

Fluorinated Firefighting Foam Survey Results

September 2020



Introduction

In 2019, Wisconsin Executive Order #40 directed the Wisconsin Department of Natural Resources (DNR) to create a PFAS Coordinating Council and “identify and prioritize sites with likely PFAS.” To this end, the biennial budget earmarked \$50,000 for DNR to “conduct a survey of local and state emergency responders to determine the level of use of PFAS-containing firefighting foam.”

Subsequently, the DNR created the inter-bureau and inter-agency “AFFF Survey, BMPs and Clean Sweep Team” to, among other things, create a firefighting foam survey for delivery to fire departments. Its objectives were to: 1) quantify the volume of PFAS-containing foam concentrate in storage statewide to help estimate the cost of a potential state-run collection and disposal effort; 2) help DNR understand how often and where PFAS-containing firefighting foam is used around the state; and 3) help DNR build strong and lasting relationships with Wisconsin’s firefighting community to better protect firefighters and the environment.

In developing this survey, the team reviewed surveys from other states (MI, MN, NY, ME, VT, NH) and asked them for advice. The team also partnered with the Wisconsin Fire Chiefs Association, WTCS Fire Training Center and DSPS Fire Safety. In all, 11 external partners reviewed the draft survey and offered their approval. In January 2020, the team contracted with the University of Wisconsin Survey Center to administer the survey. A pre-notice letter was mailed to approximately 825 fire chiefs around the state to inform them of the survey and provide advance notice of an email invitation to complete the survey online. The email invitation was sent on 24 January 2020, with two follow-up reminder emails sent on weekly intervals. On 18 February, a paper copy of the survey was sent to non-respondents, with data collection closing on 17 March. Data entry was completed by the UW Survey Center.

Upon completion of the survey’s administration, the Waste and Materials Management program requested assistance from DNR’s Analysis Services section to review, analyze and report on the survey results. Study authors conducted email and telephone follow-up surveys with fire departments in possession of more than 200 gallons of foam, to assess their interest in disposing of their inventory. This report summarizes the data from the UW Survey Center’s questionnaire, which is included in Appendix A, and the follow-up conducted with a subset of respondents.

STATEWIDE APPLICATION OF RESULTS

The results presented in this report are based on the 596 fire departments that responded to the survey, which represents 72% of all fire departments in Wisconsin. Because of this high response rate and the relatively small target population, we can be certain with 95% confidence that the margin of error of these results is within 4.2% of the population mean¹, even assuming a high degree of variation exists among fire departments. When extrapolating from the survey data to estimate the amount of fluorinated firefighting foam on hand in fire departments across the state, as well as the amount of expired product to be disposed of, we can therefore be reasonably assured that the mean survey responses reflect the average fire department.

¹ Given the small size of the population, the 596 responses are equivalent to a survey resulting in 2128 responses from a larger population.

$$n = \frac{n'}{1+n'/N} = \frac{n'}{1+n'/825} = 596 \therefore n' = 2128$$

The confidence interval for a sample from a large population is as follows:

$$2128 = n = \frac{z^2 * p(1 - p)}{CI^2} = \frac{1.96^2 * 0.5(1 - 0.5)}{CI^2} = \frac{0.96}{CI^2} \therefore CI = 0.021$$

A confidence interval of 0.021 based on a mean value of 0.5, is more commonly expressed as within 4.2% of the mean.

Results

USE OF FLUORINATED FIREFIGHTING FOAM

Question 1

There are approximately 825 fire departments in Wisconsin and 596 fire departments responded to the survey. These surveys indicate that 455 departments (77% of the respondents) had purchased, stored, trained with, or used fluorinated firefighting foam at some point in the past, while 134 of the responding departments (23%) indicated they had never purchased, stored, trained with, or used fluorinated firefighting foam.

Question 2

Of those departments that have purchased, stored, trained with, or used fluorinated firefighting foam in the past, 73 (16%) indicated that they currently have none in stock. The remaining 84 percent varied in how much fluorinated firefighting foam they currently had available, with approximately 18 percent indicating they were in possession of 100 gallons or more. Thirty-seven departments either did not respond to this survey question or initially indicated they were in possession of more than 200 gallons. Telephone and email follow-ups were conducted with 36 of these departments to solicit more detailed responses, which are reflected in Table 1. These combined data indicate that almost two thirds (64%) of all fire departments have fluorinated firefighting foam in stock. See Table 1 for additional information.

Table 1: Fluorinated firefighting foam currently on hand.

	Response Frequency (n)	Percent (%) Response	Range Minimum (gallons)	Range Maximum (gallons)	Minimum Total (gallons)	Maximum Total (gallons)
0 gallons	73	16.0	0	0	0	0
1 to 25 gallons	110	24.2	1	25	110	2750
26 to 50 gallons	90	19.8	26	50	2340	4500
51 to 100 gallons	95	20.9	51	100	4845	9500
101 to 200 gallons	52	11.4	101	200	5252	10400
201 or more gallons*	34	7.5			23572	23622
201 or more gallons	1	0.2	201	201+	201	201
Total	455	100.0			36320	50973+
				Average:	80	112

* Follow up communications provided exact totals from 34 of 37 departments that indicated that they had more than 200 gallons on hand. Two departments revised their total stock below 200 gallons.

