

## Western Regions SERC-TERC Virtual Conference 2021

### Morning Session [9:00 – 11:30 am Pacific]:

9:00 – 9:10 am Pacific:	Welcome and Overview
9:10 – 9:20 am Pacific:	NASTTPO Updates from Leadership
9:20 – 10: 55 am Pacific:	SERC Report Outs (5-7 min from each State)
10:55 – 11:00 am Pacific:	Break
11:00 – 11:30 am Pacific:	Federal Agency Report Outs (PHMSA, DHS, OSHA)

### Afternoon Session [1:00 – 3:30 pm Pacific]

1:00 – 1:20 pm Pacific:	NOAA CAMEO Updates
1:20 – 2:00 pm Pacific:	EPA Updates
2:00 – 2:10 pm Pacific:	Break
2:10 – 3:20 pm Pacific:	PFAS Topical Panel Discussion
3:20 – 3:30 pm Pacific:	Afternoon Wrap Up

## Western Regions SERC/TERC Virtual Conference

- Please mute your line and turn video off when not speaking
- Disconnect from VPN for better connectivity
- Chat Box for questions, raise hand
- If calling in from a phone, please put name and contact in chat box
- Meeting notes and presentations will be provided
- 2-minute warning

## 2021 WESTERN SERC: NASTTPO UPDATE

- Visit us at [www.nasttpo.com](http://www.nasttpo.com); Register for upcoming Webinars
- Monthly “Webinars” hosted on the 3<sup>rd</sup> Tuesday of each month at noon Eastern time
  - February 16 “CAMEO Data Manager” presentation from NOAA staff
  - March 16 “What My LEPC Did During the Pandemic”; panel of LEPC Chairs
  - April 20 NASTTPO Membership Meeting and Officer Elections
- Continue to monitor federal legislative & regulatory policies concerning EPCRA, SERCs, LEPCs, & other topics related to emergency preparedness and response
- No 2021 Spring Conference; 2022 Conference Will Be Held in Cincinnati
- New website [www.cameotraining.com](http://www.cameotraining.com); Video Tutorials, CAMEO Refresher Exercises, Resource Materials
- Virtual & Online CAMEO Training available; email [tom.bergman@sbcglobal.net](mailto:tom.bergman@sbcglobal.net)

## SERC Report Out

Western Regions SERC-TERC Conference

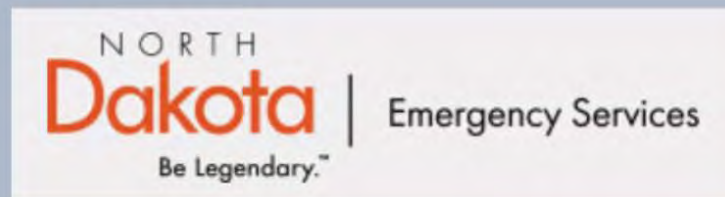


# Colorado SERC



Greg

# North Dakota SERC



Greg

# South Dakota Emergency Response Commission Update

Dustin Willett, SERC Chair

Kelsey Newling, SD DENR

## COVID-19 Impact on SERC/LEPC's

- 3 out of 4 quarterly SERC meetings are already conducted via video teleconference. In 2020 all 4 meetings were conducted virtually.
  - Majority of correspondence via e-mail
  - In-person meetings were kept small and observed infection control practices
- LEPC impacts varied – many held in-person 1<sup>st</sup> qtr meetings, however the remainder of the year was either virtual or not at all.
  - Due to state statute, lack of quarterly LEPC meetings cast the eligibility of some LEPC's to receive annual funding through the SERC into doubt.
  - Governors first executive order in 2021 allowed for an exemption to the statute in question to facilitate continued LEPC funding.



## COVID-19 Impact on SERC/LEPC's (Continued)

- Workshops were not conducted in 2020, however SD DENR and the SERC are hoping to host workshops during the summer of 2021 (currently planning for in-person events).
  - Current discussions between DENR, SERC, EPA, and other stakeholders to determine the most attractive and/or needed content
- The LEPC's that were specifically contacted and queried continued to maintain emergency plans throughout 2020. Very few exercises were conducted.

## Other Items of Note

- DENR led an effort to collect and dispose of PFAS-containing Class B Fire-Fighting Foam.
  - Operation was conducted in September
  - A total of 3,875 gallons of Class B Foam from 34 fire departments and airports across SD was collected, overpacked, and shipped by a contractor to an incineration facility in Ohio.
  - A list is being maintained for a second collection effort contingent on identifying a funding source
- The on-again/off-again status of the Keystone XL pipeline continues to impact multiple communities and counties in SD. Preparation continue at varying paces while awaiting a final determination.

# Montana SERC



Greg

Michael Radke

# Utah SERC



Greg

Fred Mehr and Robin Osterhoudt & Art Deyo

# Wyoming SERC



Rick Lopez

# Alaska SERC



Alaska Department of Military and Veterans Affairs  
**DIVISION OF HOMELAND SECURITY &  
EMERGENCY MANAGEMENT**

y, Greg

Kevin Reeve & Kathleen (Kathy) Shea

# Idaho SERC



y, Greg

Not presenting today



## OREGON

STATE EMERGENCY RESPONSE  
COMMISSION (SERC)

2021 UPDATE

Bazley, Greg

+87



RL

KR

KS

GB

Bazley, Greg

EW

Williams, Erin



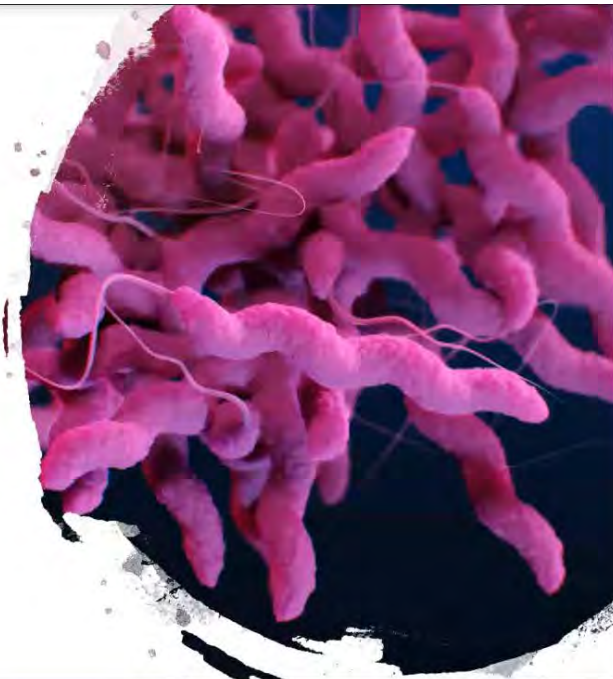
Heffner, Michael D



## State Emergency Response Commission

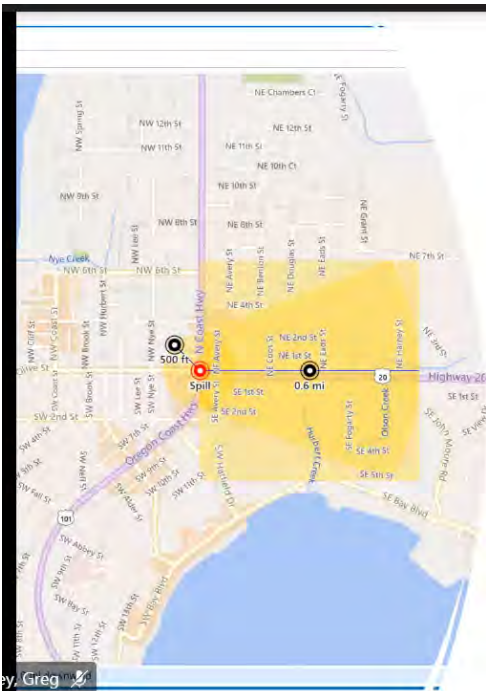
- Despite COVID-19, Oregon's SERC Executive Committee has been meeting virtually and staying on the regular quarterly schedule
- Meeting attendance has increased significantly – perhaps influenced by the opportunity to attend without the commitment of travel
- Current focus of the SERC Executive Committee is ensuring accessibility of LEPC plans to all people – regardless of disabilities or English proficiency – and ensure culturally responsive strategies

