

PFOS and PFOA in Drinking Water

This fact sheet answers frequently asked questions about the detection of Perfluorooctanoic acid (PFOA) and Perfluorooctane sulfonate (PFOS) in drinking water. The US Environmental Protection Agency (US EPA) updated the lifetime health advisory (HA) level, and we would like to inform and update you on what it means.

WHAT ARE PFOA AND PFOS?

PFOA and PFOS are fluorinated organic chemicals that are part of a larger group of chemicals referred to as perfluoroalkyl substances (PFAs). PFOA and PFOS have been the most extensively produced and studied of these chemicals. They have been used to make carpets, clothing, fabrics for furniture, paper packaging for food, and other materials (e.g., cookware) that are resistant to water, grease or stains. They are also used in aqueous firefighting foam and in a number of industrial processes. Because these chemicals have been used in an array of consumer products, most people have been exposed to them.

Many PFAs are no longer being produced in this country; the largest manufacturer completely stopped PFOA/PFOS production in 2002. PFAs are still being produced in other countries and may be imported into the US in limited quantities. The EPA and the PFA industry launched the PFOA Stewardship Program in 2006 to work toward ending the production of PFOA and other PFAs.

While consumer products and food are a large source of exposure for most people, drinking water can be an additional source in the small percentage of communities where these chemicals have contaminated water supplies. Such contamination is typically localized and

associated with a specific facility (e.g. an industrial facility where these chemicals were produced or used to manufacture other products or where firefighting foam was used).



HOW ARE PFOS/PFOA REGULATED?

Because they are emerging contaminants, there are currently no established regulatory limits for levels in drinking water. The US EPA has recently set a health advisory level (HA) of 0.07 micrograms per liter ($\mu\text{g/L}$) for both PFOS and PFOA in May 2016.

HOW CAN PFOS/PFOA AFFECT MY HEALTH?

There are many gaps in the current scientific literature, but it is believed that PFAs may affect human health. Most research is based on animal studies and scientists are still unsure of the difference between how animals and humans respond to PFAs. They are associated with changes in thyroid, liver, and kidney function, as well changes in hormone levels. These two chemicals have also been shown to cause developmental effects to fetuses during pregnancy and in breastfed infants.

CAN PFAs CAUSE CANCER?

There is no conclusive evidence that PFAs cause cancer, though several animal studies and legal cases have identified a possible link between them. The EPA reports there is suggestive evidence that these chemicals can increase the risk of cancer. Both the EPA and the National Toxicology Program are continuing research on the cancer potential of PFAs.

WHAT IS MY RISK IF I DRANK WATER ABOVE THE HEALTH ADVISORY LEVEL?

Drinking water at a level above EPA's HA does not necessarily mean that health risks are expected. This is because the HA is based on a level that is safe to drink for an entire lifetime. By convention, a value such as the HA is used as a "screening" value that is designed to overestimate exposure and ensure that sensitive individuals are protected. For example, the HA assumes that individuals drink only contaminated water and are also exposed to PFAs from sources beyond drinking water, such as food. Several safety factors are additionally applied to account for the differences between animals and humans and the differences from one human to another human. Under this scenario, a risk would be expected only if an individual continuously drinks only contaminated water at a level higher than the HA.

WHAT SHOULD I DO TO LIMIT EXPOSURE?

PFAs are found at low levels in the environment, in consumer products, and food, so it is nearly impossible to eliminate all exposure. If you live near a site where PFA contamination has been identified, there are several ways to limit your exposure such as drinking and cooking with bottled water, and using pre-mixed baby formula, or bottled water for reconstituting powdered formula. Using contaminated water for routine showering and bathing are not significant sources of exposure.



WHERE CAN I GET MORE INFORMATION?

For questions about drinking water quality contact the:

MassDEP Drinking Water Program

617-292-5770

Program.Director-DWP@state.ma.us

<http://www.mass.gov/eea/agencies/massdep/water/drinking/is-there-copper-in-my-tap-water.html>

For health-related questions contact the:

Environmental Toxicology Program

Bureau of Environmental Health, MDPH

250 Washington Street, 7th Floor, Boston, MA 02108

Phone: 617-624-5757 | Fax: 617-624-5777 | TTY: 617-624-5286

US EPA's Drinking Water Health Advisories

<https://www.epa.gov/ground-water-and-drinking-water/drinking-water-health-advisories-pfoa-and-pfos>

Images courtesy of Richard Duncan and Debora Cartagena at the Centers for Disease Control and Prevention.

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