If the average fire department has between 80 gallons and 112 gallons of foam on hand (Table 1), then across the state we estimate with 95% confidence that the total amount of fluorinated firefighting foam held by all 825 fire departments is at least 63,200 gallons and may be as high as 96,300 gallons.

Question 3

Of those departments with a history of purchasing, storing, training with or using fluorinated firefighting foam, 38 percent have guidelines, policies or best practices in place for testing, training with, or using fluorinated firefighting foam. Sixty-two percent of departments that have purchased, stored, trained with or used fluorinated firefighting foam do not currently have any guidelines, policies or best practices in place.

Question 4

The majority of fire departments surveyed use fluorinated firefighting foam only for emergency response to fires involving flammable liquids or gas (63%), while less than half of the responding fire departments use fluorinated firefighting foam for all emergency fires (38%). Forty one percent use fluorinated firefighting foam for overhaul (i.e., opening walls, ceilings, voids and partitions to check for fire extension) or prevention purposes, while less than 24 percent use fluorinated firefighting foam for training (Table 2).

Table 2: Use cases (% responses) for fluorinated firefighting foam among departments that use this class of chemicals.

	Yes	No
...for all emergency fire purposes such as structural, agricultural, liquid or vehicle fires?	37.8%	62.2%
...only for emergency fires involving flammable liquids or gases?	63.0%	37.0%
...for overhaul and prevention purposes, such as to prevent rekindle or to protect exposures?	41.7%	58.3%
...for training purposes?	23.6%	76.4%

Question 5

Among fire departments that use fluorinated firefighting foam for training, the most common location for use is on their departments’ premises (73 departments, Figure 1). Forty-six departments use their foam at a training location not owned by their departments, while 18 percent use their foam offsite on property they own. Twenty percent indicated they use fluorinated firefighting foam at another location. Many of the sites listed among these other locations could be considered training locations not owned by the departments such as parking lots, vacant lots, gravel pits and fields.

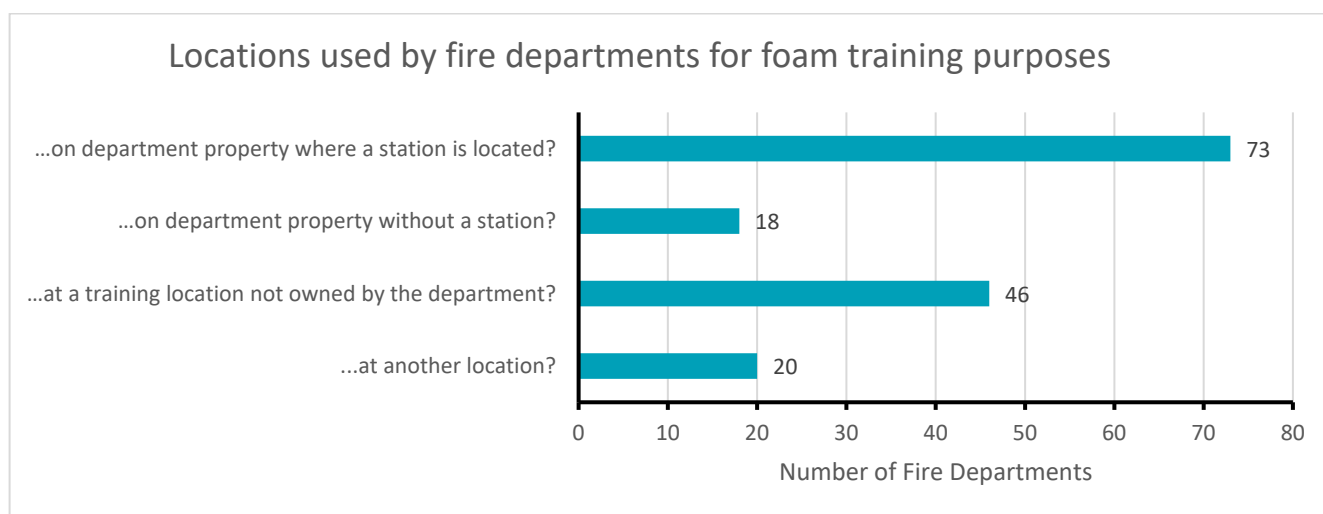


Figure 1: The number of fire departments that use fluorinated firefighting foam for training purposes at different locations.

DISPOSAL OF FLUORINATED FIREFIGHTING FOAM

Question 6

The most common means of disposing of expired or unwanted fluorinated firefighting foam appears to be placing it in storage (193 fire departments), followed by using it for training (158 departments). Only 21 departments returned their fluorinated firefighting foam to the manufacturer or supplier, while nine sent it to a landfill. A sizeable number (119 departments) indicated they disposed of their fluorinated firefighting foam by another means, however, many of these comments indicated that they were unaware that fluorinated firefighting foam had an expiration date (Figure 2, Appendix B Table 9).