Greg



## Local Emergency Planning Committees

- In Oregon, LEPC leadership and members are overwhelmed with not only COVID-19 planning and response, but also wildfire response and recovery, and civil unrest
- Many LEPC's have implemented virtual meetings and are updating emergency plans, leveraging HMEP grant funding opportunities
- Lincoln Co. – a coastal community that thrives on tourism – recently conducted a virtual TTX involving the release of anhydrous ammonia from a highway tank truck; the virtual platform was well-received and is anticipated to be used in the post-COVID era



Greg

## Oregon's Community Right-to-Know Program

- Emergency planners continue to upload emergency response plans into **CHS Manager** – Oregon's online CR2K database – creating a centralized, web-accessible repository of plans
- Public health restrictions have prevented auditors from conducting in-person inspections; this has presented an opportunity for staff to conduct in-depth audits of records
- During Oregon's devastating, wind-driven Labor Day fires, the CR2K database played a key role with informing decision-making and resource allocation regarding potential chemical releases in fire-impacted communities

zley, Greg



Photo taken in 2016, pre-COVID-19



## Oregon Needs

- Emerging need to re-build Oregon's roster of qualified HazMat Technicians across the 13 State teams; COVID-19 has created a backlog of advanced, in-person training needs
- Continued mission to build LEPC's in counties that haven't formalized a plan – many of them very rural
- Planners and responders have expressed webinar fatigue and haven't requested additional online training

ey, Greg



## THANK YOU!

### Questions?

Michael Heffner

Assistant Chief Deputy State Fire Marshal

Oregon Office of State Fire Marshal

Cell: (503) 930-2934

[michael.heffner@osp.oregon.gov](mailto:michael.heffner@osp.oregon.gov)

<https://www.oregon.gov/osp/programs/sf/Pages/SERC.aspx>



## Western States SERC Meeting

Washington State Update



he, Susan M. (MIL) 

Susan Forsythe

- How has the SERC adapted to operating during COVID-19? Are meetings still occurring? Has the frequency, timing and/or content of the meetings changed?

Washington state did end up canceling a quarterly SERC Meeting but now has started to meet again in regular virtual meetings. The frequency and timing has not changed but the content has changed. Virtual SERC Meetings have a higher attendance. After COVID, we plan on keeping the virtual component.

- Are the LEPCs still meeting? Are LEPC leadership and members overwhelmed with COVID19 planning and response? Are they conducting virtual workshops, training and/or exercises? Are emergency plans still being updated?

LEPCs have started to meet again. However, planning, training and exercise activities have dropped. LEPC Community Coordinators have had to spend the majority of their time on the COVID-19 Response.

- What are some of your needs for the upcoming year? Would a compilation of virtual training and virtual exercises be useful? Would a regular webinar series be of interest or are you burned out with virtual/online content?

Yes, virtual training and exercises would be helpful, we are concerned that virtual classes are providing the same engagement

Washington State is planning a combined LEPC-Tribal Conference and Hazardous Material Training..

#### Excerpt from the December 2020 Washington State LEPC Survey


##### 8. How often does your LEPC meet?

Answered: 25 Skipped: 0



e, Susan M. (MIL)

## Combined LEPC-Tribal and Hazardous Material Training Virtual Conferences



**2021  
LEPC-Tribal  
Conference**

**Annual Washington State  
Virtual LEPC-Tribal Conference**

**Dates:**  
**Tuesdays and Thursdays April 6<sup>th</sup> to May 6<sup>th</sup>**

**Primary Audience:**  
LEPC Members, Community Coordinators and Tribes

**Tentative Presentations:**

- Tier II Report Management HazMat Planning Team
- LEPC EPCRA Requirements Workshop
- HazMat Release Incidents Overview
- Custer Train Derailment
- HazMat Issues Related to the Malden, WA Fire
- TERCs working with LEPCs and SERC
- AWIA Update Presentation
- Northwest Area Plan Changes
- First Responders and COVID-19 Federal Updates



**Hazardous Materials Virtual  
Conference Series**



**Dates:**  
**Tuesdays and Thursdays April 6<sup>th</sup> to May 6<sup>th</sup>**

**Primary Audience:**  
First Responders

**Tentative Presentations:**

- Hazmat and Confined Space Operations
- Hazmat IQ Above/Below the Line, 4-hour session
- Hazmat and PPE
- Protecting Tribal Cultural Assets during a Hazmat Incident
- Study – Whatcom County EMD
- Vehicle Borne Improvised Explosive Devices
- FBI Seattle HMRT



**Washington State  
2021  
HazMat Conference**

he, Susan M. (MIL) tion Requirements



# Arizona SERC



Greg

Chris Nutter

A screenshot of a Microsoft Teams meeting interface. The background is a forest scene. The interface shows a calendar view for "LEPC Meeting 2021". The calendar is organized into four columns representing the quarters: First Quarter, Second Quarter, Third Quarter, and Fourth Quarter. Each column lists various Local Emergency Planning Committees (LEPCs) such as Apache, Cochise, Coconino, Gila, Graham, Greenlee, La Paz, Maricopa, Mohave, Navajo, Pinal, Santa Cruz, Yavapai, and Yuma. Some entries are marked as "Virtual" or "Meeting Scheduled". The interface includes a top navigation bar with tabs for "Apps", "Teams", and "Files". A bottom status bar shows the user's name "utter (Guest)" and the time "11:27 AM 1/27/2021".

# California SERC



azley, Greg

Fred Mehr

# Hawaii SERC



Greg

Sharon Leonida

# Nevada SERC



Richard Brenner and Brandi Salisbury

Patrick Wicklund question –

Tim Gablehouse

## Pipeline and Hazardous Materials Safety Administration (PHMSA)





# PHMSA Overview

- PHMSA is a United States Department of Transportation agency that is responsible for developing and enforcing regulations for the safe, reliable, and environmentally sound operation of the U.S.'s 2.7 million mile pipeline transportation and the oversight of more than 40,000 shippers.
- PHMSA works in partnership with State and local regulators, first responders, and industry to ensure dangerous products move safely and without incident.
- PHMSA also prepares the public and first responders to reduce consequences if an incident occurs.



To Protect People and the Environment From the Risks of  
Hazardous Materials Transportation



## Hazardous Materials Emergency Preparedness (HMEP) Grant

- The HMEP grant program assists States, Territories, and Tribes to develop, improve, and carry out emergency plans and hazmat transportation training for emergency responders.
- States and Territories receive annual allocations for the HMEP grant. Tribes compete for funding annually. For project funding, please contact your designated [state agency](#).
- Designated HMEP State Agencies are required to submit annual applications for SERC/TERC review prior to submitting the application to PHMSA.



