

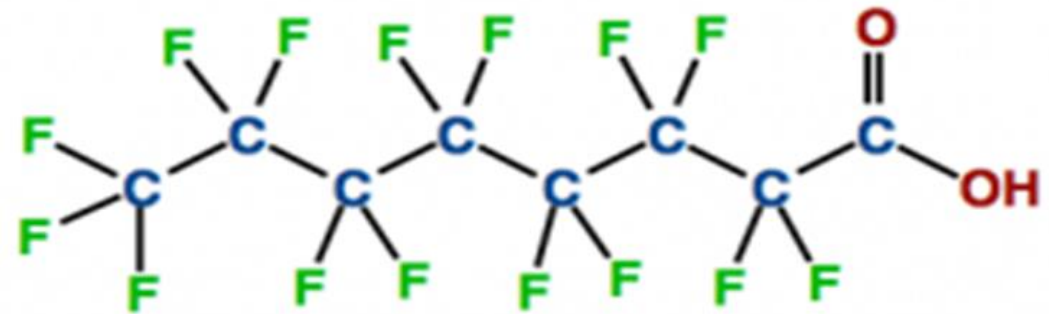
PFAS Impacts at Airports

MDOT OFFICE OF AERONAUTICS

MARCH 27, 2019

Per- and polyfluoroalkyl substances (PFAS)

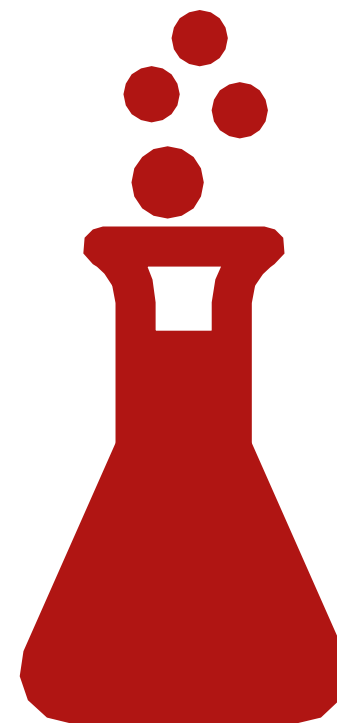
- ▶ **Strong carbon-fluorine bonds**
- ▶ Surfactants
- ▶ Hydrophobic (repels water) and oleophobic (repels oil, fat, grease)
- ▶ Began developing in 1940's
- ▶ 5,000+ compounds today



PFOA - perfluorooctanoic acid

Common PFAS Abbreviations

- ▶ Perfluorooctanoic acid (PFOA)
- ▶ Perfluorooctane sulfonate (PFOS)
- ▶ Perfluorobutane sulfonic acid (PFBS)
- ▶ Perfluorohexane sulfonic acid (PFHxS)
- ▶ Perfluorononanoic acid (PFNA)
- ▶ GenX
- ▶ ...