Disposal of Firefighting Foam Concentrate

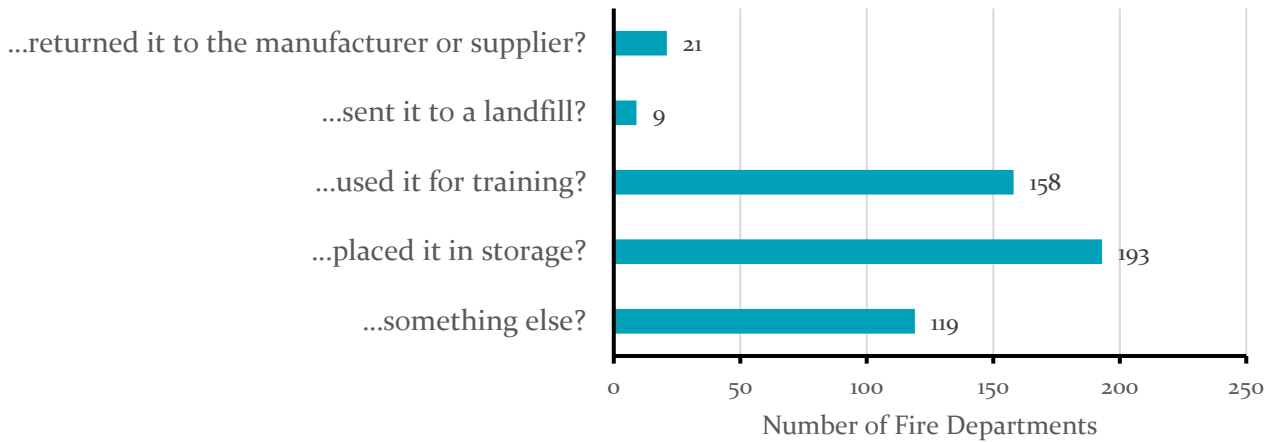


Figure 2: Means of disposing of expired fluorinated firefighting foam used by Wisconsin fire departments.

Approximately half (51%) of fire departments indicated that they currently had expired fluorinated firefighting foam on hand that needed to be disposed of (Figure 3). We followed up with thirty-seven fire departments that indicated they had more than 200 gallons of expired fluorinated firefighting foam to obtain more detailed information on the amount they had on hand. Altogether, fire departments indicated that they had on hand a minimum of 17,585 gallons of firefighting foam requiring disposal. However, there may be as much as 30,697 gallons available for disposal (Table 5).

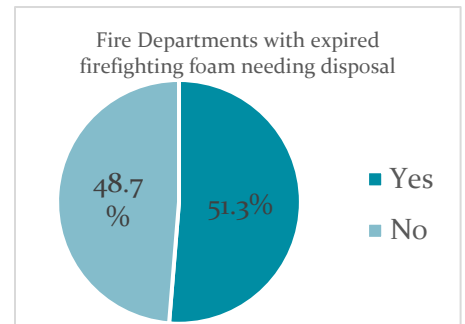


Figure 3: Fire departments (%) with expired fluorinated firefighting foam.

Table 5: Unwanted or expired fluorinated firefighting foam needing disposal.

Amount	Response Frequency (n)	Percent (%) Response	Range minimum (gallons)	Range Maximum (gallons)	Minimum Total (gallons)	Maximum Total (gallons)
0 gallons	362	59.9	0	0	0	0
1 to 25 gallons	87	14.4	1	25	87	2175
26 to 50 gallons	46	7.6	26	50	1196	2300
51 to 100 gallons	54	8.9	51	100	2754	5400
101 to 200 gallons	25	4.1	101	200	2525	5000
201 or more gallons	30	5.0			11023	15822
Total	591	100			17585	30697
				Average	30	52

If the average fire department has between 30 gallons and 52 gallons of expired foam in need of disposal (Table 5), then across the state, we estimate with 95% confidence that the total amount held by all 825 fire departments is at least 23,700 gallons and may be as high as 44,700 gallons

WATER SOURCES

Question 9

In all, 69 percent of fire departments surveyed indicated they get their drinking water from municipal supplies, while 38 percent rely on private wells. Twelve percent of departments also rely on another source, mostly bottled water (Table 6). Twenty-eight departments indicated they both obtain their drinking water from private wells and that they have trained with fluorinated firefighting foam at the property where the station is located.

Table 6: *Drinking water sources used by fire departments.*

	Percent (%) of Fire Departments
...municipal water supplies?	68.8%
...private wells?	38.2%
...other sources?	11.9%

Question 10

Surveyed fire departments also indicated they use a mix of water sources for fire suppression (Table 7). While 82 percent indicated they use municipal water supplies for this purpose, 29 percent also rely to some extent on private wells, and 62 percent make use of dry hydrants. Twenty-nine percent of departments indicated they use other water sources, which written comments revealed to be primarily surface waters such as lakes, rivers and ponds. (Appendix B - Table 10).

