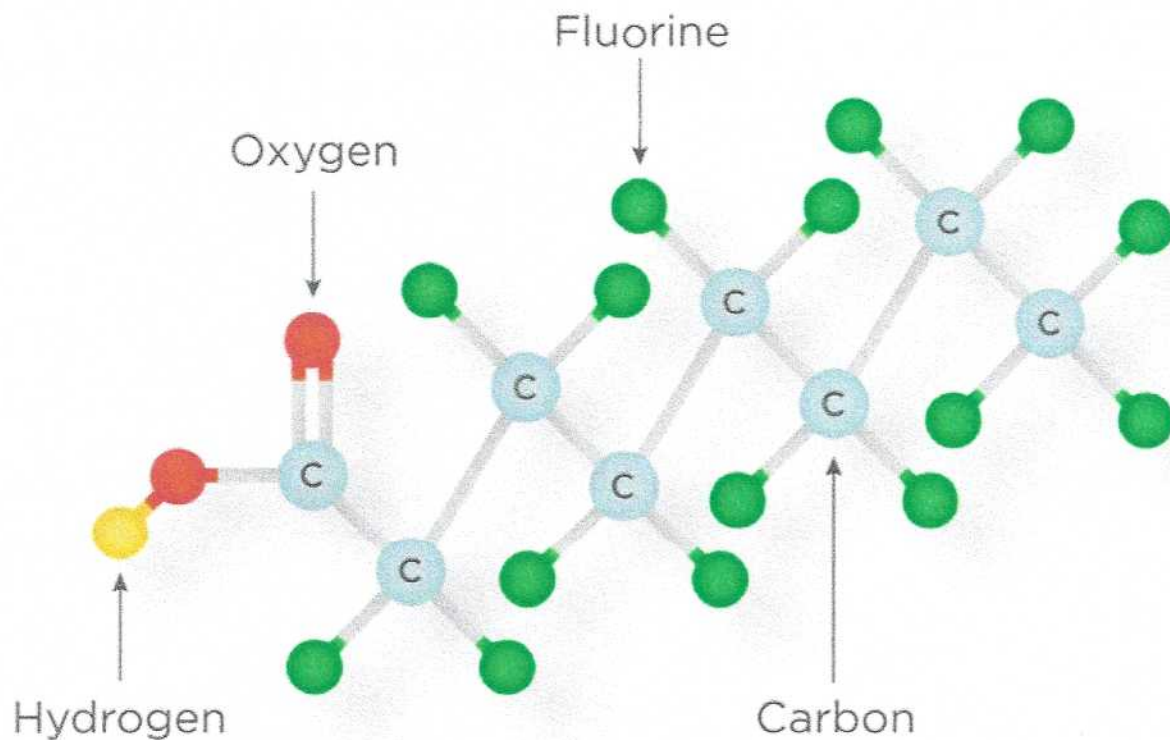


HOME | SAFETY & HEALTH

Foam Exposure Committee Leading PFAS Research

The Foam Exposure Committee (FEC) is leading research into PFAS chemicals found in firefighting foam and how to best protect firefighters and the environment from these harmful substances.

Mar 18th, 2020



Everyone is beginning to learn about an entire group of chemicals called PFAS: Per- and Polyfluorinated Alkyl Substances which are actually 4700 plus PFAS chemical

Professor of Physics at the University of Notre Dame, was scheduled to speak about how PFAS chemicals affect first responders at FDIC International 2020 (Fire Department Instructors' Conference).

Professor Peaslee has been explaining the basics of what these PFAS chemicals are, how they work, where they are used, and why there are so many concerns about them and human health. PFAS in Class B Foam (AFFF), Class A Foams and Wetting Agents are toxic exposure concerns to firefighters as well as the fate of PFAS in the environment. Research and testing are being completed, together with an assessment of what can be done to minimize firefighter exposures and the cleaning of PFAS contaminated apparatus.

The Foam Exposure Committee (FEC) has been involved in obtaining nearly 200 firefighting foam samples for testing from around the United States and Canada. The FEC Committee is still actively seeking firefighting foam samples to test for total fluorinated (PFAS) content. Fluorinated (PFAS) firefighting foams have proven to be a toxic issue to human health, the environment and especially water supplies yet they continue to be manufactured, distributed and used.

The mission of the committee is: to reduce firefighter/first responder exposures to PFAS chemicals used in firefighting foams in order to protect their health and lives. We will determine which firefighting products contain PFAS and those that are fluorine-free.