To Protect People and the Environment From the Risks of  
Hazardous Materials Transportation





# SERCs/TERCs Information Sharing

- On February 28, 2019, PHMSA published a final rule titled “Hazardous Materials: Oil Spill Response Plans and Information Sharing for High-Hazard Flammable Trains. See [HM-251B; 84 FR 6910](#)
- The final rule requires railroads to share information about high-hazard flammable train (HHFT) operations with each SERC, TERC, or other appropriate State-delegated agency in each State through which it operates to improve community preparedness.
- In 2021, PHMSA will begin to collect information from states, territories and tribes to confirm the distribution of railroad-provided hazardous materials shipping information to local emergency planning entities.



To Protect People and the Environment From the Risks of  
Hazardous Materials Transportation



Shakira Mack

## Current PHMSA Hazmat Grant Funding Opportunities

- [Hazardous Material Emergency Preparedness \(HMEP\) Grant](#) Opportunity Number (Tribal) 693JK321NF0004
- [Hazardous Materials Instructor Training \(HMIT\) Grant](#) Opportunity Number 693JK321NF0010
- [Supplemental Public Sector Training \(SPST\) Grant](#) Opportunity Number 693JK321NF0011
- [Assistance for Local Emergency Response Training \(ALERT\) Grant](#) Opportunity Number 693JK321NF0003
- [Community Safety Grant](#) Opportunity Number 693JK321NF0009

***All funding opportunities will close on March 15, 2021***



To Protect People and the Environment From the Risks of  
Hazardous Materials Transportation



# Helpful Links

- **HAZMAT Safety Assistance Team (HMSAT)**: Responsible for face-to-face outreach and field compliance assistance on the Hazardous Materials Regulations (HMR).
- Hazardous Materials Grant Program Information & Related Links: <https://www.phmsa.dot.gov/grants/hazmat/hazardous-materials-grants-program>
- HMEP Expenditures Guide: <https://www.phmsa.dot.gov/grants/hazmat/hmep-expenditures-guideguide-pdf>
- PHMSA HAZMAT TRAINING. <https://dotnfa.vividlms.com/> New on-line training program introduces users to the HMR, and may be used to meet the requirements for general awareness training, or as the basis for developing function-specific training programs.



Lisa Reichenbaher

Department of Homeland (no slides) by Marcie Stone Mark Glasser in Region 10 and Jim Fagan in Region 8

Paul Leary – OSHA Region 9







**CAMEO Suite Update**

**2021 Western States SERC/TERC Meeting  
January 27, 2021**

**Kristen Faiferlick  
NOAA's Office of Response and Restoration  
(contracted by Genwest Systems, Inc.)**

teams.microsoft.com is sharing your screen. [Stop sharing](#) [Hide](#)

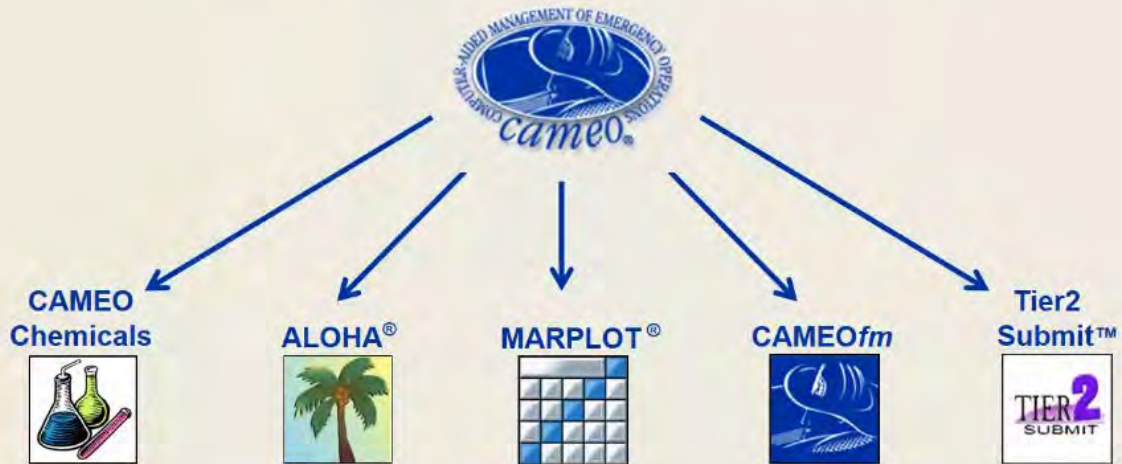
(Guest)

This slide features a photograph of several large green and blue metal drums, likely containing hazardous materials, stacked in a warehouse or storage area. The drums have various labels and markings. The background is slightly blurred, showing more drums and some equipment.

Kristen Faiferlick

# CAMEO® Software Suite

Developed jointly by NOAA and EPA for more than 30 years



**250,000 downloads** and **1.2+ million visitors** to CAMEO Chemicals site each year

Keepin

teams.microsoft.com is sharing your screen.

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suite



## Release Schedule

- **February 2021:**
  - Small updates to Tier2 Submit and CAMEO Data Manager
- **Summer 2021:**
  - Updates to CAMEO Chemicals (2020 ERG data and other data updates like LOCs, LOL, Hazmat Table, etc.)
- **Beyond:**
  - Update ALOHA

teams.microsoft.com is sharing your screen.

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) (Guest)

3

Update ALOHA and Marplot

## Tier2 Submit State Customizations

If your state uses Tier2 Submit:

- What are the most common questions you hear from your reporters?
- Is there anything you'd like to clarify about your state's process or requirements?

We can add this text to the State Fields section of Tier2 Submit!

For some examples, set the state field to Colorado, Oklahoma, Ohio, New Mexico, Virginia, or Hawaii.

## Tier2 Submit State Customizations

You may be interested in collecting:

- State ID or facility ID numbers
- Which LEPC the facility reports to
- If this is a first-time submission or an annual submission
- Chemical carrier/transportation information
- Info you need to calculate submission fees (# of facilities, # of chemicals, etc. We can often auto-populate this for you.)
- Official-use-only fields, and more



# CAMEO Data Manager Demo

← → 🏠 👤 🧪 ⚠️ 🏠 🚚 🗺️ Import Export Help ⚙️

Location Phones ID and Regulations Contacts Chemicals State Fields Incidents Attachments Certification Notes Checklist

Report Year  Site  of  ☐ Shipper ⓘ

Facility Name  ⓘ

< Record 1 of 54 > Show responder summary ⓘ

**Location where chemicals are present**

**Street Address (where hazardous materials are present)**

Street  ⓘ

Cross Street

City

State  Zip

County

Fire District

Country

Department

**Mailing Address**

Street

City

State  Zip  ⓘ

Country

Email  ⓘ


**Latitude and Longitude**

Latitude  ⓘ Longitude  ⓘ

[Set latitude/longitude from address](#) ☒ Linked to MARPLOT

[Show nearby records](#) Showing records within 1 mi [Clear nearby records](#)

7 facilities 1 incident 3 special locations 1 resource [Show labels](#)