Table 7: *Water sources used for fire suppression activities.*

	Percent (%) of Fire Departments
...municipal water supplies?	81.9%
...private wells?	29.3%
...dry hydrants?	62.2%
...other sources?	29.3%

INFORMATION REQUESTED

Question 13

Respondents were asked to rate the importance of different types of information about fluorinated firefighting foam (Table 8). Responses to this question indicated a strong appetite for more information overall, with the majority of respondents indicating all types of information were either very or extremely important.

Table 8: Importance of information (% responses) related to fluorinated firefighting foam.

Type of Information	Not at all	A little	Somewhat	Very	Extremely
Disposal options	10.4%	6.5%	16.9%	24.7%	41.5%
Alternative products	8%	4.1%	17.2%	30.5%	40.1%
Liability	7.0%	5.1%	19.2	31.4%	37.2%
Best management practices	8.7%	6.3%	19.3	32.9%	32.9%
Health impacts	7.7%	6.1%	21.8%	31.7%	32.7%
Product identification	8.2%	5.6%	22.6	31.3%	32.3%
Environmental impacts	7.5%	6.5%	22.0%	34.8%	29.3%

AIRPORTS

Fifteen percent of the fire departments surveyed indicated they were the primary service for one or more airports (Figure 4). While the vast majority of these fire departments service just one airport, three departments service two airports, and one department services three airports. A complete list of fire departments and the airports they serve is presented in Table 11 in Appendix B.

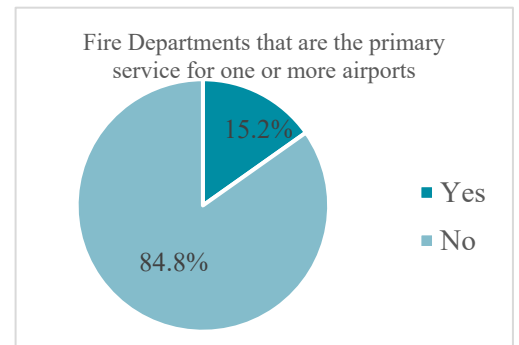


Figure 4: Fire Departments that are the primary service for one or more airports.

2019 Wisconsin Act 101

This survey was authorized and funded by 2019 Wis. Act 9 (biennial budget), which was enacted on July 3, 2019. This survey is separate and distinct from the provisions of 2019 Wisconsin Act 101, which was enacted on February 5, 2020 and created Wis. Stat. §299.48. Act 101 prohibits the use of PFAS-containing foams, except for emergency fire-related operations and testing purposes, if the testing facility has taken appropriate containment, treatment, and disposal measures. This survey was emailed to fire departments in January 2020, shortly before Act 101 was enacted. Therefore, the survey did not include any questions related to testing with fluorinated foam.

Prepared by
 Ben Beardmore and Meghan Pluemer
 Analysis Services Section
 Bureau of Environmental Analysis and Sustainability
 Wisconsin Department of Natural Resources

Appendix A. Survey Questionnaire

PFAS-containing foam, or fluorinated firefighting foam, is typically used for Class B flammable liquid fires and related hazards. Class A/B firefighting foam also typically contains PFAS.

A partial list of common PFAS-containing foam concentrates includes:

- Aqueous Film Forming Foam (AFFF)
- Alcohol Resistant (AR-AFFF)
- Film-Forming Fluoroprotein Foam (FFFP)
- Alcohol Resistant Film-Forming Fluoroprotein Foam (AR-FFFP)
- Fluoroprotein Alcohol-Resistant (FPAR)

These acronyms are generally printed in large letters on the foam concentrate containers.

1. Has your fire department ever purchased, stored, trained with, or used fluorinated firefighting foam?

Yes

No → Go to question 9

2. Thinking of all stations or facilities in your department, about how many gallons of fluorinated firefighting foam concentrate do you currently have in total?

0 gallons

1 to 25 gallons

26 to 50 gallons

51 to 100 gallons

101 to 200 gallons

201 or more gallons

3. Does your department have guidelines, policies or best practices for testing, training with, or using, fluorinated firefighting foam?

Yes

No

4. For which of the following purposes does your department use fluorinated firefighting foam?

Does your department use fluorinated firefighting foam...

	Yes	No
a. ...for all emergency fire purposes such as structural, agricultural, liquid or vehicle fires?	<input type="radio"/>	<input type="radio"/>
b. ...only for emergency fires involving flammable liquids or gases?	<input type="radio"/>	<input type="radio"/>
c. ...for overhaul and prevention purposes, such as to prevent rekindle or to protect exposures?	<input type="radio"/>	<input type="radio"/>
d. ...for training purposes?	<input type="radio"/>	<input type="radio"/>
e. ...other purposes?	<input type="radio"/>	<input type="radio"/>

5. If your department **does not** use fluorinated firefighting foam for **training purposes**, skip to question 6.

In which of the following locations does your department use fluorinated firefighting foam for training purposes?

