

Intentionally Added PFAS in Illinois Firefighting Foam (2021)



Submitted by Office of the Illinois State Fire Marshal
March 18, 2022

Purpose

Under Public Act 102-0290, the Office of the State Fire Marshal was tasked with surveying the Illinois fire service to determine the prevalence and use of Class B firefighting foam which contains intentionally added PFAS.

Background

PFAS, the short term for perfluoroalkyl and polyfluoroalkyl substances, are a group of manmade chemicals that have been widely used in industrial and consumer products since the 1940s. Among many other sources, PFAS can be found in some Class B firefighting foams. PFAS can accumulate in the environment and in the body, potentially causing adverse health impacts.

Older Class B foam formulations typically contain long-chain PFAS (e.g. PFOS or PFOA) as ingredients or contain precursors that degrade into long-chain PFAS in the environment. Such foams, sometimes called legacy foams, are considered to contain “intentionally added PFAS”.

Under the U.S. Environmental Protection Agency’s (USEPA’s) PFOA Stewardship Program, all U.S. foam manufacturers voluntarily reformulated their foams by 2016. These modern foam formulations contain short-chain PFAS which are thought to be less bioaccumulative and less toxic. Some manufacturers have also formulated fluorine-free firefighting foams.

Method

The Office of the State Fire Marshal requested participation by all Illinois fire departments in this survey. For determination of discharge or disposal occurrences in the “prior 12 months”, the period was November 1, 2020 to October 31, 2021. It is important for context to note that requirements related to use of Class B firefighting foam containing intentionally added PFAS enacted under Public Act 102-0290 did not become effective until January 1, 2022, which was after the survey period.

To ensure consistency in reporting of foam content, the Office of the State Fire Marshal requested fire departments report information about the foam in their possession and worked with foam manufacturers to identify those foams likely containing intentionally added PFAS, containing non-intentional PFAS (modern, short-chain foams), or containing no PFAS.

Results

The Office of the State Fire Marshal received responses from 333 fire departments, which is approximately 29% of Illinois fire departments. The results of their responses are below.

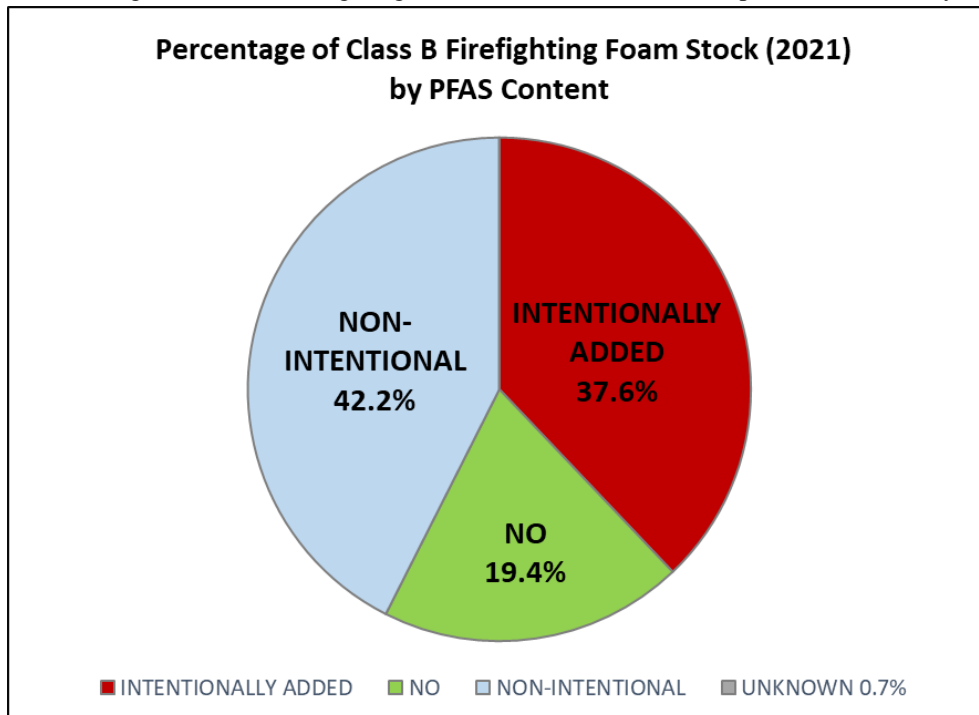
Amount of Class B Firefighting Foam

Illinois fire departments reported approximately 48,000 gallons of Class B firefighting foam in stock as of January 1, 2022. Though a significant portion of the available Class B firefighting foam stock likely contains intentionally added PFAS, a larger portion does not. Approximately 37.6% (18,000 gallons) of Class B firefighting foam reported likely contained intentionally added PFAS. By contrast, approximately 61.6% (30,000 gallons) of Class B firefighting foam stock reported did not contain intentionally added PFAS. The PFAS content of less than 1% (350 gallons) of Class B firefighting foam reported could not be identified.

