



## **Perfluorochemicals (PFCs)**

Perfluorochemicals (PFCs) are a group of chemicals used to make fluoropolymer coatings and products that resist heat, oil, stains, grease, and water. Fluoropolymer coatings can be used in such varied products as clothing, furniture, adhesives, food packaging, heat-resistant non-stick cooking surfaces, and the insulation of electrical wire. Many chemicals in this group, including perfluorooctane sulfonic acid (PFOS) and perfluorooctanoic acid (PFOA), have been a concern because they do not break down in the environment, and they build up in wildlife. PFCs have been found in rivers and lakes and in many types of animals on land and in the water.

### **How People Are Exposed to PFCs**

How people can be exposed to PFCs is as yet unclear. Some PFCs persist in the environment, and people are mostly likely exposed by consuming PFC-contaminated water or food. Exposure may also occur by using products that contain PFCs.

### **How PFCs Affect People's Health**

Human health effects from exposure to low environmental levels of PFCs are unknown. Studies of laboratory animals given large amounts of PFCs have found that some PFCs may affect growth and development, reproduction, and injure the liver. More research is needed to assess the human health effects of exposure to PFCs.

### **Levels of PFCs in the U.S. Population**

In the *Fourth National Report on Human Exposure to Environmental Chemicals (Fourth Report)*, CDC scientists measured 12 PFCs in the blood serum (the clear portion of blood) of 2,094 participants aged 12 years and older who took part in the National Health and Nutrition Examination Survey (NHANES) during 2003–2004. By measuring PFCs in serum, scientists can estimate the amount of PFCs that have entered people's bodies.

CDC scientists found four PFCs (PFOS, PFOA, PFHxS or perfluorohexane sulfonic acid, and PFNA or perfluorononanoic acid) in the serum of nearly all of the people tested, indicating widespread exposure to these PFCs in the U.S. population.

Finding a measurable amount of PFCs in serum does not mean that the levels of PFCs cause an adverse health effect. Biomonitoring studies on levels of PFCs provide physicians and public health officials with reference values so that they can determine whether people have been exposed to higher levels of PFCs than are found in the general population. Biomonitoring data can also help scientists plan and conduct research on exposure and health effects.

## For More Information

- Agency for Toxic Substances and Disease Registry  
**Toxicological Profile for Perfluoroalkyls**  
<http://www.atsdr.cdc.gov/toxprofiles/tp200.html>
- Environmental Protection Agency  
**Perfluorooctanoic Acid (PFOA) and Fluorinated Telomers**  
<http://epa.gov/opptintr/pfoa/>

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