Does your department use fluorinated firefighting foam for training purposes...

	Yes	No
a. ...on department property where a station is located?	<input type="radio"/>	<input type="radio"/>
b. ...on department property without a station?	<input type="radio"/>	<input type="radio"/>
c. ...at a training location not owned by the department?	<input type="radio"/>	<input type="radio"/>
d. <u>...at another location?</u> → Please tell us:	<input type="text"/>	

6. Which of the following has your department done with expired or unwanted fluorinated firefighting foam concentrate?

Have you...

	Yes	No
a. ...returned it to the manufacturer or supplier?	<input type="radio"/>	<input type="radio"/>
b. ...sent it to a landfill?	<input type="radio"/>	<input type="radio"/>
c. ...used it for training?	<input type="radio"/>	<input type="radio"/>
d. ...placed it in storage?	<input type="radio"/>	<input type="radio"/>
e. ...something else? → Please tell us:	<input type="text"/>	

7. Currently, does your department have any expired or unwanted fluorinated firefighting foam concentrate that it would like to dispose of?

- Yes
- No → Go to question 9

8. Thinking of all stations or facilities in your department, about how many gallons of expired or unwanted fluorinated firefighting foam concentrate would your department like to dispose of?

- 1 to 25 gallons
- 26 to 50 gallons
- 51 to 100 gallons
- 101 to 200 gallons
- 201 or more gallons

9. Thinking of all stations or facilities in your department, which of the following water sources do you use for drinking water?

Does the drinking water for your fire stations or facilities come from...

	Yes	No
a. ...municipal water supplies?	<input type="radio"/>	<input type="radio"/>
b. ...private wells?	<input type="radio"/>	<input type="radio"/>
c. <u>...other sources?</u> → Please tell us:	<input type="text"/>	

10. Thinking of all stations or facilities in your department, which of the following water sources do you use for fire suppression activities?

Does your department use water for fire suppression activities from...

	Yes	No
a. ...municipal water supplies?	<input type="radio"/>	<input type="radio"/>
b. ...private wells?	<input type="radio"/>	<input type="radio"/>
c. ...dry hydrants?	<input type="radio"/>	<input type="radio"/>
d. <u>...other sources?</u> → Please tell us: <input style="width: 200px;" type="text"/>		

11. Is your department the primary firefighting service provider for one or more airports?

- Yes
 No → **Go to question 13**

12. Please name up to 3 airports your department is the primary firefighting service provider for, the city in which they are located, and their FAA identifier, such as GRB for Green Bay, if known:

Airport #1 name:

Airport #1 city: Airport #1 FAA identifier:

Airport #2 name:

Airport #2 city: Airport #2 FAA identifier:

Airport #3 name:

Airport #3 city: Airport #3 FAA identifier:

Please check if your department is the primary firefighting service provider for more than 3 airports.

13. How helpful would each of the following types of information about fluorinated firefighting foams be to your department?

	Not at all	A little	Somewhat	Very	Extremely
a. Health impacts	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. Environmental impacts	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. Alternative products	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. Disposal options	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e. Best management practices	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f. Product identification	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
g. Liability	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
h. Other type of information. Please tell us below:					
<input style="width: 250px;" type="text"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

14. What type or types of fluorinated firefighting foam does your department use? Please include brand, manufacturer and product name. If possible, also include the percent concentration, and the manufacture and expiration date. At the end of the survey, we include an email address if you are also able to send a photo.

15. Please share any comments you may have about your department's experience with fluorinated firefighting foams:

16. What is your name?

First Name:

Last Name:

17. What is your rank or title?

Rank or title

18. What is your fire department's name?

Fire department's name

19. What is your fire department's identification number or FDID?

FDID number

20. How many fire stations does your department have?

Number of fire stations

Thank you! Please return your completed questionnaire today in the postage-paid envelope provided.

If possible, please take a photo of your Class B fluorinated foam container labels or safety data sheet and email that image to: dnrfirefightingfoamstudy@wisconsin.gov

