

Per- and poly-fluoroalkyl substances and blood donation Fact Sheet

October 2016

What are per- and poly-fluoroalkyl substances¹?

Per- and poly-fluoroalkyl substances, also known as “PFASs”, are a group of manufactured chemicals that have been used since the 1950s in a range of common household products and specialty applications, including in the manufacture of non-stick cookware; fabric, furniture and carpet stain protection applications; food packaging; some industrial processes; and in some types of fire-fighting foam.

There are many types of PFASs. The best known examples are:

- perfluorooctane sulfonate, also known as “PFOS”; and
- perfluorooctanoic acid, also known as “PFOA”.
- Perfluorohexane sulfonate (PFHxS) is another chemical of the PFAS group present in some fire-fighting foams.

Have people and blood donors been exposed to these chemicals?

Although not manufactured in Australia, importations containing PFASs have been used in household products and industries including PFHxS in firefighting foam. Firefighters have been exposed to PFASs through occupational exposure and in addition PFASs enter the environment when the products are disposed of by water contamination. These products do not break down in the environment and in addition take years to be excreted from the human body.

People are exposed to these chemicals through everyday life from food, water and contact with products containing PFASs, and it is expected that detection of small amounts of these chemicals is routinely present in human blood. People who work in industries that use PFOS and PFOA, or use products containing these chemicals, may be exposed to higher levels than the general public. Where larger quantities of PFOS and PFOA have been released into the environment, communities located near those sites may be exposed to higher levels than the general public.

What are the health effects of exposure to PFASs?

Whether significant health problems in humans occur because of exposure to PFASs is currently unknown, but on current evidence from studies in animals, the potential for adverse health effects cannot be excluded. Because the elimination of PFASs from the human body is slow there is a risk that continued exposure to PFOS and PFOA could cause adverse health effects.

Why have some donors had blood tests reporting PFAS levels?

Blood testing reporting PFAS levels is not clinically indicated as levels cannot inform clinical management. The levels can only determine if the level is at, above or below the background population exposure. Testing has been offered to certain population or community groups such as firefighters and residents in Oakey, Queensland where historical use of these chemicals have worked their way through the soil to contaminate surface and ground water. The utility of this testing is to monitor population level exposure over time.

¹ Per- and poly-fluoroalkyl substances (PFAS) FactSheet, Australian Health Protection Principle Committee, Updated June 2016

About the Australian Red Cross Blood Service

Australian governments fully fund Red Cross for the provision of blood products and services to the Australian community. This is possible through the support of more than half a million voluntary blood donors. For more information or to make an appointment to give blood call **13 14 95** or visit www.donateblood.com.au

Is the Blood Service deferring donors from high risk areas or occupations then?

No. A higher proportion of people from these areas may have higher than background population levels, but the risk to blood safety has not been demonstrated. International studies on blood donors and other populations have shown a wide variation in PFAS levels. The Blood Service does not recommend that donors undergo testing for the purposed of determining that they are able to donate.

Does the Blood Service have reference levels where a donor will be deferred?

Donors must feel healthy and well and meet a number of other health requirements in order to donate. Our donor questionnaire will pick up any donor that has been unwell or been to the doctor for any tests or investigations.

The Blood Service does not have a specific published cut-off for PFAS levels where a donor will be deferred from donation, as there is not a known level where there is a risk from a blood transfusion. In addition, as would be expected in a general population, studies have shown wide variations in levels in donated blood² and higher levels have not been shown to have adverse outcomes in blood recipients. Reporting of levels is based on a comparison to national averages, rather than a toxic level, and it is expected that exposed individuals that have undergone testing will generally have higher than average levels.

The Blood Service instead evaluates any donor results on a case-by-case basis. It is expected that even in higher risk populations in Australia the levels of PFASs in the vast majority will be acceptable for blood donation. A recipient will only receive one transfusion from a donor, which is only a small proportion of a patient's total blood volume. Patients receiving large volumes of donated blood transfusions will receive a mix from donors from different areas.

The Blood Service continues to monitor scientific evidence and developments to ensure our policy remains in line with current evidence and international practice. If required, we will adjust our policy accordingly.

² Olsen,GE, Lange CC, Ellefson ME et al. Temporal Trends of Perfluoroalkyl Concentrations in American Red Cross Adult Blood Donors, 2000–2010. Environ. Sci. Technol. 2012, 46, 6330–6338