○ Street view ● Satellite view [Re-center map](#) [Map instructions](#) ▶

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6

CAMEO Data Manager 4.0

← → 🏠 👤 🧪 ⚠️ 🏠 🚚 🗺️ Import Export Help ⚙️

Search Listing all Facilities

54 Facilities < Page 1 of 2 > ...

<input type="checkbox"/>	Rep. Year	Facility Name	City	County	Address	State	Zip	🗺️
<input type="checkbox"/>	2020	Allied Business Group	Seattle	King	123 Main St	WA	98104	
<input type="checkbox"/>	2019	Allied Business Group	Seattle	King	123 Main St	WA	98104	🗺️
<input type="checkbox"/>	2019	Bright Lights Electric	Seattle	King	582 10th Ave	WA	98104	
<input type="checkbox"/>	2020	Bright Lights Electric	Seattle	King	582 10th Ave	WA	98104	
<input type="checkbox"/>	2019	Deep River Reservoir	Deep River	Wahkiakum	446 Douglas Fir Ave	WA	98638	
<input type="checkbox"/>	2019	Discovery Cove Aviation Services	Greenville	King	247 Dave Lewis Drive	WA	98104	
<input type="checkbox"/>	2020	Discovery Cove Aviation Services	Greenville	King	247 Dave Lewis Drive	WA	98104	
<input type="checkbox"/>	2019	Emerald City Hospitality	Greenville	King	145 Pacific Crest Drive E	WA	98113	
<input type="checkbox"/>	2020	Emerald City Hospitality	Greenville	King	145 Pacific Crest Drive E	WA	98113	
<input type="checkbox"/>	2020	Everett Logistics	Everett	Snohomish	28 Seaview Way S	WA	98201	
<input type="checkbox"/>	2019	Evergreen College Laboratories	Greenville	King	23 Ernestine Anderson Ave NW	WA	98113	
<input type="checkbox"/>	2020	Evergreen College Laboratories	Greenville	King	23 Ernestine Anderson Ave NW	WA	98113	
<input type="checkbox"/>	2020	Futuretech Research Center	Greenville	King	102 Echo Hawk Rd SE	WA	98111	
<input type="checkbox"/>	2019	Grays Harbor Marina	Everett	Snohomish	62 Cedar Way	WA	98201	
<input type="checkbox"/>	2020	Grays Harbor Marina	Everett	Snohomish	62 Cedar Way	WA	98201	
<input type="checkbox"/>	2019	Green Valley Lighting Company	Seattle	King	50233 Bellevue Ave #B	WA	98104	
<input type="checkbox"/>	2020	Green Valley Treatment Plant	Greenville	Wahkiakum	2053 Forest Lake Ave NW	WA	98612	
<input type="checkbox"/>	2019	Greenville Fueling Station (site 2b)	Greenville	King	78 5th St NE	WA	98104	
<input type="checkbox"/>	2020	Greenville Fueling Station (site 2b)	Greenville	King	78 5th St NE	WA	98104	
<input type="checkbox"/>	2019	Greenville Mechanics and Auto Sales	Greenville	King	10953 NE King St	WA	98104	
<input type="checkbox"/>	2020	Greenville Mechanics and Auto Sales	Greenville	King	10953 NE King St	WA	98104	
<input type="checkbox"/>	2019	Greenville Processing Plant	Greenville	King	14 Sherman St	WA	98111	
<input type="checkbox"/>	2020	Greenville Processing Plant	Greenville	King	14 Sherman St	WA	98111	

CAMEO Data Manager 4.0

Facilities Contacts Chemical Inventory Incidents Special Locations Routes Resources MARPLOT Import Export Help

Location Phones ID and Regulations Contacts Chemicals State Fields Incidents Attachments Certification Notes Checklist

Report Year 2019 Site of Shipper

Facility Name Allied Business Group

Record 2 of 54

Show responder summary

**Street Address (where hazardous materials are present)**

Street 123 Main St

Cross Street

City Seattle

State WA Zip 98104

County King

Fire District 12

Country USA

Department Safety Management

**Latitude and Longitude**

Latitude 47.594602 Longitude -122.323542

Set latitude/longitude from address Linked to MARPLOT

Show nearby records

Street view Satellite view Re-center map Map instructions

**Mailing Address**

Street PO Box 526

City Seattle

State WA Zip 98104

Country USA

Email info@alliedbusinessgroup.com

CAMEO Data Manager 4.0

Facilities Contacts Chemical Inventory Incidents Special Locations Routes Resources MARPLOT Import Export Help

Location Phones ID and Regulations Contacts Chemicals State Fields Incidents Attachments Certification Notes Checklist

Report Year 2019 Site of Shipper

Facility Name Allied Business Group

Record 2 of 54

Show responder summary

**State Fields**

Washington does not allow users to submit their Tier II information using Tier2 Submit. [Check with your state](#) to see how to submit your Tier II information.

**Incidents**

Name	Spill Date	Spill Time
10/5/ 2019 anhydrous ammonia release		3:05pm

List this facility's incidents Add Incident

**Attachments**

File Name	
Allied_Business_chemical_SDS.pdf	Open file
Allied_Business_emergencyplan.pdf	Open file
Allied_Business_siteplan.pdf	Open file

Add Attachment

**Certification**

Submitted general site plan of facility to the state and local emergency planners (Sections 301 - 303 of EPCRA, 40 CFR sections 300 and 355)




SDS received with Tier II forms



CAMEO Data Manager 4.0

Responder summary for facility: **Allied Business Group (2019)** Export

Address: **123 Main St, Seattle, WA 98104**

CHEMICALS	PHONE NUMBERS & CONTACTS	WEATHER
<p><b>Ammonia (anhydrous)</b></p> <p>CAS: 7664-41-7 <b>EHS</b> </p> <p>Physical properties: pure, gas</p> <p>Max amount: 1,900 pounds</p> <p>Average amount: 1,500 pounds</p> <p>Max amount in largest container: 1,900 pounds</p> <p>Storage Locations</p> <ul style="list-style-type: none"> <li>West side of building, outside boiler room, Above ground tank, Less than ambient pressure, Greater than ambient temperature</li> </ul>	<p><b>Erica Garcia</b> Fac. Emergency Coordinator, Tier II Information Contact, Submitter</p> <p>24-hour: 206-555-1212</p> <p>Emergency: 206-555-1313</p> <p><b>Jacob Huang</b> Owner / Operator, Emergency Contact</p> <p>24-hour: 206-555-4545</p> <p>Emergency: 206-555-8989</p> <p>Work: 206-555-2323</p>	<p><a href="#">Get weather forecast at facility location</a></p> <p>ATTACHMENTS</p> <ul style="list-style-type: none"> <li><a href="#">Allied_Business_chemical_SDS.pdf</a></li> <li><a href="#">Allied_Business_emergencyplan.pdf</a></li> <li><a href="#">Allied_Business_siteplan.pdf</a></li> </ul>
<p><b>Nitric acid</b></p> <p>CAS: 7697-37-2 <b>EHS</b> </p> <p>Physical properties: mixture, liquid</p> <p>Max amount: 500 pounds</p> <p>Average amount: 100 pounds</p> <p>Max amount in largest container: 400 pounds</p> <p>Storage Locations</p> <ul style="list-style-type: none"> <li>South storage room, Plastic or non-metallic drum, Ambient pressure, Ambient temperature, 400 pounds</li> </ul>		
<p><b>Diesel fuel</b></p> <p>CAS: 68476-34-6 </p> <p>Physical properties: liquid</p> <p>Max amount: 5,000 pounds</p> <p>Average amount: 5,000 pounds</p> <p>Max amount in largest container: 7,000 pounds</p>		

CAMEO Data Manager 4.0

Facilities | Contacts | Chemical Inventory | Incidents | Special Locations | Routes | Resources | MARPLOT | Import | Export | Help