Table 1. Reported Class B Firefighting Foam Stock of Illinois Fire Departments (2021)

Reported Class B Firefighting Foam Stock of Illinois Fire Departments (2021)		
Contains PFAS?	Gallons	Percentage
INTENTIONALLY ADDED	18,196	37.6%
NON-INTENTIONAL	20,427	42.2%
NO	9,385	19.4%
UNKNOWN	350	0.7%
Total	48,358	100%

Figure 1. Percentage of Class B Firefighting Foam Stock of Illinois Fire Departments (2021) by PFAS Content



Discharge of Class B Foam

Illinois fire departments reported that approximately 466 gallons of Class B firefighting foam was discharged over the prior 12 months. Of that, the PFAS content of the foam was unknown for 85% (395 gallons) of foam discharged. This is likely due to the fact that foam product is loaded into emergency response vehicles prior to the time it is needed and records may not exist. Due to the mostly unknown PFAS content of reported discharges, it is not possible to draw significant conclusions about discharge of Class B firefighting foam with intentionally added PFAS.

Table 2. Approximate Number Gallons of Class B Firefighting Foam Discharged (2021)

Approximate Number Gallons of Class B Firefighting Foam Discharged (2021)				
Reason for Discharge	Contains PFAS?			Total Gallons (by Reason)
	INTENTIONALLY ADDED	NON-INTENTIONAL	UNKNOWN	
ACCIDENTAL	1	-	-	1
AIRCRAFT INCIDENT	-	-	50	50
EXTERIOR FIRE	-	-	5	5
HAZ-MAT	-	-	11	11
STRUCTURE FIRE	5	-	100	105
TRAINING	10	45	55	110
VEHICLE FIRE	-	10	174	184
Total Gallons (by PFAS Content)	16	55	395	466