Our first responders should have immediate access to safer fluorine-free firefighting foams.

Learn more about PFAS [here](#).

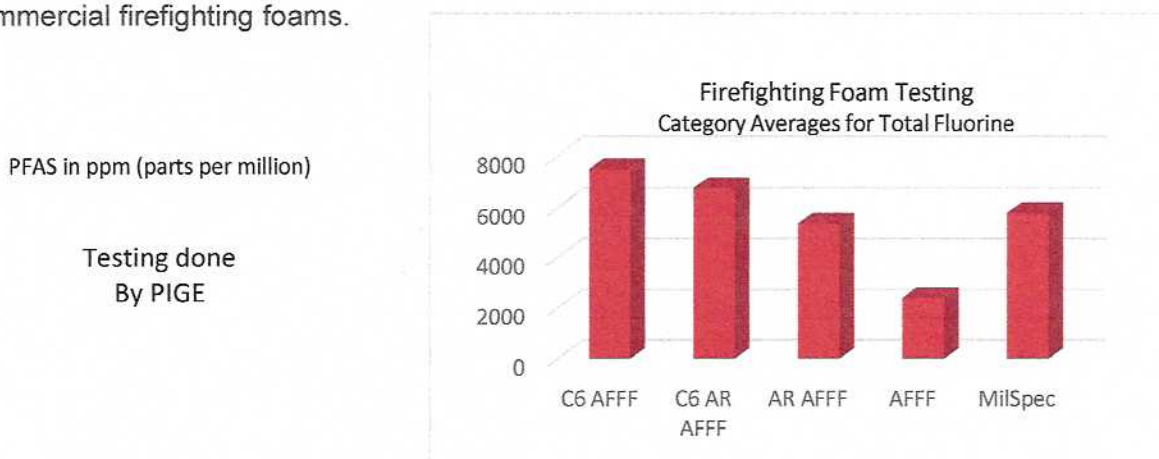
VOICE YOUR OPINION!

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FIRE DEPARTMENT SERVICE ANNOUNCEMENT

*Release of Fluorine Testing Data on Firefighting Foams by the Foam Exposure Committee
FEMA advises to replace older stocks of AFFF with fluorine-free foam solutions¹
#2 May 22, 2020*

Aqueous Film-Forming Foam (AFFF) continues to be used by fire departments throughout the United States. The Foam Exposure Committee is releasing the following testing results which reports the total averaged level of fluorinated chemicals by category found in current commercial firefighting foams.



Research continues to assess reduction of fluorinated chemicals in AFFF to minimize risk to firefighters. Certain PFAS can accumulate and stay in the human body for long periods of time. Long-term exposure in high concentrations results in a buildup of PFAS within the body. This buildup may have negative health effects like an increased risk for thyroid disease and testicular, kidney and bladder cancers.

The US Fire Administration recommends replacing older AFFF stocks with fluorine-free foam solutions. C6 products tested higher in total fluorine content than AFFF and MilSpec. According to the Department of Defense, the MilSpec no longer requires fluorine.² There are no regulations that require the use of fluorinated firefighting foams in public fire departments. For further information, check out the ATSDR website at: <https://www.atsdr.cdc.gov/pfas/index.html>

¹ https://www.usfa.fema.gov/training/coffee_break/021120.html

² <https://tinyurl.com/vaqzbyff>

FIRE DEPARTMENT SERVICE ANNOUNCEMENT

Firefighting Foam Regulations
Bulletin #3, July 4, 2020

“There is no regulation preventing the use of fluorine-free foams by non-military users, including firefighting training centers, chemical manufacturers, oil refineries, and others.”¹ Fluorine-free foams have been used successfully throughout the fire service for twenty years.

The Foam Exposure Committee is continuing to work on potential firefighting foam exposures to firefighters. In April 2019, the New York Rochester Institute of Technology published a paper on fluorine-free firefighting foams where they identified over 90 products from 22 manufacturers. The main source of information was obtained from manufacturers’ websites. The ingredient information was obtained from safety data sheets (SDS).²

The New York Rochester Institute of Technology noted that: “There is some doubt within the firefighting foam industry that fluorine-free foams are truly free of fluorine.”³ Listing proprietary ingredients makes it impossible to determine truly fluorine-free alternatives. Promoted alternatives can produce regrettable substitutions. Testing will clearly confirm the fluorine-free component.

