

Office of the Minister for the Environment

Chair

Cabinet Business Committee

PFOS and PFOA contamination: Engagement with potentially affected neighbours

Executive Summary

1. Defence forces worldwide have reported contamination at their facilities, associated with their historical use of firefighting foams for fighting liquid fuel fires. Elevated levels have been measured in shallow aquifers on two NZ Defence sites, which may impact adjacent ground and surface waters used for drinking, stock and irrigation water. The Ministry of Health advises there are no acute health risks from these contaminants. There is currently no consistent evidence that exposure to PFOS and PFOA causes adverse human health effects but as this is an emerging contaminant, the evidence around the health risks is still unclear.
2. An immediate response is proposed to engage with neighbouring properties to Ohakea and Woodbourne to inform them of this, seek their permission and investigate the nature and extent of any water contamination beyond the two bases. This will be followed by an assessment of which other non-Defence sites may have elevated levels of the key contaminants and what risks, if any, may be posed in those locations.
3. The proposal seeks your agreement to the approach in the attached communications plan and that you note that engagement with potentially affected neighbours will start on 7 December 2017.

Context

4. Emerging organic contaminants are a class of contaminants which are becoming apparent in the environment and raising concerns about their potential effect on the environment and human health. One class of emerging contaminants is Poly- and Per-Fluoro-Alkyl Substances (PFAS). The focus of concern are two compounds in this class, PFOS and PFOA define, historically used in the manufacture of firefighting foams. These foams were used widely internationally from the 1970s as they were very effective in suppressing liquid fuel fires.
5. These compounds were also used widely in a variety of other products such as carpets and apparel. This means that these compounds are found in the environment in low concentrations. However, they pose little risk in most of these products as the compounds are only ingested into the body through food or drink.

6. A larger risk to the environment is posed through the repeated use of relatively high concentrations of these compounds such as in training in the use of historic Class B firefighting foams which contained the compounds PFOS and PFOA. This presents a specific risk of contamination through the runoff into groundwater. To our knowledge, there are only a very small number of sites across the country have had repeated training with these foams to represent such a risk.
7. Since around 2000 concerns have been raised about the environmental and health effects of PFOS and PFOA. Subsequent regulations which have been introduced to limit and restrict their use are summarised in the regulatory history below.
8. Defence Forces worldwide, including Australia, have found PFOS and PFOA contamination in soils and groundwater associated with firefighting foam practice areas. This has triggered NZ Defence Force to include PFOS and PFOA when undertaking investigations into contaminated soils on their bases. Priority has been given to Ohakea and Woodbourne due to their active training facilities and use of groundwater onsite and nearby.
9. This issue has become a matter of significant public concern at Defence sites in Australia. I understand that the historical use of these firefighting foams in New Zealand is significantly lower than that in Australia. For example, at the Australian Defence site at Williamtown in the period of 1976-2004 the Defence Force used an average of 74,107 litres of Class B foam concentrate including these compounds per year. By comparison, NZ Defence Force advise their use of this concentrate at Ohakea and Woodbourne was approximately 1,000 litres per year.
10. NZDF has been advised by its primary suppliers that, since 2002, the suppliers have not imported for NZDF firefighting foams that contain PFOS or PFOA. There is however remaining uncertainty over whether any of these foam products could contain trace levels of PFOS and PFOA as manufactured impurities, or whether the functional fluorosurfactants they contain can break down in the environment.
11. The compounds are persistent in the environment and are available to humans and animals through consumption of food or water rather than from skin or other contact. The reason for concern is the potential for long term exposure to be harmful to human health, due to the ability of these compounds to be stored in the body. There is currently no consistent evidence that exposure to PFOS and PFOA causes adverse human health effects but as this is an emerging contaminant, the evidence around the health risks is still unclear¹. The Ministry of Health advises that there are no acute human health risks.
12. A 2013 report commissioned by the Ministry of Health found that the concentrations of PFOA in adult serum in New Zealand are generally similar to, or lower than, those in the USA, Canada, Germany, and Australia, while the concentrations of PFOS are considerably lower than those in USA, Canada, Germany, and Australia.

¹ There appears to be no risk for those who have been using the compounds in fire training exercises. This is because (1) the health risks – to the extent that there are any – are associated with ingestion of PFOS and PFOA as opposed to skin contact, and (2), those engaged in fire-fighting were well suited up in fire-fighting equipment so their exposure to the compounds was minimal

13. Health has taken a precautionary approach while recognising this response should be proportionate to other potential public health issues and to the known health risks.
14. There is currently no New Zealand guideline for PFOS and PFOA in drinking water. The Ministry of Health has reviewed the guideline levels adopted overseas including in Australia and the United States, and recommends adopting interim guidance levels for use in New Zealand that are the same as the values being proposed in Australia. These levels are 0.07 µg/L for PFOS and 0.56 µg/L for PFOA.
15. Preliminary testing undertaken at NZ Defence Force bases showed some results in the groundwater below Ohakea is above the Australian guidelines. This prompted more detailed investigations as summarised in the site history below.