PFAS Uses



Aerospace



Apparel



Building and
Construction



Chemicals and
Pharmaceuticals



Electronics



Oil & Gas



Energy



Healthcare and
Hospitals



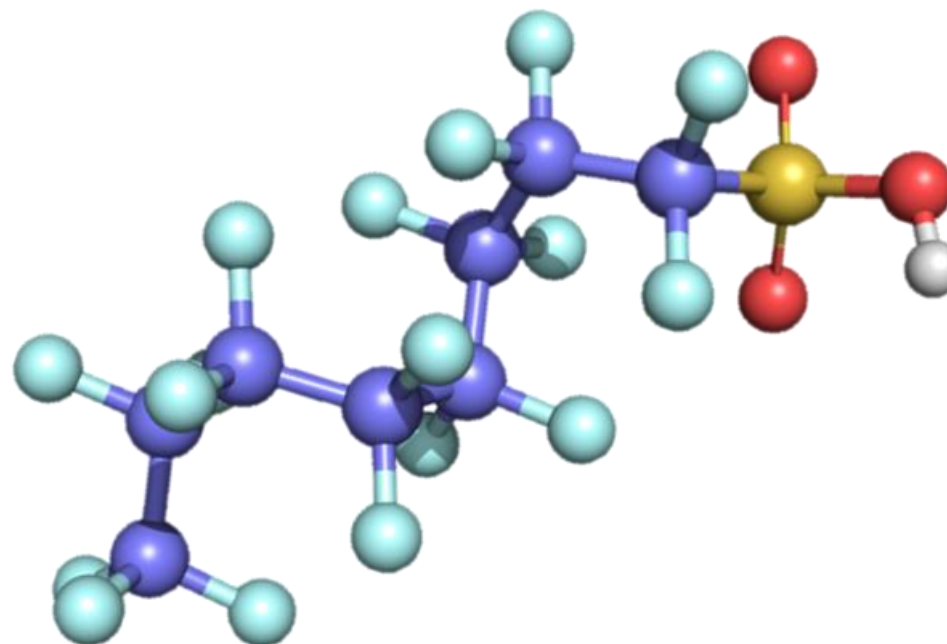
Aqueous Film
Forming Foam

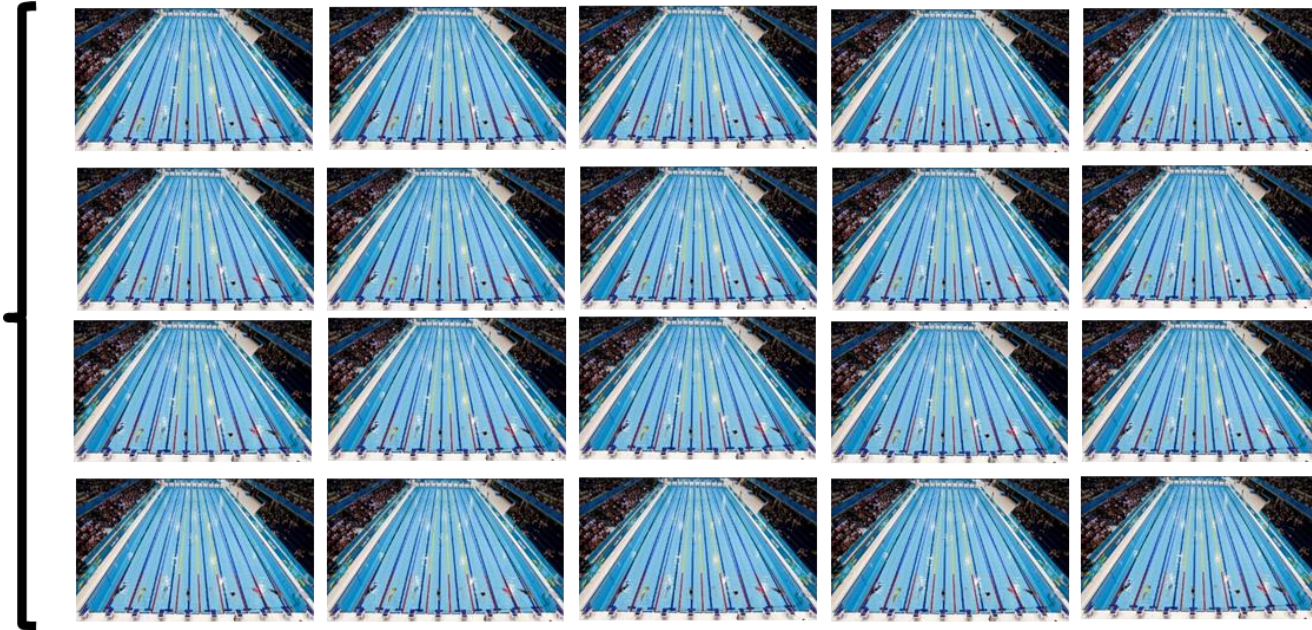


Semiconductors

Why the concern?

- ▶ Pervasive
- ▶ Persistent
- ▶ Bioaccumulative
- ▶ Associated with adverse health effects
- ▶ Scarcity of information in scientific literature
- ▶ Incomplete regulatory structure





Part Per Trillion

1 DROP IN
20 OLYMPIC SWIMMING
POOLS

Michigan PFAS Action Response Team (MPART)

- ▶ Executive Order 2019-3
- ▶ Unique multi-agency approach
- ▶ Leads coordination and cooperation among all levels of government
- ▶ Directs implementation of state's action strategy

Airports & PFAS



Airport Types

- Commercial / Primary / Small, Medium, Large Hub / Part 139 / “Big”
- General Aviation / GA / Non-Primary / “Little”
- Almost all are publicly owned



Aircraft Rescue Firefighting – ARFF

- Specialized Firefighting – Personnel, Equipment, Tools
- Required at Part 139 “Big” Airports based on different indexes
- Different indexes have different requirements

- ARFF \neq AFFF

Training vs Testing

- ▶ Not the same thing
- ▶ Both are required under Federal Regulation.
- ▶ Training for People
- ▶ Testing for Equipment



AFFF Testing



AFFF Testing

Conductivity

Refractometry

Truck

Pumps

Ground????