The Foam Exposure Committee Mission / Goal Statement

To reduce firefighter / first responder exposures to perfluorinated chemicals used in firefighting foams in order to protect their health and lives. We will determine which firefighting products contain PFAS and those that are fluorine-free. Our first responders should have immediate access to safer fluorine-free firefighting foams.

- 1 Per- and Polyfluorinated Substances in Firefighting Foam, New York Rochester Institute of Technology, p. 12 & 45, http://theic2.org/article/download-pdf/file_name/Per_and_Polyfluorinated_Substances_in_Firefighting_Foam_040919.pdf
- 2 Ibid., p. 11
- 3 Ibid., p. 22

FIRE DEPARTMENT SERVICE ANNOUNCEMENT

Bulletin #4

SAFETY BULLETIN

PLEASE CHECK THE LABELS ON YOUR

5 GALLON BUCKETS,

55 GALLON DRUMS OR YOUR TOTES.

IF THE FOLLOWING ARE PRINTED ON THE CONTAINERS

PLEASE STOP USING THE FOAM AS IT CONTAINS

PFAS

AFFF, AR-AFFF OR

C-6 AFFF FOAMS

THESE FOAMS HAVE BEEN INDEPENDENTLY TESTED AND

CONTAIN **INTENTIONALLY ADDED PFAS. AS SUCH,**

THESE FOAM CONCENTRATES REPRESENT A HEALTH RISK

FOR FIREFIGHTERS AND THE PUBLIC.

Please contact your State Authorities for proper PFAS disposal action.



FIRE DEPARTMENT SERVICE ANNOUNCEMENT

Bulletin #5, Foam Exposure Committee, January 8, 2021

Firefighters have become much more aware of the perfluorinated chemical compounds used in firefighting foams. PFAS are used in all Aqueous Film-Forming Foam (AFFF) and pose a threat to firefighter health, safety and life. In addition to exposure at incidents, "Firefighters may also handle open containers of concentrated foams at the firehouse when topping off the apparatus tank during scheduled maintenance."¹ As such, the potential for incidental ingestion or absorption through dermal (physical) contact should not be ignored.

Several attendees to the Fire Department Instructor Conference (FDIC) 2019 held in Indianapolis, Indiana heard Dr. Graham Peaslee speak about his independent scientific study of PFAS found in firefighter gear (PPE). These attendees were interested in testing firefighting foam samples for the fire service. The Foam Exposure Committee (FEC) was formed shortly thereafter. This committee includes two retired fire chiefs, an apparatus manufacturer, a foam representative, a retired military firefighter and a widow of a fire chief.

FEC set up standardized test sample kits. Procedures were established with independent testing conducted by mass spectrometry (PIGE) for total fluorine (TF). Samples were taken from firefighting foams in active use by US fire departments. The oldest firefighting foam sample obtained was from 1978.

There are critical issues involved with using older firefighting foams. "There are two key areas of concern with these AFFFs containing these compounds: environmental impacts and health impacts. Concerning the health impact, it is important to recognize that the body cannot metabolize these chemicals."²

¹ Fire Apparatus Magazine, Issue 7 and Volume 22, The Legacy of Firefighting Foam, Phillip Paff, July 10, 2017, <https://www.fireapparatusmagazine.com/2017/07/10/the-legacy-of-firefighting-foam/>

² *ibid.*

The Foam Exposure Committee Mission / Goal Statement

To reduce firefighter / first responder exposures to perfluorinated chemicals used in firefighting foams in order to protect their health and lives. We will determine which firefighting products contain PFAS and those that are fluorine-free. Our first responders should have immediate access to safer fluorine-free firefighting foams.

FIRE DEPARTMENT SERVICE ANNOUNCEMENT

Bulletin #6, C6 Firefighting Foams, January 15, 2021

There are vast differences in firefighting foams and unfortunately, the Safety Data Sheets (SDS) are relatively generic. Military Specification (MilSpec), AFFF, AR-AFFF and C6 products are of the most concern because of their known high toxicity. One Foam Exposure Committee (FEC) tester had stopped by a Midwestern fire department to collect an active C6 product only to find out that it had been tossed into a dumpster on the fire chief's order to clean out the fire department. This raised concern because proper disposal methods are critical for these products. One five gallon pail of a C6 product would be enough to contaminate a large lake. Short chain polymers are much more difficult to remediate than long chain polymers.