Regulatory History

16. In 2006, the Group Standard for Fire Fighting Chemicals (under the Hazardous Substances and New Organisms Act) specifically excluded foams containing PFOS and PFOA, making the import or manufacture of foams containing those compounds unlawful and restrictions placed on its use. EPA has advised that adequate notice was provided to users of this new status at that time.
17. A process was available for importers and manufactures to apply for an alternative approval under HSNO during this period. However, no approvals were sought.
18. In 2011, the HSNO Act which was amended adding PFOS to the list of Persistent Organic Pollutants under Schedule 2A of HSNO. This listing meant that PFOS could no longer be imported, manufactured or used in New Zealand in any form, except for research purposes.
19. It is likely that PFOA will get listed at the Stockholm Convention in 2019 as a POP. This would then lead to a prohibition in New Zealand in 2020, at which stage all uses would be restricted as for PFOS. Note that even though PFOA is not yet prohibited specifically, it is unavailable in Class B firefighting foams due to the earlier 2006 exclusion.

NZ Defence Force Response

20. In early 2015 NZ Defence Force undertook soil and water testing at Ohakea Fire Training Area. PFOS and PFOA was confirmed as present in groundwater at Ohakea Fire Training Area in April 2015.
21. A neighbouring property and Horizons Regional Council were advised in July 2015 of trace levels of PFOA and PFOS in groundwater from a stock water well. A final report and recommendations of the detailed site investigation of Ohakea Fire Training area was received in November 2015.
22. As there was very limited expertise in NZ at that time, NZDF sought technical expertise to develop a standardised approach.
23. In March 2016 NZDF received advice from technical experts confirming that some soils at Woodbourne contained low levels of PFOS and PFOA, followed by the results of detailed site investigation at Devonport confirming the presence of PFOS and PFOA in soil, groundwater and marine sediments at the Sea Safety Training facility.

24. In January 2017 after receiving expert advice NZDF commissioned a full site investigation at Ohakea. This reported in June 2017 that PFOS and PFOA in groundwater was crossing the Ohakea boundary (outbound) at levels well above the Australian Department of Health / Food Standards Australia New Zealand guidelines. In July 2017 NZDF commissioned groundwater modelling to predict off site migration of PFOS and PFOA in groundwater at Ohakea.
25. Water supply testing at Waiouru, Linton, Ohakea, Woodbourne and Burnham, confirms water supplies are safe to drink. Other defence sites are on external reticulated council supply. Technical experts tested water from Rangitikei River adjacent to Ohakea and confirmed the absence of PFOS or PFOA.
26. In August 2017 NZDF briefed Minister of Defence and advised the next step in the investigation is to sample wells on private land adjacent to Ohakea.
27. Groundwater modelling in September 2017 predicts PFOS and PFOA concentrations in a groundwater plume in an area south-west of Ohakea is likely to be above Australian Department of Health / Food Standards Australia New Zealand guidelines.
28. An All of Government working group was set up from the end of October 2017. This paper summarises the proposed All of Government response.

Fire and Emergency Response

29. 95 percent of foams used by Fire and Emergency New Zealand are Class A foams, which are used for fighting fires involving combustible solids such as wood, paper, fabric and vegetation. Class A foams have never contained any PFAS compounds, including PFOS and PFOA.
30. Class B foams are used in fighting fires involving flammable liquids, and may also be used to suppress flammable vapour to reduce the risk of ignition of a flammable liquid spill. Firefighters may attend flammable liquid fires in a wide range of situations and locations including storage sites in fixed locations, or vehicle accidents (including road tankers carrying bulk fuels) anywhere on the roading network. Some but not all Class B foams historically contained PFOS and PFOA.
31. In 2016 Fire and Emergency New Zealand commissioned a research report, giving a breakdown of Class B foam usage in incidents between 2011 and 2016. The total usage was 8,500 litres of Class B foam concentrate. For comparison, a total of 95,200 litres of Class A foam concentrate was used over the same time period.
32. 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. There is, however, remaining uncertainty over whether any of these foam products could contain trace levels of PFOS or PFOA as manufactured impurities, or whether the PFAS compounds they contain can break down in the environment to give PFOS or PFOA.
33. Fire and Emergency New Zealand does not have historic records of Class B foam used in training. The use of Class B foam in training at Fire and Emergency sites has been limited in recent years and there is currently a moratorium in place on its use for training. While the risk of contamination at training sites is low Fire and Emergency New Zealand is engaging consultants to provide advice on whether testing of sites should be undertaken.

