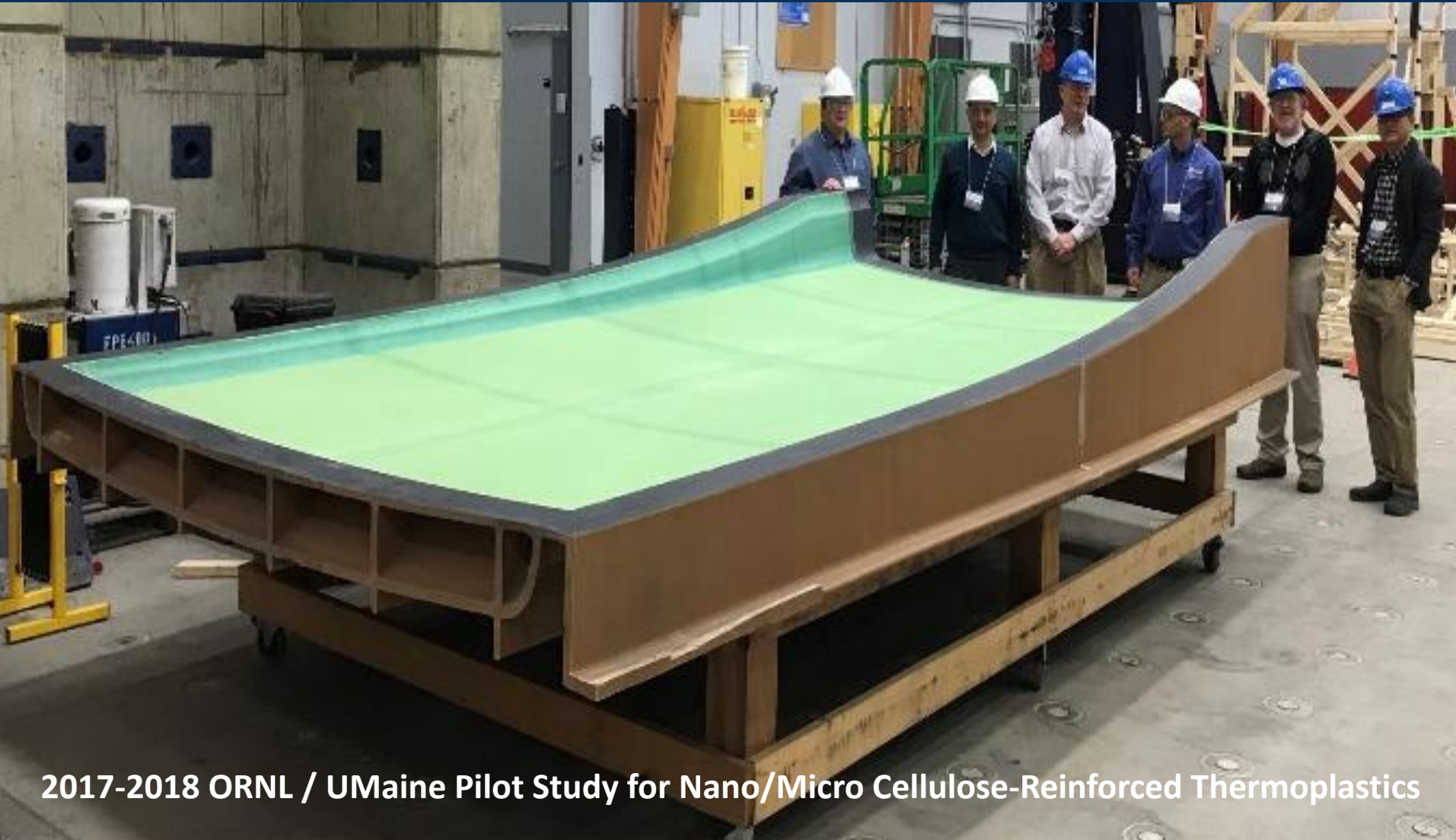


# **CNF for Fire- Fighting Applications**

**Cellulose Nanomaterials Researchers  
Forum  
August 24<sup>th</sup> 2023**

**James Anderson**

# Inspiration



2017-2018 ORNL / UMaine Pilot Study for Nano/Micro Cellulose-Reinforced Thermoplastics

Municipal Firefighting



Wildlands Firefighting



Fire Extinguishers



**Drive**

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# The danger is real



U.S. Department of Defense

Officials Describe DOD's Efforts to Mitigate Impacts of PFAS Chemicals

Dec. 17, 2021 | By David Vergun, DOD News

Defense Department officials addressed cleanup efforts and measures being taken to address the recommendations of the DOD Inspector General report on per- and polyfluoroalkyl substances (PFAS) — man-made chemicals used in many industrial and consumer products.



GUARDIAN  
LEGAL NETWORK

Contact Us

## Firefighting Foam Lawsuit

### Pursue Justice Today

Firefighting foam used by civilian and volunteer firefighters alike has been **linked to multiple cancers**. Firefighters may have been exposed to a **dangerous carcinogen in the foam**. Cancers linked to this firefighting foam include:

- Prostate Cancer
- Kidney Cancer
- Bladder Cancer
- [And More](#)

If you developed an injury after being exposed to firefighting foam, complete our no-cost form today and see if you qualify for legal compensation.