Since there is no 'cradle to grave' protocol for PFAS firefighting foam at present, these products can leach out 'forever chemicals' which can then contaminate community water supplies. Fire chiefs have been put in the untenable position of contaminating their own communities. PFAS have long been considered bio persistent as well as toxic.

Continuing research will provide the necessary information in order to make changes to protect firefighters. But, in the meantime, fire departments are encouraged to stop using all AFFF, AR-AFFF and C6 products now. A fire department can contact their local or state department of natural resources or pollution agency for directions on disposal. There is no regulatory requirement for US fire departments to use fluorinated firefighting foams.

The Foam Exposure Committee Mission / Goal Statement

To reduce firefighter / first responder exposures to perfluorinated chemicals used in firefighting foams in order to protect their health and lives. We will determine which firefighting products contain PFAS and those that are fluorine-free. Our first responders should have immediate access to safer fluorine-free firefighting foams.

FIRE DEPARTMENT SERVICE ANNOUNCEMENT

Bulletin #7, PFAS at Additional Sites, January 22, 2021

Fluorinated firefighting foams known as Aqueous Film-Forming Foams (AFFF) are being identified nationwide as a water contamination source issue. The Foam Exposure Committee (FEC) lists possible contaminated areas that have yet to be addressed on a national level.

#	Facility
27,184	US Fire Departments ¹
51,697	US fire stations ²
524	Airports required by the FAA to use AFFF ³
	5,080 public airports ⁴
	14,556 private airports ⁵ *
678	Military bases ⁶

* Private airports: "Includes civil and joint-use civil-military airports, heliports, STOL (short takeoff and landing) ports, and seaplane bases in the United States and its territories. Sole-use military airports are not included."⁸

There are 1,216,600 fire personnel in the United States per the Federal Emergency Management Agency (FEMA). Firefighters have been identified as having higher PFAS levels in their blood than the general population. Firefighting academies who may have used fluorinated firefighting foams in the past should be tested for PFAS.⁹

- 1 National Fire Department Registry, FEMA, Last updated Dec. 10, 2020, <https://apps.usfa.fema.gov/registry/summary>
- 2 *ibid.*
- 3 *Aviation Pros*, The Evolving Concern of PFAS at Airports, Lynleigh Love, Chris Crosley Dec 26, 2019, <https://www.aviationpros.com/aoa/aircraft-rescue-firefighting-arff/article/21092898/the-evolving-concern-of-pfas-at-airports>
- 4 Number of public and private airports from 1990 to 2019 (2015 data unavailable), published by E. Mazareanu, June 26, 2020, <https://www.statista.com/topics/3324/airports-in-the-united-states/>
- 5 *ibid.*
- 6 Military Bases are Full of Cancer-Causing PFAS Chemicals, June 2, 2020, SOFREP, <https://pfasproject.com/2020/06/01/military-bases-are-full-of-cancer-causing-pfas-chemicals/>
- 7 National Fire Department Registry, FEMA, Last updated Dec. 10, 2020, <https://apps.usfa.fema.gov/registry/summary>
- 8 Number of public and private airports from 1990 to 2019 (2015 data unavailable), published by E. Mazareanu, June 26, 2020, <https://www.statista.com/topics/3324/airports-in-the-united-states/>
- 9 Firefighter Academies in The United States, accessed Dec 12, 2020, <https://firefighternow.com/find-fire-academy/>



States within the US depend upon regional fire training centers usually located in larger metropolitan areas to staff regional municipal fire departments.

FIRE DEPARTMENT SERVICE ANNOUNCEMENT

Bulletin #8, PFAS Contamination at Fire Training Sites, January 29, 2021

States are taking action to determine PFAS contamination of fire training sites. Florida completed their firefighting foam survey in February 2020:

“In 2018, DEP conducted a statewide survey of 45 certified fire training facilities. This survey gathered information regarding each facility’s historic use of AFFF and the source of each facility’s drinking water. In addition, the survey identified the likely locations of nearby public and private potable wells. This information was used to prioritize the order in which the facilities were evaluated. The Department assessed 25 fire training facilities where usage of AFFF was confirmed or suspected.”¹

In addition: “From 2008 to 2014, Antea Group [sustainability consultants] participated in a source investigation of per- and polyfluoroalkyl substances (PFAS) in water and soil, tasked with completing a U.S.-based region-wide survey of potential PFAS sources for a confidential client.”² The company then, “surveyed personnel from local municipal and private industrial fire departments and firefighting training facilities, such as refineries and airports, regarding their use and knowledge of firefighting foams.”³

“Based on the site ranking, several firefighting training and fire sites where Class B AFFF was discharged were identified as potential PFAS sources and selected for further investigation. Antea Group completed these additional investigation activities including site reconnaissance, in-depth interviews, and sampling of potentially affected media including groundwater, soil, surface water or sediments.