Appendix B. Open-ended Comments

Table 9: *Open ended comments regarding fluorinated firefighting foam disposal.*

12-15 years ago, old foam was used for training as a 'disposal' means
All will eventually be used on a fire scene, and only order more when low
any fluorinated foam to my knowledge has been used and not purchased in 17 yrs
Changed over to Class A foam in 1996
County Clean Sweep Program
Contracted with a landfill that accepts firefighting foam
County Clean Sweep Program
Currently looking into proper disposal options
currently removed it from our trucks awaiting disposal instructions
Depleted supply and no longer use.
Disposed of all fluorinated Class B foams through North Shore Environments servi
Disposed of at a household hazardous waste collection event
do not buy extra only purchase small amounts
do not stock more then we can use
Doesn't have any unwanted or expired foam
Donated it to other departments
Donated it to other fire departments
Dumped into Sewer System
Even if expired, it was just used up on calls.
Expired foam . Waiting for county wide clean sweep to dispose of properly.
Given the the County's "Clean Sweep" project. Controlled disposal.
hardly ever use foam, very small fire department - never once in 5 years as Chie
Has no expr. date
hasn't expired.
Have not disposed of any.
have not had any expired or unwanted foam
Have not had expired foam to my knowledge
have not used for over 15years
Haven't had to return any
Haven't used for a long time when we ran out we stopped
Havent had them expire.
I am unaware of any disposal
Incinerated at Veolia
Issued a directive restricting its use to flam/comb liquid fires only
its in our fire hall back room. didn't know what to do with it yet. where it ne
Most AFFF concentrates do not expire
No One will take it off our hands, 3m is out of business of foam
None expired
none expired
North Shore Environmental
Not aware of a expiration date on the container
Not sure on any disposal. If any, happened before my membership
Nothing, trying to figure out what to do with it.
on truck for classi B Fire
Our foam expired last in the 90's, I'm unable to find out what was done prior
Our foam has no expiration date
Paid for disposal of it and cleaning of our on board foam tanks.
Placed in storage until cost effective method is found for dispoal is found
ready for emergency use
Return to Outagamie foam bank
Sent in for recycle
Sent to another department, County Foam Bank
Sent to county Hazardous materials site
sent to local airport for training

Sold it at auction
Still have 10 gallons we will never use.
still in our possession
still use it for fires
Still using it
Stored in 270 gallon tote.
Stored in trucks for use on fire scene's.
Suppose to be indefinite shelf life
Switched to different foam 10 years ago
taken out of service
The foam we use has no expiration
Through attrition it was used and then trained with. The Nbfd has switched to "C
unknown disposed of before I was chief
Unsure how any Class B Fluorinated foam was used prior to July 2018.
Used at fire -never replaced
Used it as needed at fires and never replenished our stock. Began using Class A
used on fire incidents and current in storage
used through attrition
used up several years ago and did not replace
Using up what's left in tank + then switching to other foam
usually has been used before expiration date
Waiting for assistance from the government on how to handle
Waiting for more direction from WSFCA and DNR
waiting to dispose of properly
Waiting to hear how to get rid of it
WAS USED PRIOR TO THIS NOTICE
We always use all of our supply before it expires.
We currently have little if any outdated foam
We do not have any of the foam types listed in this survey
We do not purchase Class B foam anymore. We keep a limited supply of class A
We had a licensed waste company come in and take possession of it for disposal.
we had it incinerated by an environmental company in order to properly dispose
We have discontinued use a few years ago.
We have little to no extra foam. All foam is currently on apparatus.
we have never had any expire, we continue to use no matter age.
We have none, nor have we dispose of any. We only carry Afff
We have not disposed of Class B Foam. When needed we will follow best practices
we have not had any expired
we have not had any for a few years
We have only 10 gallons left. We stopped purchasing 4 years ago
we just keep it till we use it and replenish our stock rotating using oldest fir
we no longer have any left over
We only have class A foam from Lemay in our station for the past 8 yrs
We order and use only what is used at fires
We order on as needed basis.
We quit buying and using it 10 years ago.
We use F500 which does not have PFAS
we use it even if expired
We usually have used it on calls. It is not expiring
We were told the foam we use has no shelf life.
We will be replacing it as soon as supplier gets it in
What we have has not expired yet.
when are department ran out of it we never replaced it
Will get rid of it some day
Working on coordination with General Mitchell Airport Fire Dept for Disposal.
Working with supplier

Table 10: *Open-ended comments related to water sources used to extinguish fires.*

Any static water source available
Any static water source available (river, lake, etc)
Anywhere we can get water.
Baraboo River if necessary
Bay of Green Bay, Pensaukee River
Bodies of water
Buried tanks lakes and streams
Cisterns
Creek, ponds
Creeks – lake
Creeks + ponds
creeks, ponds, rivers, etc.
deep well at station
ditches, ponds, lakes, rivers, streams
Draft directly from ponds
Draft directly from Static Water Source. Lake or Bay
Draft from Bay
draft from lake or river
Draft from lakes + streams
draft from lakes and rivers
Draft from local lakes, rivers, bodies of water
Draft water directly from a water source ie. Pond/River
Drafting
Drafting from lakes
Drafting from lakes, ponds, etc.
Drafting from natural water sources like lakes / rivers.
drafting from river
Drafting from river
drafting from the river
Dry hydrants under mutual aid if requested.
Farm Irrigation wells
Farm ponds, river water
Flowages
Irrigation well
Irrigation wells
lake
Lake
lake drafting
Lake Michigan
lake use
lake water
Lake water
Lake Winnebago
lakes
Lakes
LAKES
Lakes & Creeks
Lakes & rivers
Lakes & Rivers
Lakes + ponds
lakes and creeks
Lakes and ponds upon occasion
lakes and rivers
Lakes and rivers
Lakes and Rivers
Lakes and rivers in the areas
lakes and streams
Lakes and Streams
lakes or rivers
Lakes or rivers
LAKES OR RIVERS
Lakes, Cranberry Marsh Ponds
Lakes, ponds
lakes, rivers
Lakes, rivers