U.S. Fire Administration



**The Hidden Dangers in Firefighting Foam**

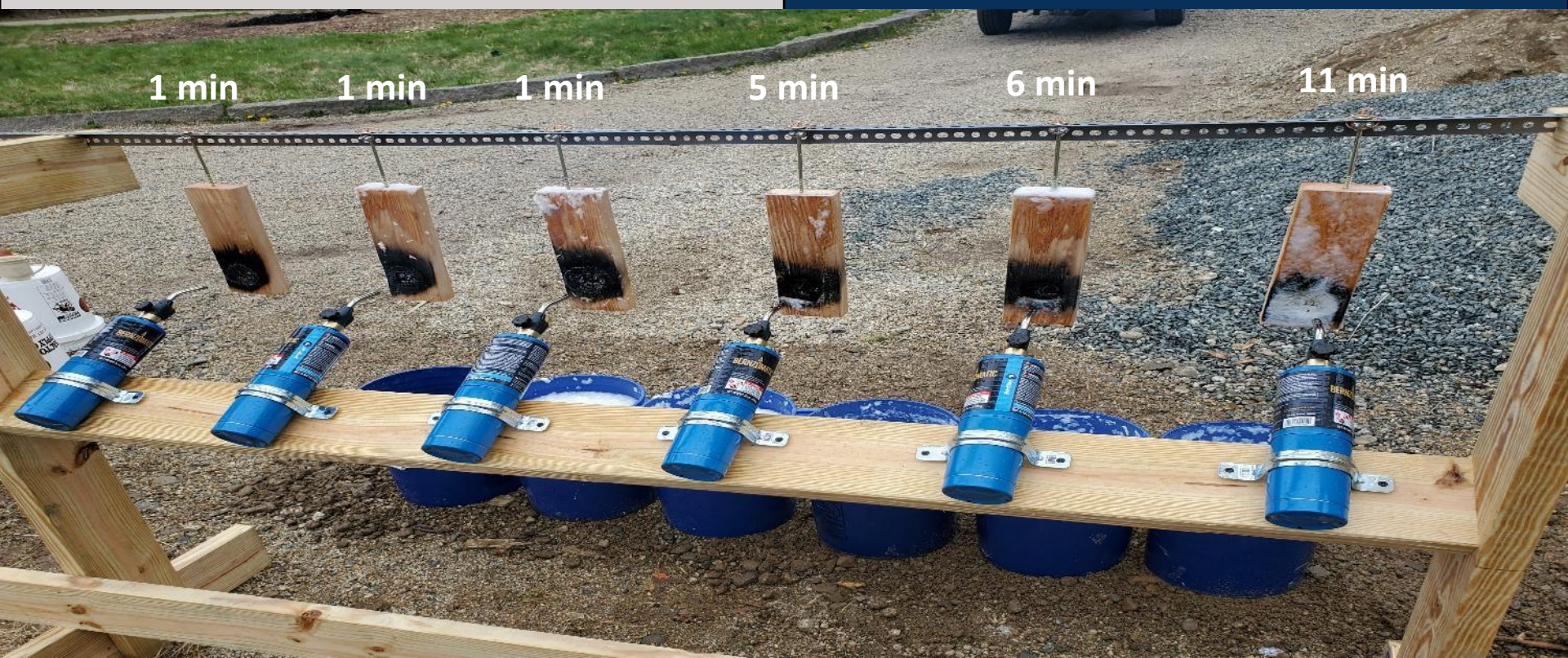
Posted: Feb. 11, 2020

Learn how to protect yourself against exposure to dangerous chemical compounds found in firefighting aqueous film forming foam (AFFF) solutions.

# Key Benefits




- 100% Bio-derived/Compostable
- Water-based + 1 Natural Ingredient
- Extinguishes Faster
- Prevents Reignition