...PFAS were present in the environment above background at sites where Class B AFFF was discharged repeatedly in training exercises or where large amounts of AFFF was utilized on Class B fires. In many cases, PFAS in surface water or groundwater were at concentrations above the available state or federal screening or advisory levels for drinking water, so it was important for the client to have that full visibility in order to take corrective action.”⁴

¹ Fire Training Facilities Assessment for PFOA and PFOS, <https://floridadep.gov/waste/waste-cleanup/content/fire-training-facilities-assessment-pfoa-and-pfos>

² Mapping PFAS Hotspots at Fire Training Facilities, <https://us.anteagroup.com/projects/mapping-pfas-hot-spots-firefighting-training-facilities#52671>

³ *ibid.*

⁴ *ibid.*



The US has 51,697 fire stations that could potentially be contaminated with fluorinated firefighting foams if training was ever conducted on site. Photo taken with permission of Fire Chief Brian Gaudet, Hillsboro Fire Protection District, Missouri.

FIRE DEPARTMENT SERVICE ANNOUNCEMENT

Bulletin #9, Notice on AFFF Fire Extinguishers, February 5, 2021

Along with the increasing concerns of AFFF products which contain PFAS chemicals, the National Association of Fire Equipment Distributors (NAFED) has issued an alert on fire extinguishers.¹ As known previously, PFAS are associated with “serious environmental, pollution and health issues.”² Since this issue includes fire extinguishers, manufacturers are now in the process of stopping production and sales of AFFF fire extinguishers and recharge agents.

“Make certain that if you are servicing or removing AFFF extinguishers from service, the foam solution should not be disposed of by pouring into the sewer system or pouring it on the ground. The solution is considered a hazardous material and an environmental hazardous substance. Disposal must be in accordance with appropriate federal, state/provincial, and local regulations.

What happens next? New agents are being developed but we do not know what the timeline is before they are approved and developed for use in fire extinguishers.”³

“This development has a significant impact on the fire extinguisher service industry.”⁴

“Concerns center around the potential negative impact on the environment from the discharge of foam solutions (the combination of water and foam concentrate). The primary issues are the toxicity, biodegradability, persistence, treatability in wastewater treatment plants and nutrient loading of soils. All of these are cause for concern when foam solutions reach natural or domestic water systems.”⁵

This is a significant development. Fire departments are an important source of community information and should be aware of this evolving change in AFFF products.

¹ <https://www.nafed.org/latestnews/aff-fire-fighting-foam-update>

² *ibid.*

³ *ibid.*

⁴ *ibid.*

⁵ <https://www.firerescue1.com/firefighter-safety/articles/how-safe-is-firefighting-foam-NIYF6zhwXGmSIV8e/>



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**As part of our ongoing Technical Support Program
we have included the following NAFED Alert concerning AFFF Foam.**

There has been growing concern about the presence of PFAS (per- and polyfluoroalkyl substances) in AFFF (Aqueous Film Forming Foam). PFAS have been associated with serious environmental, pollution, and health issues. This has been a topic of discussion at NAFED conferences for the past three years. The major areas of concern have been at civilian and military airfields, petrochemical facilities, and firefighting testing and training facilities where AFFF has widespread use.

This issue also includes AFFF fire extinguishers. Recently both Amerex and Ansul have stopped production and sales of AFFF fire extinguishers and recharge agents. Badger is in the process of redesigning their stainless-steel cylinders and, once completed, will be offering their AR-AFFF extinguishers. A Buckeye representative stated that they are developing an AFFF extinguisher that should be introduced in the future.

This development has a significant impact on the fire extinguisher service industry. The current NFPA 10 requires that these extinguishers be recharged every three years and hydrotested every five years. However, without the agents being available, the Extinguishers cannot be recharged and should be removed from service.