Location | Phones | ID and Regulations | Contacts | Chemicals | State Fields | Incidents | Attachments | Certification | Notes | Checklist

Report Year:  Site:  of  ☐ Shipper ①

Facility Name:  ①

Location where chemicals are present

Street Address (where hazardous materials are present)

Street:  ①

Cross Street:

City:

State:  Zip:

County:

Fire District:

Country:

Department:

Mailing Address

Street:

City:

State:  Zip:  ①


Country:

Latitude and Longitude

Latitude:  ① Longitude:  ①

[Set latitude/longitude from address](#) ☒ Linked to MARPLOT

[Show nearby records](#)







2019	2020	Diffs	Facility	Expand all	Show in main list...	30 comparisons	Page 1 of 1
✓	✓	14	Allied Business Group (2019) (2020) ▼				
			<ul style="list-style-type: none"> <li>Street changed from "123 Main Sta" to "123 Main St"</li> <li>Latitude changed from "47.595782" to "47.594602"</li> <li>Longitude changed from "-122.326877" to "-122.323542"</li> <li>Facility ID "123456789" was removed</li> <li>Facility ID "561499 (All Other Business Support Services)" was removed</li> <li>Contact "Erica Garcia" was removed (2019)</li> <li>Contact "Jacob Huang" was removed (2019)</li> <li>Chemical "Ammonia (anhydrous), CAS number: 7664-41-7" was removed (2019)</li> <li>Chemical "Diesel fuel, CAS number: 68476-34-6" was removed (2019)</li> <li>Chemical "Nitric acid, CAS number: 7697-37-2" was removed (2019)</li> <li>Chemical "Sodium hypochlorite (bleach), CAS number: 7681-52-9" was removed (2019)</li> <li>Facility attachment "Allied_Business_chemical_SDS.pdf" was removed</li> <li>Facility attachment "Allied_Business_emergencyplan.pdf" was removed</li> <li>Facility attachment "Allied_Business_siteplan.pdf" was removed</li> </ul>				
✓	✓	1	Bright Lights Electric (2019) (2020) ▶				
✓	✗		Deep River Reservior (2019)				
✓	✓	9	Discovery Cove Aviation Services (2019) (2020) ▶				
✓	✓	5	Emerald City Hospitality (2019) (2020) ▶				
✓	✓	9	Evergreen College Laboratories (2019) (2020) ▶				
✓	✓	2	Grays Harbor Marina (2019) (2020) ▶				

CAMEO Data Manager 4.0

Facilities | Contacts | Chemical | Special | Export | Help

Search Listing all Facilities

Rep. Year Facility Name

2020 Allied Business Gr

2019 Allied Business Gr

2019 Bright Lights Elec

2020 Bright Lights Elec

2019 Deep River Reserv

2019 Discovery Cove Av

2020 Discovery Cove Av

2019 Emerald City Hos

2020 Emerald City Hos

2020 Everett Logistics

2019 Evergreen College

2020 Evergreen College

2020 Futuretech Resea

2019 Grays Harbor Mar

2020 Grays Harbor Mar

2019 Green Valley Ligh

2020 Green Valley Trea

2019 Greenville Fueling

2020 Greenville Fueling

2019 Greenville Mecha

2020 Greenville Mecha

2019 Greenville Proces

2019 Greenville Sub-St

Export

What do you want to do?

☐ Create a ZIP file containing CSV files, which can serve as a backup of your CAMEO data ⓘ

☐ Create a PDF file ⓘ

☒ Create a contact list (a special report CSV file that cannot be re-imported) ⓘ

List type: ☒ Phone list (one row per phone number)

☐ Email list (one row per email; all phone numbers in a single cell)

☒ Include rows for phones/email of each facility ⓘ

☐ Do not repeat contact rows for contacts associated with more than one facility ⓘ

☐ Create a chemical list (a special report CSV file that cannot be re-imported) ⓘ

☐ Create a KML file, which can be used to view your records on a map ⓘ

Which records should be included?

☐ Selected facilities and their contacts (0 facilities)

☐ Listed facilities and their contacts (54 facilities)

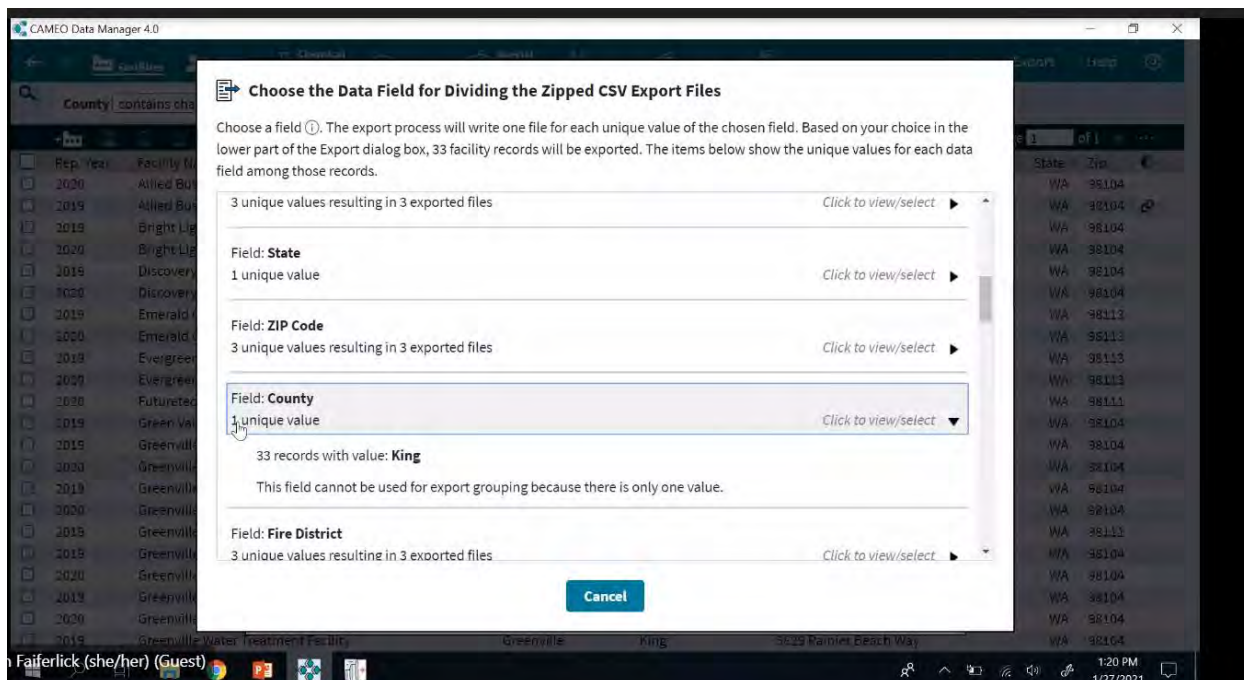
☒ All facilities and their contacts (54 facilities)

Create File Cancel

on Faiferlick (she/her) (Guest)

1:18 PM 1/27/2021





## Keep Current on CAMEO

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- Sign up for the CAMEO listserv by emailing [subscribe-cameo@lists.epa.gov](mailto:subscribe-cameo@lists.epa.gov)



## CAA RMP RECONSIDERATION RULE

US EPA  
Office of Emergency Management  
January 2021

Deanne

Deanne Grant

## CHANGES TO RMP REGULATIONS BEGIN

August 1, 2013: President Obama issued Executive Order (EO) **13650 Improving Chemical Facility Safety and Security** following catastrophic chemical facility incidents in the US.