Lakes, Rivers (non hydranted community)
lakes, rivers, ponds
lakes,rivers
Lakes,rivers,streams
lakes. rivers. ponds etc
lakes/ponds
Lakes/rivers/ponds
Local Creeks and/or ponds
Local lakes
Local lakes, rivers, streams, and ponds.
Local streams and rivers if required during firefighting operations
local surface water
Mississippi River/Creeks
MISSISSIPPI RIVER/OTHER OPEM WATER FOR DRAFTING
municipal owned well and cistern system
Municipal well
mutual aid tankers
Natural sources
Natural sources (ponds, rivers, lakes)
ponds
Ponds
Ponds - pools - creeks - river etc.
ponds ,rivers
ponds + lakes
ponds etc
Ponds in the area
ponds streams rivers lakes
Ponds, creeks, bay
Ponds, lakes, rivers
ponds, lakes, rivers, pools, dry hydrents
ponds, river
portable pumps in rivers + lakes
Possible from lakes or rivers
Pull out of area Lakes
pump water out of the Chippewa River
Quarry
Rare occasions, once every five years maybe, draft directly from a creek/river.
river
River
river and creeks
river and ponds
river fill sites
River, lakes, and ponds
RIVERS
rivers / streams
rivers + ponds
Rivers and lake
Rivers and lakes
Rivers and Ponds
Rivers or lakes
Rivers, creeks, lakes
Rivers, lakes
Rivers, lakes and ponds without dry hydrants
Rivers, lakes, streams
Rivers, streams, ponds and lakes
Rivers/creeks Direct drafting without dry hydrant
Rivers/large creek beds
Rock River - Drafting source
St Louis River
static ponds, lakes or river basins
Static Water
Static water sources (drafting)
static water supply/creek, river, lake
Storage Tank
streams and lakes
Streams,Lakes, Rivers
suction water from river
Surface waters (rivers or ponds)
Tenders from other municipalities

Underground pumping station
water fill sights
We have a draft pump in station which we draft from the river
Well at the Fire Station
Wells the fire dept owns

Table 11: *Fire departments and the airports they serve.*

FDID	Fire Department	Airport Name	Airport City	Airport Code
1030	Adams County Fire District	Adams County Legion Field	Adams	
3020	Barron Maple Grove Fire Department	Barron Area Airport	Barron	
3040	Chetek Fire District	Chetek Airport	Chetek	Y23
3050	Cumberland Fire District	Cumberland Airport	Cumberland	
3080	Rice Lake Fire Department	Rice Lake Regional Airport - Carl's Field	Rice Lake	RPD
4010	Barnes Volunteer Fire Department	Barres Airport	Barres	
5170	Hobart	Austin Straubel International	Green Bay	GRB
5190	Austin Straubel Airport Public Safety	Austin Straubel International Airport	Green Bay	GRB
7020	Grantsburg Volunteer Fire Department	Grantsburg Municipal Airport	Grantsburg	
7050	Webster Volunteer Fire Department	Burnett County Airport	Siren WI	RZN
7060	Scott Vol Fd1	Voyager Villager Property Assoc.	Webb Lake, WI.	
8010	New Holstein Fire Dept.	New Holstein Municipal Airport	New Holstein	8D1
10090	Neillsville Fire Department	Neillsville Airport	Neillsville	
11090	Portage Fire Department	Portage Municipal Airport	Portage	C47
11110	Rio Fire Department	Gilbert Field	Rio WI.	94C
12080	Prairie Du Chien Fire Department	Prairie Du Chien Municipal Airport	Prairie Du Chien	
13010	City of Madison Fire Department	Dane County Regional Airport-Truax	Madison	MSN
13170	Cottage Grove	Black Hawk Airfield	Cottage Grove	87Y
13230	Middleton Fire District	Morey Field	Middleton	
13240	Stoughton Fire Dept	Matson Airport	Stoughton WI	
13260	Truax Field	Dane County Regional	Madison	MSN
13270	Waunakee Fire District	Waunakee Airport	Waunakee	
14220	Juneau Fire Department	Dodge County Airport	Juneau	KUNU
16010	Superior Fire Department	Bong Airport	Superior	
16090	Highland VFD	Ross Rd Airport	Highland	
16140	Solon Springs Fire Dept	Solon Springs Municipality Airport	Solon Springs	OLG
17030	Menomonie Fire Dept.	Menomonie Municipal Airport	Menomonie	LUM
20010	Town of Fond Du Lac	Fond Du Lac County Airport	Fond Du Lac	FLD
20190	Waupun Community Fire Department	Dairyland Aviation	Waupun	WI07
22200	Platteville Fire Department	Platteville Municipal Airport	Platteville	PVB
23020	Brodhead Fire District	Brodhead Municipal	Brodhead	
23080	Brooklyn Fire Protection District	Syvud Airport	Oregon	7WI5
24060	Grand River Fire District/Markesan Fire Dept.	Unknown	Markesan	
25110	Linden Fire Department	Iowa County Airport	Mineral Point	MRJ
27040	Black River Falls Fire Department	Black River Area Airport	Black River Falls	BCK
28010	Fort Atkinson Fire Department	Fort Atkinson Municipal Airport	Fort Atkinson	
28090	Watertown	Watertown Municipal Airport	Watertown	
28120	Palmyra Village Fire Department	Palmyra Municipal Airport	Palmyra	88C
29090	New Lisbon	Mauston New Lisbon Airport	New Lisbon Wisc.	
30020	Kenosha Fire Department	Kenosha Reginal	Kenosha	
31040	Luxemburg Community Fire Department	Rio Creek Airport	Town Of Casco	
32050	La Crosse Fire	Lacrosse Municipal	La Crosse	LSE
34010	City of Antigo	Langlade County Airport	Antigo	AIG
35020	Merrill	Merrill Municipal Airport	Merrill	

