exposure-risks for animals and the environment within the Investigation Area.

A PFAS Management Area Plan (PMAp) will also be developed based on the overall outcomes of the detailed environmental investigation. The PMAp will recommend actions to manage and reduce the risks of PFAS exposure, where required, for the Amberley community.

Developing the PMAP will involve a review of the sources of the contamination and the key ways it is migrating into the community. A comparison and evaluation of a range of available PFAS management activities will also occur to identify possible options for the site.

As part of the PMAP, an Ongoing Monitoring Plan is being prepared. This outlines the sampling program that will be undertaken by Defence to monitor and track the PFAS contamination over the coming years.

The HHRA Addendum, ERA and PMAP are expected to be finalised in the last quarter of 2019.

Keeping the community informed

Defence will continue to keep the community informed on the outcomes of the detailed environmental investigation and subsequent management plan. As well as community information sessions, updates will be provided through the project website, newsletters and factsheets as new information becomes available.

Health Advice

The Environmental Health Standing Committee (enHealth) of the Australian Health Protection Principal Committee (AHPPC) has released guidance statements to help assess public health risks when PFAS have been released into the environment. In July 2019, the statements were updated to reflect the most current evidence relating to PFAS.

The Expert Health Panel for PFAS found that although the scientific evidence in humans is limited, reviews and scientific research to date have provided fairly consistent reports of an association with several health effects.

The health effects reported in these associations are generally small and within normal ranges for the whole population. There is also limited to no evidence of human disease or other clinically significant harm resulting from PFAS exposure at this time.

As precaution, enHealth recommends exposure to PFAS be minimised wherever possible whilst further research is undertaken on the potential health effects of PFAS exposure.

If you live or work in a PFAS contaminated area, your state or territory health department can provide you with local advice on how to minimise exposure to PFAS.

For more information, contact the Commonwealth Department of Health.

Phone: 1800 941 180
Web: www.health.gov.au/pfas

Contact Information

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