Key areas of emphasis:

- Strengthening community planning and preparedness
- Enhancing federal operational coordination
- Improving data management
- Modernizing policies and regulations



Deanne

# RMP AMENDMENTS RULE TIMELINE



Deanne

## RMP AMENDMENTS FINAL RULE

### Accident Prevention Program (40 CFR 68 Subparts C/D)

- Third party audits
- Safer technology and alternatives analysis
- Incident investigation root cause analysis

### Emergency Response Program (40 CFR 68 Subpart E)

- Enhanced local emergency coordination requirements
- Emergency exercise provisions

### Information availability requirements (40 CFR 68 Subpart H)

- Facility chemical hazard information
- Facility public meeting

Deanne



# RMP AMENDMENTS FINAL RULE

Deanne

## Accident Prevention Program (40 CFR 68 Subparts C/D)

- Third party audits
- Safer technology and alternatives analysis
- Incident investigation root cause analysis

## Emergency Response Program (40 CFR 68 Subpart E)

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- Emergency exercise provisions

## Information availability requirements (40 CFR 68 Subpart H)

- Facility chemical hazard information
- Facility public meeting

# RMP AMENDMENTS FINAL RULE

Deanne

## Other minor provisions

- Minor changes to accident prevention program provisions
- Technical corrections and clarifications
- Changes to risk management plan

## Compliance dates

- New local emergency coordination provisions  
March 2018
- New prevention program, exercises and information availability provisions  
March 2021
- Risk management plans update  
March 2022

BATF finding that fire and explosion in West, Texas, was caused by a criminal act rather than accident

Potential security risks with information disclosure requirements in final Amendments rule

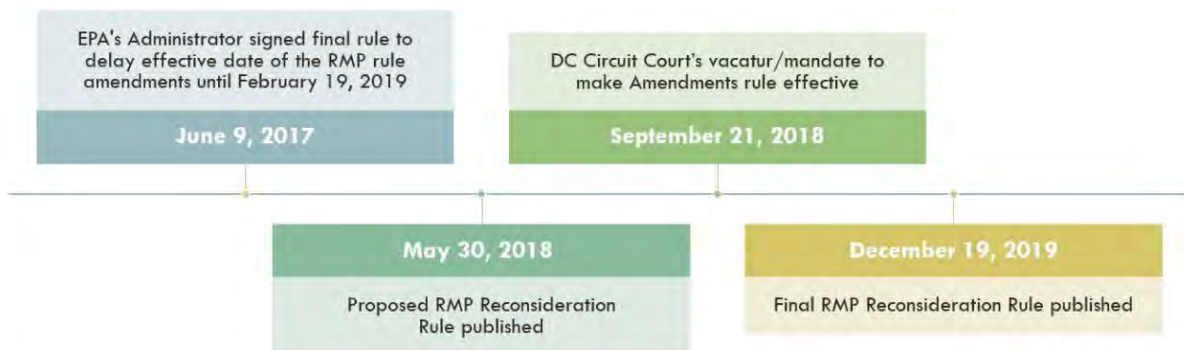
Concerns with the costs of the Amendments rule

Concerns that EPA did not adequately coordinate with OSHA

## WHY DID EPA RECONSIDER THE RMP AMENDMENTS FINAL RULE?

Deanne

## RMP RECONSIDERATION FINAL RULE TIMELINE



Deanne

## RMP RECONSIDERATION FINAL RULE ACCIDENT PREVENTION PROGRAM

Deanne

Rescinded **third party audits**



Rescinded **safer technology and alternatives analysis**



Rescinded **root cause analysis incident investigation**



Retained **minor provisions**: Program 2 incident investigation team requirements and 'reports' term; safety information 'SDS' term



Rescinded all other **minor provisions**



## RMP RECONSIDERATION FINAL RULE EMERGENCY RESPONSE PROGRAM/ EMERGENCY COORDINATION

Deanne

Retained **annual coordination** with local response organizations and documentation of coordinated activities



Modified provision to enable emergency response planners to **obtain information "necessary for" planning and implementation of local emergency response plans**





RMP  
RECONSIDERATION  
FINAL RULE  
EMERGENCY  
RESPONSE  
PROGRAM/  
EMERGENCY  
EXERCISE

Retained **annual notification drills**



Retained requirement to **perform field and tabletop exercises**



Retained **tabletop exercises frequency**, every 3 years



Modified **field exercises frequency** by removing minimum frequency requirement (owner or operator must still consult with response officials on frequency)



Modified **documentation requirements** by only recommending items for exercise reports



Deanne

RMP  
RECONSIDERATION  
FINAL RULE  
INFORMATION  
AVAILABILITY

Rescinded requirement to provide chemical hazard information to public on request



Modified public meeting requirement to require meeting within 90 days only for accidents with off-site impacts



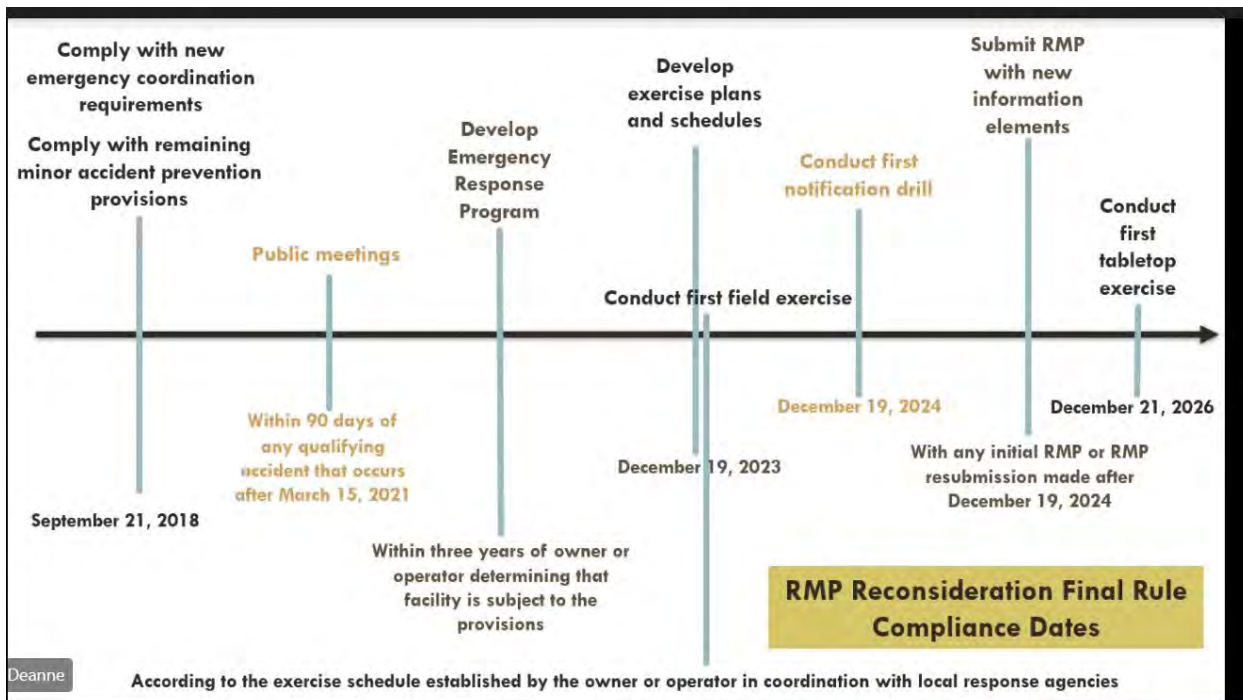
Deanne

## WHAT FACILITY CHEMICAL INFORMATION IS AVAILABLE TO THE PUBLIC NOW?



- Read-only access to the full version of facility RMPs at reading rooms by appearing in person at a Federal reading room
- Read-only RMP access directly from the local emergency planning committee in the location where the person lives or works
- Submitting a FOIA request to EPA
- Information available under the Emergency Planning and Community Right-to-Know Act