35030 Tomahawk Vol. Fire	Tomahawk Regional Airport	Tomahawk	TKV
36070 Manitowoc Fire Rescue Department	Manitowoc County Airport	Manitowoc	MTW
37030 Mosinee Fire District	Central Wisconsin Airport	Mosinee	
37170 Wausau Fire Department	Wausau Downtown Airport	Wausau	
40200 Milwaukee Fire Dept.	Mitchell International	Milwaukee	MKE
40200 Milwaukee Fire Dept.	Timmerman	Milwaukee	KMWC
40240 Milwaukee County Fire Department	Milwaukee Mitchell Airport	Milwaukee	KMKE
40240 Milwaukee County Fire Department	Timmerman	Milwaukee	KMWC
41080 Tomah Fire Department	Bloyer Field	Tomah	Y72
41130 Sparta Area Fire District	Sparta Fort Mc Coy Airport	Sparta	
42080 Oconto Fire Department	Douglas Bake Airport	Oconto, WI	
43010 Rhinelander	Rhinelander/Oneida County	Rhinelander	RHI
44070 Greenville Fire & Ems	Appleton International Airport	Appleton	
44280 Appleton International Airport	Appleton International	Appleton	ATW
46010 Durand Rural Fire Dept Inc	CVH Heliport	Durand	WI57
46010 Durand Rural Fire Dept Inc	Durand Municipal	Durand	WI25
46010 Durand Rural Fire Dept Inc	Hayes Road	Durand	WN99
48010 Amery	Amery	Amery	
49010 Stevens Point Fire Department	Stevens Point Municipal Airport	Stevens Point	KSTE
50050 Park Falls Fire Rescue	Park Falls Municipal Airport	Park Falls	
50060 Phillips Vol. Fire Dept.	Price County Airport	Phillips	KPBH
51010 Racine Fire Department	John H Batten Field	Racine	RAC
51080 Rochester Volunteer Fire Company	Fox River Airport	Burlington	96C
51090 City of Burlington	Burlington Municipal Airport	Burlington	KBUU
51110 Wind Lake Volunteer Fire Company	Guntley Airport	Wind Lake	62C
51130 Union Grove Yorkville	Sylvania Airport	Sturtevant	
52010 Richland Center Fire Dept.	Richland Airport	Sextonville	93C
53100 Town of Turtle Fire Department	Beloit Airport	Beloit	44C
56070 Delton	Baraboo Dells Airport	Baraboo	DLL
57040 City of Hayward	Sawyer Co. Airport	Hayward	
57050 Town of Hayward Fire Dept.	Sawyer County Airport	Hayward	
58100 Shawano Area Fire Department	Shawano County Airport	Shawano	
59230 Town of Sheboygan Falls	Sheboygan County Memorial Airport	Sheboygan Falls	SBM
62100 Viroqua Fire Department	Viroqua Municipal Airport	Viroqua	
63030 Eagle River Joint Municipal Fire Commission	Eagle River Union Airport	Eagle River	EGV
63110 Arbor Vitae Fire Rescue	Lakeland Airport	Arbor Vitae	ARV
65030 Shell Lake Fire Association	Shell Lake Municipal Airport	Shell Lake	SSQ
66010 West Bend	West Bend Municipal Airport	West Bend	ETB
66030 Hartford	Hartford Municipal Airport	Hartford	HXF
67040 City of Brookfield	Capitol Airport	Brookfield	02C
67060 City of Waukesha	Waukesha County Airport	Waukesha	
69030 Plainfield Fire Department	Runway Leasing Inc Nr 1 (Reabes Spraying Service)	Plainfield	8WI2
69050 Wautoma Area Fire District169059	Wautoma Municipal Airport	Wautoma	Y50
70030 City of Oshkosh Fire Department	Wittman Regional	Oshkosh	KOSH
71010 Grand Rapids Fire Department	Alexander Field	Wisconsin Rapids	KISW
71130 Marshfield Fire and Rescue Department	Marshfield Municipal Airport	Marshfield	MFI