007525



Now What?

- ▶ MPART/MDOT Letter to FAA in 2018 requesting modification to certification regulations.
- ▶ January 17, 2019 – FAA Responded
- ▶ AFFF testing is still required

However....



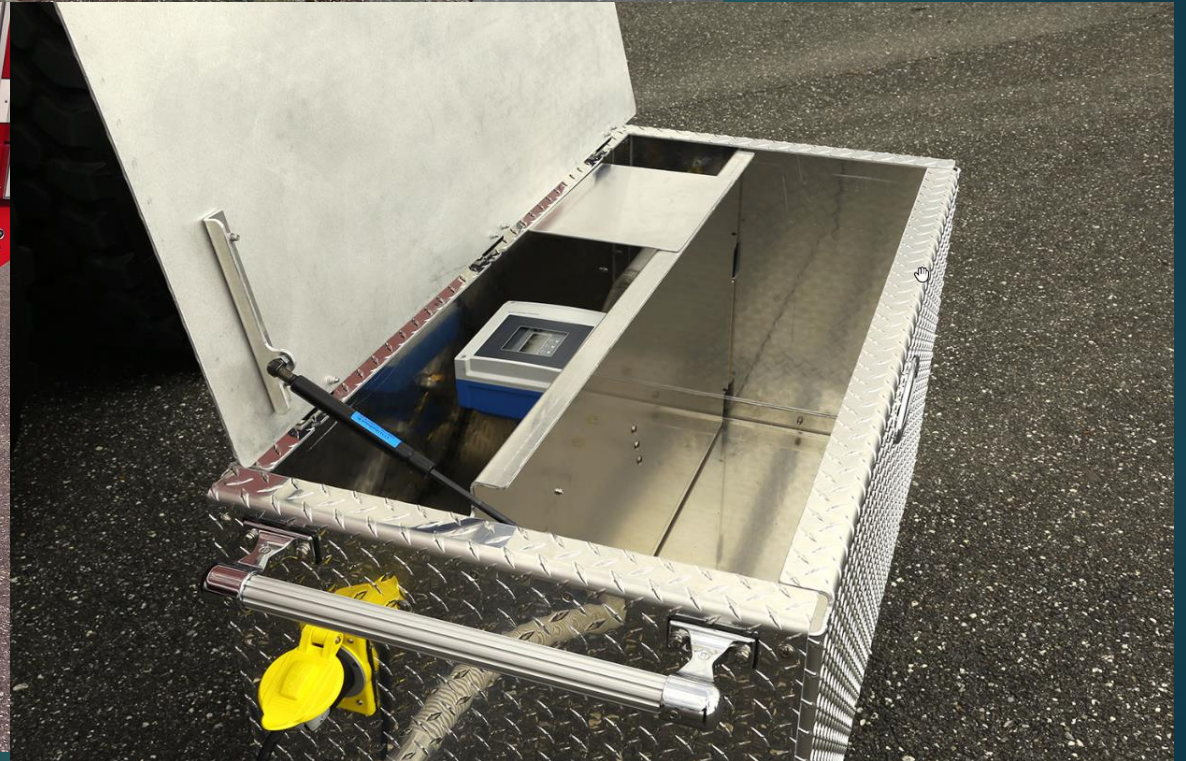
Federal Aviation Administration National Part 139 CertAlert

Cautionary**Non-Directive**Advisory**Cautionary**Non-Directive**Advisory**Cautionary**Non-Directive**

Date: 1/17/2019 **No. 19-01**
To: All Certificated Part 139 Airports and Aircraft Rescue and Firefighting (ARFF) Departments
Subject: Aqueous Film Forming Foam (AFFF) Testing at Certificated Part 139 Airports
Point of Contact: Marc Tonnacliff, AAS-300, 202-267-8732
Email: marc.tonnacliff@faa.gov

MDOT / MDEQ/ MPART Partnership

- \$400,000 to
acquire system at
every primary
airport





Questions on anything “airports?”