Deanne



Deanne

# WHAT IS EPA DOING TO PREVENT FUTURE CHEMICAL ACCIDENTS?



Retention of all prevention provisions that have resulted in long-term trend of fewer significant chemical accidents

New RMP Reconsideration Rule provisions

National Compliance Initiative for Reducing Risks of Accidental Releases at Industrial and Chemical Facilities

Deanne

Rebecca Broussard



CLEAN WATER ACT HAZARDOUS SUBSTANCE WORST CASE DISCHARGE PLANNING REGULATIONS

US EPA  
Office of Emergency Management  
January 2021

ard, Rebecca



## STATUTORY AND REGULATORY BACKGROUND

Under section 311(j)(5) of the Clean Water Act (CWA), the President:

*"shall issue regulations which require an owner or operator of a . . . facility . . . to prepare and submit to the President a plan for responding, to the maximum extent practicable, to a worst case discharge, and to a substantial threat of such a discharge, of oil or a hazardous substance."*

Oil requirements promulgated in 1994:  
Facility Response Plans (FRP) under Subpart D of 40 CFR 112.

EPA has never proposed worst-case discharge planning regulations for CWA hazardous substances (HS) under 311(j)(5).

ssard, Rebecca

## CONSENT DECREE



ssard, Rebecca



## CWA 311(J)(5)(C)(IV) ONSHORE FACILITY DEFINITION

An onshore facility that, because of its location, could reasonably be expected to cause **substantial harm** to the environment by discharging into or on the navigable waters, adjoining shorelines, or the exclusive economic zone.

ssard, Rebecca

## CWA 311(J)(5)(D) RESPONSE PLAN REQUIREMENTS

A response plan required under this part shall-

- i. Be consistent with the National Contingency Plan (NCP) and Area Contingency Plans (ACP);
- ii. Identify the qualified individual having full authority to implement removal actions, and require immediate communications between that individual and the appropriate Federal official and the persons providing personnel and equipment pursuant to clause (iii);
- iii. Identify, and ensure by contract or other means . . . the availability of, private personnel and equipment necessary to remove to the maximum extent practicable a worst case discharge (including a discharge resulting from fire or explosion), and to mitigate or prevent a substantial threat of such a discharge;
- iv. Describe the training, equipment testing, periodic unannounced drills, and response actions of persons . . . at the facility, to be carried out under the plan to ensure the safety of the . . . facility and to mitigate or prevent the discharge, or the substantial threat of a discharge;
- v. Be updated periodically; and,
- vi. Be resubmitted for approval of each significant change.

sard, Rebecca

## CWA 311(J)(5)(E) SUMMARY OF EPA RESPONSIBILITIES FOR SUBMITTED PLANS

1

Promptly review  
such response plan;

2

Require  
amendments if the  
plans do not meet .  
.. requirements of  
this paragraph;

3

Approve plans that  
meet the  
requirements of this  
paragraph; and,

4

Review each plan  
periodically  
thereafter

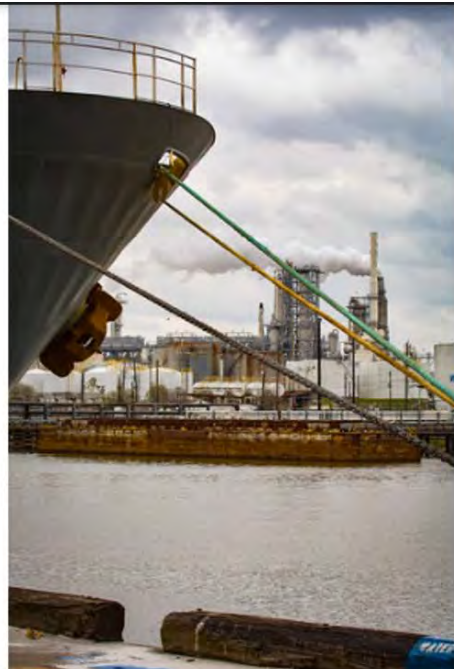
sard, Rebecca

## NEXT STEPS

Stay tuned for NPRM in Spring 2022 and open  
comment period

Contact EPA with any questions or concerns

sard, Rebecca







**PROTECTING COMMUNITIES FROM CHEMICAL ACCIDENTS:  
THE EMERGENCY PLANNING AND COMMUNITY  
RIGHT-TO-KNOW ACT (EPCRA) 1986**

### Overview of the importance of EPCRA ("EPCRA in a Nutshell")

#### Intended Audience:

- State, Tribal and Local Political Officials
- State, Tribal and Local Environmental Managers
- State, Tribal and Local Planners
- First Responders
- General Public

Length: 19 slides

Duration: ~20-25 minutes

Outcome: Power point and narrated video of the presentation.

Expected release in next few weeks.

Vidisha Parasram

Sicy Jacob

## Other EPCRA related Projects

### Survey of State Emergency Response Commissions

- First FR Notice seeking public comments was published on November 12, 2020.
- Comment Period closed on January 11, 2021
- EPA received one anonymous comment
- ICR package & Survey questions will be submitted to OMB for approval within couple of weeks or so.

### National LEPC-TEPC Handbook

- Supplement/Complement – EPCRA online training, ["Understanding EPCRA and How to Protect Communities From Chemical Accidents: A Training for States, Tribes, LEPCs, and Local Planners and Responders"](https://www.epa.gov/epcra/epcra-non-section-313-online-training-states-tribes-lepcs-local-planners-and-responders)
- Legislative text; suggestions/guidance for implementing EPCRA; resources & tools

Greg

Breann Bockstahler



## **R8 AWIA Workshop Report Out**



**Western Regions SERC/TERC Conference  
January 2021**



## **Region 8 AWIA Workshop**

**AWIA was signed into law October 2018**

**Revisions under EPCRA include:**

**Community Water Systems (CWS) to receive prompt notification of a reportable release of an EHS or CERCLA HS that potentially could affect source water.**

**CWS to also have access to Tier II information.**





## Region 8 AWIA Workshop

- EPA Contractor tasked with hosting, colleagues from ORD reached out to the Region 8 Drinking Water Program and Preparedness Unit.
- Virtual workshop held due to Covid.
- Attendees included SERC/TERC personnel, state drinking water primacy personnel, state emergency management personnel (including Tier II managers).