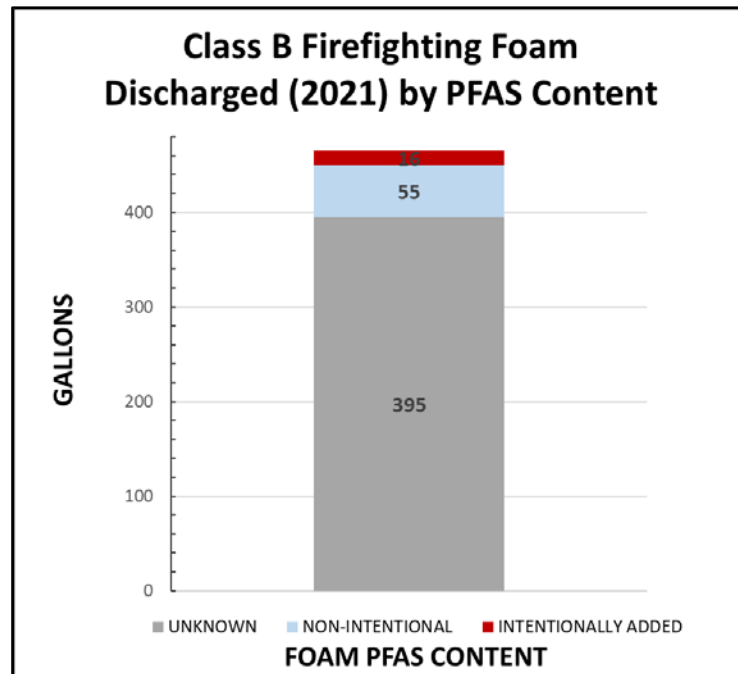
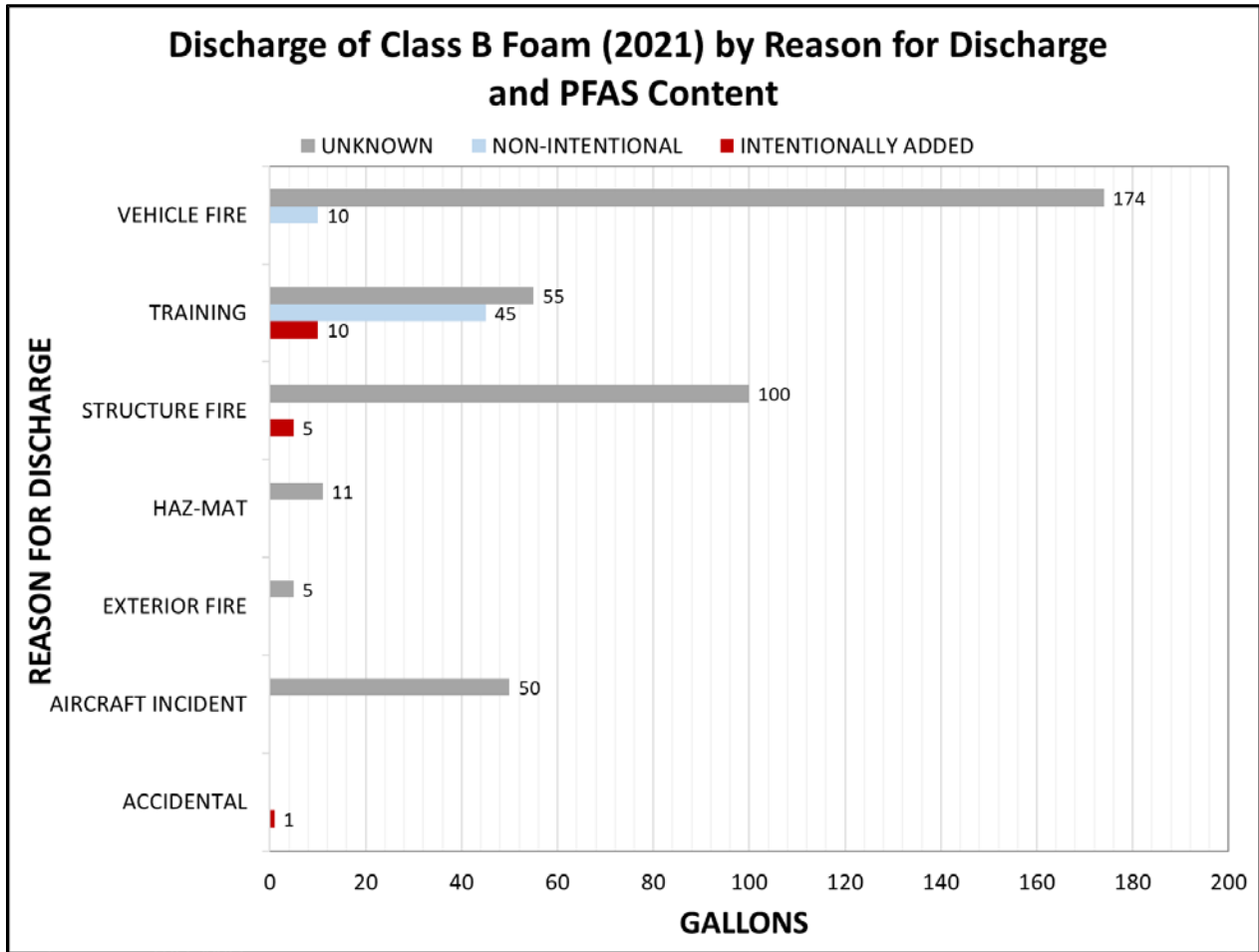


Figure 2 (right).
Discharge of Class B
Firefighting Foam (2021)

Figure 3. Discharge of Class B Firefighting Foam (2021) by Reason for Discharge



Disposal of Class B Foam

Fire departments reported disposal of approximately 750 gallons of Class B firefighting foam likely containing intentionally added PFAS. Disposal was conducted by special waste disposal companies or foam vendors.

**750 Gallons
Disposed**

Conclusion

Over one-third of Illinois’ fire service reported Class B firefighting foam in stock likely contains intentionally added PFAS. Reported discharges in 2021 were equivalent to 1% of available Class B firefighting foam stock. Reported disposals in 2021 were equivalent to 1.6% of available Class B firefighting foam stock or 4.1% of available Class B firefighting foam stock which likely contains intentionally added PFAS.

The Office of the State Fire Marshal is tasked with surveying the fire service annually on this subject matter for the next five years. Future surveys may offer additional insights.