Depending on the hazard being protected, another Class B rated extinguisher may be substituted. However, dry chemical or clean agent fire extinguishers do not have the ability to suppress vapors like a foam extinguisher does.

What happens next? New agents are being developed but we do not know what the timeline is before they are approved and developed for use in fire extinguishers.

The next edition of NFPA 10 is scheduled for release in 2021. The new edition contains a proposed revision to Section 7.8.2.3.1 that would read:

7.8.2.3.1 The premixed agent in liquid charge-type AFFF and FFFP fire extinguishers shall be replaced at least once every 3 years following the manufacturer's instructions, not to exceed the 5-year hydrostatic test interval.

One fire extinguisher manufacturer stated at the NFPA 10 technical committee meeting that their agent does have a five-year life. Once this agent and extinguisher becomes available there should not be a need to recharge those extinguishers on a three-year cycle.

Make certain that if you are servicing or removing AFFF extinguishers from service, the foam solution should not be disposed of by pouring into the sewer system or pouring it on the ground. The solution is considered a hazardous material and an environmental hazardous substance. Disposal must be in accordance with appropriate federal, state/provincial, and local regulations.

It is up to you to keep yourself, your customers and your community safe and up to date.

Any questions concerning this NAFED bulletin please do not hesitate to call our Technical Support line at 58-883-0651

FIRE DEPARTMENT SERVICE ANNOUNCEMENT

Bulletin #10, PFAS Blood Testing for Military Firefighters, February 12, 2021

In a congressionally mandated exposure assessment, the National Defense Authorization Act (NDAA) of 2020 directed: "Beginning October 1, 2020, the Secretary of Defense shall provide blood testing to determine and document potential exposure to perfluoroalkyl and polyfluoroalkyl substances (commonly known as "PFAS") for each firefighter of the Department of Defense during the annual physical exam..."¹

Testing is being done because of concern for potential occupational exposure and is not considered mandatory. Currently testing is for only six PFAS compounds out of the 9,200+ known by the USEPA at this time. These are: PFOA, PFOS, PFBS, PFHpA, PFHxS and PFNA.² NHANES (National Health and Nutrition Examination Survey, CDC blood testing in the US) has been monitoring 12 PFAS since 1999 in participants aged 12 and over.³

Military firefighters do not have to pay for the PFAS blood test. The testing does not include veterans.⁴ Veteran Kevin Ferrara of Wooldrich, PA stated that: "We really need to establish a standard level, because right now, those active duty military and DoD civilian firefighters, they're going to get the blood drawn but then nobody really knows what to do after that."⁵

A helpful Fact Sheet on Medical Testing for PFAS noted: "Knowing PFAS blood levels helps to establish baseline exposure levels and raise awareness so people may be proactive in reducing their exposure." Currently, there is no established treatment for PFAS exposure.⁶

¹ Department of Defense, Memorandum, Transmittal of Facts Sheets for Blood Testing for DoD Firefighters Per- and Poly-fluoroalkyl Substances Levels, September 29, 2020, <https://www.health.mil/Reference-Center/Publications/2020/09/29/Memo-transmitting-fact-sheets-for-PFAS-blood-testing-levels>

² ibid.

³ ibid.

⁴ E&E News, Pentagon will test firefighters' blood for PFAS. But then what? Bev Banks, E&ENews Reporter, September 1, 2020, <https://www.eenews.net/stories/1063712631>

⁵ ibid.

⁶ Fact Sheet, Published by the PFAS Community Campaign, April 28, 2020, <https://cswab.org/new-fact-sheet-on-medical-testing-for-pfas/>



“Since 1999, CDC has measured several types of PFAS in the U.S. population as part of the National Health and Nutrition Examination Survey (NHANES). NHANES is a survey that measures the health and nutritional status of adults and children in the United States. In particular, the survey has measured PFOS and PFOA. With the decrease in production and use of some PFAS, the national PFAS levels also have dropped over time. From 1999 to 2014, blood PFOA and PFOS levels declined by more than 60% and 80%, respectively (www.cdc.gov/exposurereport).”

[<https://www.atsdr.cdc.gov/pfas/health-effects/blood-testing.html>]

Long chain PFAS have been replaced with short chain PFAS for which there are less health studies although independent scientists have called out this replacement chemical as a ‘regrettable substitution.’ Dr. Linda Birnbaum, former director of the NIH / NIEHS, has reported although the short chain chemicals may be in the blood for a shorter amount of time, they are no less toxic.