34. Management of foam stocks has historically been at a regional level with replacement foam purchased to maintain stock levels, so there is no national recordkeeping or stock management programme. A project is currently underway to review management of foam stocks as part of a wider review of the use of Class B foams by Fire and Emergency New Zealand, taking account of the wide range of incidents attended that require the application of Class B foam.

Other Historical Users of PFOS and PFOA

35. Officials have limited information on which other training sites have historically used PFOS and PFOA. Officials will be able to develop a more comprehensive picture of where these compounds have been used repeatedly, once the issue is made public. Officials will also seek information on the importation and use of these compounds at such sites.

36. The Environmental Protection Authority has advised that imports of foam concentrate since the group standard was enacted have been compliant with HSNO regulations and did not contain PFOS or PFOA, although trace incidental impurity level of PFOA could not be excluded.

37. I understand other potential users of foams containing PFOS and PFOA include: airports, fuel storage depots and oil refineries and installation.

All of Government Response

38. An All of Government working group (working group) has been preparing a response to this issue. The most immediate focus will be on establishing the extent and nature of contamination in land adjacent to the Ohakea and Woodbourne Air Force bases. Further to this, officials will be requiring further information about other sites which may have used firefighting foams in training or testing or which may present a similar contamination risk. This will involve contacting other potential historical users of firefighting foams as soon as possible to advise them of the issue and seek information on the scale of historical use. The NZ Defence Force will continue investigations at their other locations.

39. The testing of water from properties that neighbour the defence facilities requires permission from landowners and residents. The working group has developed a programme to engage with potentially affected landowners and residents and undertake testing of water on their properties. Approval is needed on the approach to the draft communications plan for engagement as attached to this briefing.

Planned Testing Regime

40. Testing of groundwater has been undertaken within the Ohakea and Woodbourne Air Force base boundaries. At Ohakea some results exceed the interim guideline maximum level for drinking-water and groundwater modelling indicates that PFOS concentration in a groundwater plume to the southwest is likely to be above the interim guideline.

41. The interim guideline level is 0.07µg/l (or 70 parts per trillion) which is the standard applied in Australia. Other Defence facilities have also had testing undertaken and some contamination found. However at these locations groundwater is not currently used as a source of drinking-water and therefore is not part of the initial response.

42. Ministry for Primary Industries (MPI) is supporting the Ministry of Health and New Zealand Defence Force investigation to assess the nature of any potential contamination risk. Details of the operations are set out in the attached communications plan.
43. MPI and MFAT will ensure key counterparts in selected overseas markets are aware of the likely media interest in New Zealand, and that New Zealand overseas posts have access to the background information and communications prepared in association with the media release.
44. While at this stage there does not appear to be an acute risk to health, MPI has taken a precautionary approach and has conducted tests on milk produced from dairy farms neighbouring the Ohakea base. Milk is a useful sign post to see if any contamination of productive land has occurred. The testing of milk from individual properties can be done through MPI's normal processes under confidentiality agreements.
45. The laboratory responsible for testing milk for PFOS and PFOA residues has provided MPI a verbal update with preliminary results. Of the 32 test results, three have PFOS detections at extremely low levels. No PFOA was detected in any sample. The PFOS levels are so low that MPI would not in the normal course of events report them at all. These levels pose no food safety risk. MPI will await the results of water testing, and if any specific farms or premises show high results.
46. MPI will test other food types, as required if the results from ground water monitoring and/or milk testing suggest any risk of food contamination.

Wider Public Engagement

47. Other historical users of firefighting foam containing PFOS and PFOA will be expected to undertake their own investigations. They will be advised immediately prior to the media engagement to ensure they have the relevant information. MfE will, as much as sensibly can be done, develop records of where firefighting foam was likely to have been used in relevant quantities and will develop a plan to ensure appropriate testing ensues.
48. Interested organisations, iwi, communities and individuals will be kept actively informed of progress, once more information is available.
49. Consideration will need to be given to how to respond to this water quality information as it becomes available, particularly over what, if any, alternative water supplies may be required. If alternative water supplies are required there are engineering options and further investigation would be necessary to identify the preferred option.

Communications Approach

50. The focus for communication will be to engage potentially affected households first, before a sequential release to key stakeholders such as Councils, wider industry groups and local MPs prior to a public announcement.
51. Landowners and residents will receive advice through a letter drop and a follow up visit from NZ Defence Force and Ministry of Health staff. There is a risk that a stakeholder may go to the media with this information. Therefore a media release will be issued by officials several hours after the initial letter drop.