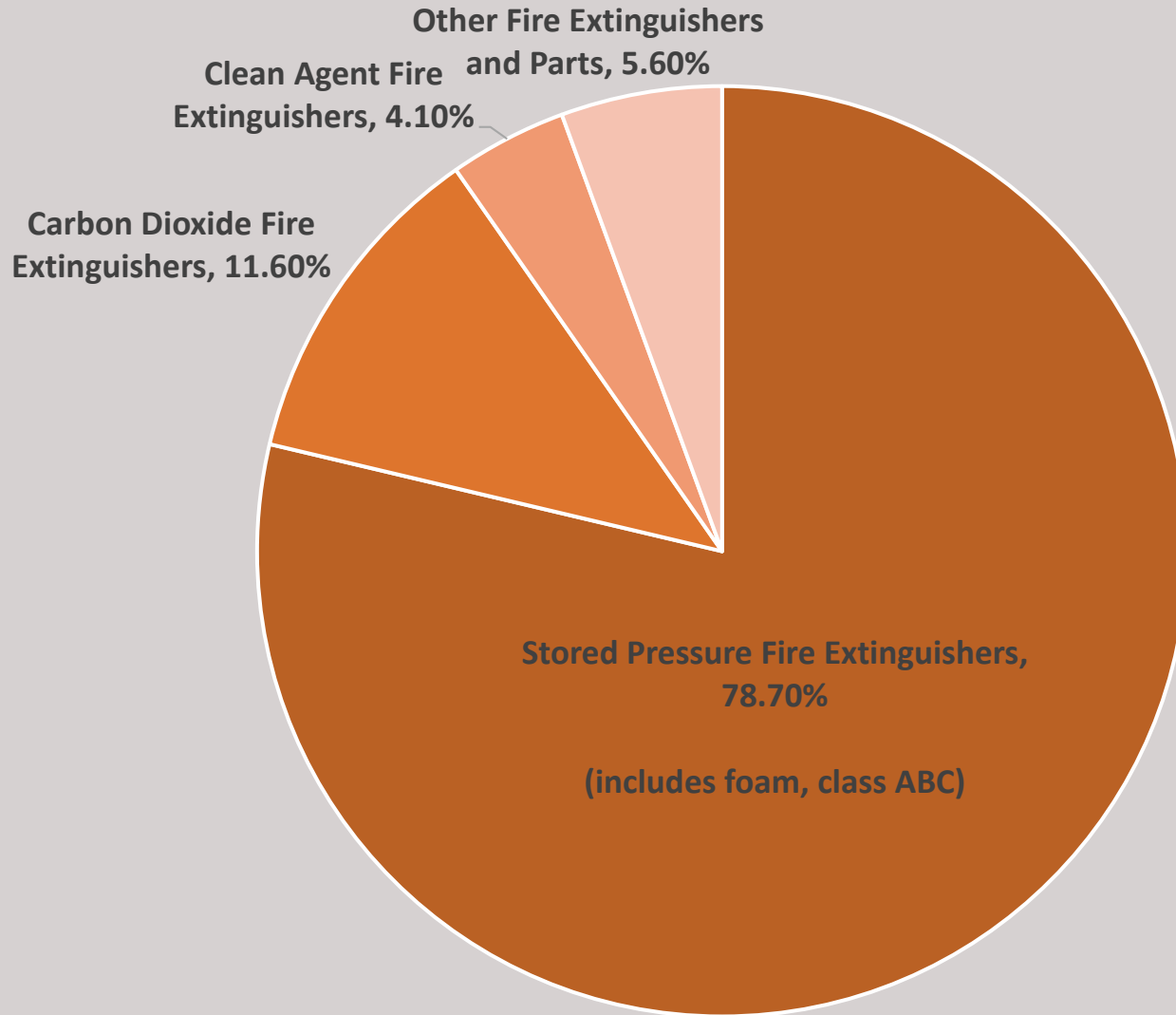
# Market Size

Fire Extinguisher Manufacturing in  
USA



**\$1.5 BILLION**

# The Numbers





# Timeline

**Q1 2023 : MIRTA Program Funding and Participation**

**Q2 2023 : NAFED Conference  
Provisional Patent Filed**

**Q3 2023 : Additional Testing,  
Engagement with Manufacturers**

**Q4 2023 : License agreement(s)?**

# Team Effort

**THE UNIVERSITY OF MAINE**

## 2023-24 Campus Map

**P** VISITOR permits authorize parking in any black lot or visitor space.

- RED** (Residential) permits authorize parking in residential lots.
- BLACK** (Visitor) permits authorize parking in visitor spaces.
- BLUE** (Faculty/Staff) permits authorize parking in faculty/staff lots.
- GREEN** (Innovation) permits authorize use of innovation spaces.
- FUTURE BLACK** (Parking) - Future Black Parking.

Permits **MUST** be displayed on interior mirror.  
Signs governing lots take precedence over all maps and permits.

- ?** Information
- +** Ambulance
- P** Public Bus Stop
- +** Emergency Phone
- ♿** Gender Inclusive Restroom
- ⚡** Public Electric Vehicle Charging Station
- 🚲** Bike Repair Station

**Visitor Parking**  
Visitors need permits. Visitor Permits allow parking in designated visitor spaces and black lots only. They are available for free at the UMaine Office of Parking and Transportation Department.

Office: 207.581.4047

Scan the QR code to get information on **UMaine Sidekick** and always have support in your pocket for the daily services you need.

**University Park Housing**  
Departments for students, faculty and staff located one mile from campus.

**Welcome to the University of Maine, Orono**  
Please respect that UMaine is a walking campus  
Pedestrians have right of way at all times

**ORONO FIRE DEPARTMENT**  
**ORONO POLICE**

**Stewart Harvey**  
**Rob St Louis**

**Winter Parking Ban**  
Blue and Black lots are closed to parking from 6 a.m. to 6 p.m.

**Distance** 1/8 MILE  
Walking time 2-3 minutes

UMaine 070603  
Cartography by Purple Leaf Maps  
Please suggest edits to [um.purpleleaf@maine.edu](mailto:um.purpleleaf@maine.edu)

# Thank you

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## Any Questions?