Bryan Budds / buddsb@Michigan.gov / 517-335-9841

2019 Air Service Program - Airport Awareness and Capital Improvement & Equipment Categories

Associated City	ID	Funding Rate	"Airport Awareness" Category			"Capital Improvement & Equipment" Category			Project Description	Surplus Air Service Funding Requests Programmed			Project Description
			State Funds	Local Funds	Total	State Funds	Local Funds	Total		State Funds	Local Funds	Total	
Alpena	APN	90/10	10,000	1,111	11,111	-	-	-		-	-	-	
Escanaba	ESC	90/10	4,600	511	5,111	5,400	600	6,000	ARFF Vehicle Foam System	-	-	-	
Flint	FNT	50/50	-	-	-	2,000	2,000	4,000	Water Bottle Refilling Station, Power Outlets for Passenger Seating	6,800	6,800	13,600	ARFF Vehicle Foam System
Grand Rapids	GRR	50/50	10,000	10,000	20,000	-	-	-		-	-	-	
Hancock	CMX	90/10	-	-	-	10,000	1,111	11,111	Terminal Modifications (continued)	5,400	600	6,000	ARFF Vehicle Foam System
Iron Mountain	IMT	90/10	5,000	556	5,556	5,000	556	5,556	ARFF Vehicle Foam System	10,000	1,111	11,111	South Ramp Utility Upgrade for Future Hangars (Gas, Water, Sewer)
Ironwood	IWD	90/10	10,000	1,111	11,111	-	-	-		-	-	-	
Kalamazoo	AZO	50/50	6,000	6,000	12,000	4,000	4,000	8,000	ARFF Vehicle Foam System	-	-	-	
Lansing	LAN	50/50	-	-	-	10,000	10,000	20,000	Closed Circuit TV System Revisions	-	-	-	
Manistee	MBL	90/10	10,000	1,111	11,111	-	-	-		7,650	850	8,500	Zero-Turn Commercial Riding Mower
Marquette	SAW	90/10	6,000	667	6,667	4,000	444	4,444	Purchase Security Cameras (5)	-	-	-	
Muskegon	MKG	90/10	10,000	1,111	11,111	-	-	-		-	-	-	
Pellston	PLN	90/10	-	-	-	5,400	600	6,000	ARFF Vehicle Foam System	-	-	-	
Saginaw	MBS	50/50	-	-	-	4,200	4,200	8,400	ARFF Vehicle Foam System	5,000	5,000	10,000	4x4 Utility Vehicle (Gator-type)
Sault Ste Marie	CIU	90/10	4,400	489	4,889	4,000	444	4,444	Back-Up Power Generator for Hangar	-	-	-	
Traverse City	TVC	50/50	-	-	-	10,000	10,000	20,000	AAAE's Interactive Airport Security Training Program	4,200	4,200	8,400	ARFF Vehicle Foam System
ARFF Vehicle Foam System		100	-	-	-	-	-	-		3,020	-	3,020	Additional State Funding to Cover ARFF Vehicle Foam System Program Shortage
Totals			76,000	22,667	98,667	64,000	33,955	97,955		42,070	18,561	60,631	

Total State Funds in 2019 Air Service Program	214,105
Total State Funds Programmed in ARFF Training Category	32,000
Total State Funds Programmed in AA and CI&E Categories	140,000
Remaining Balance	42,105 Balance Available for Surplus Funding Requests
Total Surplus Funding Requests Programmed	42,070
Remaining Balance in 2019 Air Service Program	\$ 35

Michigan DOT Aeronautics

ARFF vehicle foam system

Airport	Cart Pricing	Vehicle Mod Kits	Price Per Airport
Battle Creek	\$19,550	\$2,556	\$22,106
Detroit Metro	\$19,550	\$2,556	\$22,106
Escanaba	\$19,550	\$2,556	\$22,106
Flint	\$19,550	\$2,556	\$22,106
Grand Rapids	\$19,550	\$2,556	\$22,106
Hancock	\$19,550	\$5,112	\$24,662
Iron Mountain/Kingsford	\$19,550	\$2,556	\$22,106
Ironwood	\$19,550	\$2,556	\$22,106
Kalamazoo	\$19,550	\$2,556	\$22,106
Lansing	\$19,550	\$2,556	\$22,106
Manistee	\$19,550	\$2,556	\$22,106
Marquette	\$19,550	\$2,556	\$22,106
Muskegon	\$19,550	\$5,112	\$24,662
Pellston	\$19,550	\$2,556	\$22,106
Pontiac	\$19,550	\$2,556	\$22,106
Saginaw	\$19,550	\$2,556	\$22,106
Sault Ste Marie	\$19,550	\$2,556	\$22,106
Traverse City	\$19,550	\$2,556	\$22,106
Total	\$351,900	\$51,120	\$403,020

* \$3,020 overage will be covered by the Air Service Program