52. The key messages will be that there is contamination of groundwater at the Ohakea and Woodbourne Air Force bases and that further testing is needed to determine the extent of that contamination; and whether household water supplies are affected.
53. The emphasis for the engagement will be this is a local issue.
54. A draft communications plan has been developed between the working group agencies. This plan includes advice to interested parties both immediately prior and subsequent to the contact with landowners or residents adjacent to the air bases.
55. Sampling will be undertaken in accordance with the engagement plan and with agreement from the resident and/or landowners. Depending on laboratory resources, results of the testing are expected early January.
56. New Zealand's export markets (China, EU, USA and Australia) will be alerted informally immediately prior to the media release to ensure accurate messaging is available and avoid uninformed reactions which might have a trade impact. New Zealand's Missions in other capitals will be provided with adequate information so that they can deal with enquiries once the public announcement is made.
57. The proposed date for engagement with potentially affected landowners and residents adjacent to these Air Force bases is the 7 December 2017.

Risks

58. Preparations for engagement with potentially affected landowners and residents, and undertaking water quality sampling have largely been developed by the NZ Defence Force, and will be assisted by the two relevant DHB public health teams. Two sets of six operational teams (one set at each locality) are being trained to engage with potentially affected landowners. The working group has balanced the risks of delay in informing residents with the need to be well prepared for landowner and community concerns.
59. The release of the second report for the inquiry into Havelock North drinking-water is critical of the Ministry of Health's capabilities concerning drinking-water, and some could draw links between the Havelock issue and the water contamination discussed in this paper. I have asked the Prime Minister's Chief Science Advisor to keep a watching brief on this issue.
60. As we approach the operational phase, the contamination issue will become known to a greater circle of interested parties. This increases the risk of the information making its way into the public domain before we have spoken with affected households. This would result in a reactive rather than a proactive communications response.
61. The focus of this work is a local investigation of two NZ Defence properties. However other sites have also historically used Class B fire-fighting foams and are likely to be of interest to the public and media. This risks it becoming a media focus and creating the impression of a national public health environmental issue. This risk is being mitigated by advising the other major users of these compounds including other airports and fuel handling facilities so they can prepare their public responses.

62. Landowners and/or residents whose water is being investigated will likely seek support and an alternative drinking-water source will be available while the investigations are being undertaken. Support networks such as an 0800 number, web material and local health services will be available from the day engagement begins. Drinking-water will be available during the sampling process and until the results become known.
63. In the event that testing is positive, we will bring options back to Cabinet for decisions.
64. NZ Defence Force are involved in late-stage negotiations with the Kurahaupo iwi collective in giving effect to their Treaty Settlement in relation to Woodbourne, which involve commercial redress. NZ Defence Force is advising consultation as soon as possible to mitigate those risks. Officials need to understand the extent of any contamination before discussions can be completed. It is important to fully disclose information on the contamination issue discussed in this paper, and officials intend to do so.
65. Significant domestic media coverage is expected following the release of the media statement and this may generate queries from the regulatory authorities in New Zealand's export markets and/or by overseas media. However, use of these chemicals is not unique to New Zealand as they are used throughout the world with no particular food safety measures applied. Domestic food supplies and New Zealand food products for export are not expected to be affected. MFAT and MPI have developed a plan to inform regulatory authorities in export markets in order to manage the potential risks to market access and to New Zealand brand's reputation.

Consultation

66. This paper has been prepared in collaboration with:
- NZ Defence Force
 - Ministry of Health
 - Ministry for Primary Industries
 - Environmental Protection Authority
 - Department of Prime Minister and Cabinet
 - Ministry of Foreign Affairs and Trade
 - Fire and Emergency NZ
67. The Ministry of Business, Innovation and Employment and WorkSafe have been informed of the issue and kept updated.

Financial implications

68. The immediate response is being funded by NZ Defence Force and other agencies as relevant. The financial implications of the medium term response are currently unknown. More certainty around the financial implications will be known once the results of the water sampling and testing are available.

Recommendations

I recommend that the Committee:

1. **Note** that the Cabinet Business Committee has been granted the power to act on the proposed date for engaging with potentially affected neighbours, which is currently proposed for 7 December 2017
2. **Approve** the approach of the draft communications plan, subject to minor amendments as I see fit
3. **Note** that the Prime Minister's Chief Science Advisor is available to provide independent advice on possible effects of these compounds
4. **Note** whilst the initial response is focused on Ohakea and Woodbourne officials will be investigating other sites where these firefighting foams have been used in the past

Authorised for lodgement.

Hon David Parker
Minister for the Environment

Appendix 1: Draft Communications Plan

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