## **Region 8 AWIA Workshop**

**Provided an opportunity to discuss implementation of AWIA in a region-specific setting.**

**Held break out sessions with each state in attendance with a facilitator:**

- **Walk through what really happens for release notifications and if any changes would be necessary to include CWSs.**
- **Chemical data availability and why that is helpful for CWSs.**



# Region 8 AWIA Workshop

Time (Mountain)	Activity	Facilitator
8:15 a.m. – 8:30 a.m.	GoToTraining Check-in	• Will Keefer, Horsley Witten (HW)
8:30 a.m. – 8:50 a.m.	Virtual Platform Overview, Welcome, Event Logistics and Participant Introductions	• Will Keefer, HW • Bre Bockstahler, EPA Region 8 • Dawn Ison, EPA Headquarters
8:50 a.m. – 9:35 a.m.	AWIA Section 2018 Amendments to EPCRA Section 304 (emergency release notifications) Overview	• Dawn Ison, EPA Headquarters
9:35 a.m. – 9:45 a.m.	Small Group Discussion “Meet and Greet”	• Small Group Facilitators
9:45 a.m. – 10:00 a.m.	Break	
10:00 a.m. – 10:45 a.m.	Small Group Discussion: Release notifications	• Small Group Facilitators
10:45 a.m. – 11:15 a.m.	Small Group Discussion Debriefs	• Small Group Facilitators
11:15 a.m. – 11:45 a.m.	AWIA Section 2018 Amendments to EPCRA Section 312 (chemical data availability) Overview	• Dawn Ison, EPA Headquarters • Bre Bockstahler, EPA Region 8
11:45 a.m. – 12:45 p.m.	Lunch Break	
12:45 p.m. – 1:15 p.m.	Large Group Discussion: Chemical data availability and CWS access	• Will Keefer, HW
1:15 p.m. – 2:00 p.m.	State Roundtable Discussion Breakouts	• Small Group Facilitators
2:00 p.m. – 2:15 p.m.	Break	
2:15 p.m. – 2:45 p.m.	Small Group Discussion Debriefs	• Small Group Facilitators
2:45 p.m. – 2:55 p.m.	Hot Wash and Improvement Planning Overview	• Will Keefer, HW
2:55 p.m. – 3:00 p.m.	Closing Remarks and Evaluations	• Dawn Ison, EPA Headquarters • Kyle St. Clair, EPA Region 8



AutoSave ON = AWIA workshop report out.pptx Bockstahler, Breann Search

File Home Insert Draw Design Transitions Animations **Slide Show** Review View Help Acrobat

From Beginning From Current Slide Present Online Custom Slide Show Set Up Slide Show Hide Slide Rehearse Timings Record Slide Show ☒ Play Narrations ☒ Use Timings ☒ Show Media Controls Monitor: Automatic ☐ Use Presenter View Monitors


Start Slide Show Set Up

1 2 3 4 5 6

## Region 8 EPCRA Contacts:

Breann (Bre) Bockstahler  
[bockstahler.breann@epa.gov](mailto:bockstahler.breann@epa.gov)  
 303-312-6034

Mark Quick  
[quick.mark@epa.gov](mailto:quick.mark@epa.gov)  
 303-312-6981

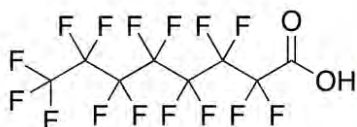


# A primer on PFAS

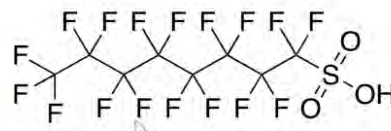
Dan Stralka, Ph.D.

Harry Beller, Ph.D.

EPA Region 9, SEMD



Perfluorooctanoic acid (PFOA)



Perfluorooctanesulfonic acid (PFOS)

Harry

Western States SERC Conference  
 January 27, 2021

Daniel Stralka and Harry Beller

## Outline: A primer on PFAS (Per- and Polyfluoroalkyl Substances)

- Nomenclature and physical/chemical properties
- Manufacture and use
- Sampling and analysis
- Fate and transport
- Distribution in the environment
- Human and ecological effects
- Risk and regulation

r, Harry

## Useful references / Sources of slides

Interstate Technology Regulatory Council (ITRC\*). April 2020. Per- and Polyfluoroalkyl Substances (PFAS). <https://pfas-1.itrcweb.org/>  
PFAS Training Module videos:

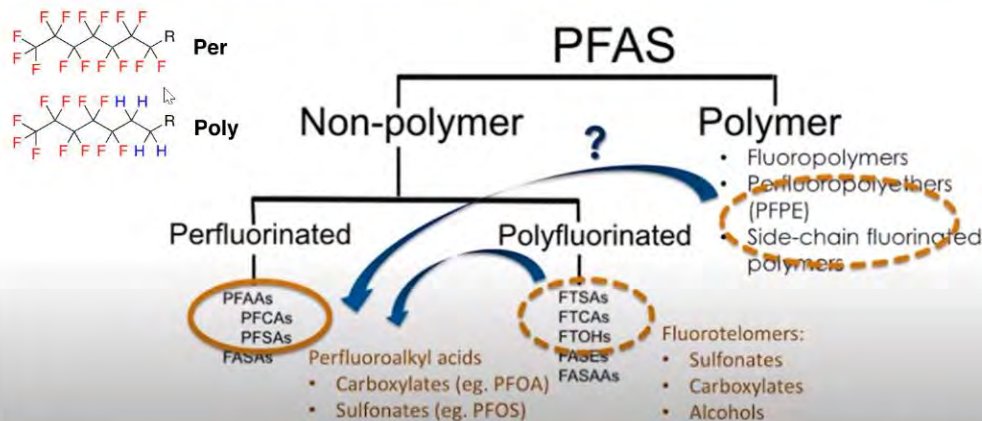
- Module 1, Virginia Yingling <https://www.youtube.com/watch?v=WaLnmmhnrJ0&feature=youtu.be>
- Module 2, Sandra Goodrow <https://www.youtube.com/watch?v=C1v2cggZ2mY&feature=youtu.be>
- Module 3, Rula Deeb <https://www.youtube.com/watch?v=PPayDiDiryM&feature=youtu.be>
- Module 4, Janice Willey <https://www.youtube.com/watch?v=NS-KO5YpWeU&feature=youtu.be>
- Module 5, Christopher Higgins [https://www.youtube.com/watch?v=KCKj8SYZ\\_Fw&feature=youtu.be](https://www.youtube.com/watch?v=KCKj8SYZ_Fw&feature=youtu.be)
- Module 6, Linda Hall <https://www.youtube.com/watch?v=Zm1C3vjvre8&feature=youtu.be>
- Module 7, Kevin Long [https://www.youtube.com/watch?v=sAfH\\_c-d10M&feature=youtu.be](https://www.youtube.com/watch?v=sAfH_c-d10M&feature=youtu.be)
- Module 9, Shalene Thomas [https://www.youtube.com/watch?v=h-g\\_aCyJHAK&feature=youtu.be](https://www.youtube.com/watch?v=h-g_aCyJHAK&feature=youtu.be)

SERDP and ESTCP Webinar Series: Jason Conder, 4/13/20, Guidance for Assessing the Ecological Risks of Threatened and Endangered Species at AFFF-Impacted Sites

Geosyntec PFAS Webinar Series: Kristin Bridges and Jason Conder, 4/14/20, PFAS Toxicology and Risk Assessment: State of the Science

\*While we are using materials produced by ITRC, today's presentation is not an official ITRC training course and this

# General Classification of Per- and Polyfluoroalkyl Substances (PFAS)



Harry

Modified from ITRC Module 2

## PFAA Naming System

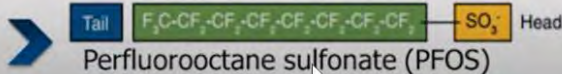
### ► PFXY

- **PF** = perfluoro
- **X** = number of carbons
  - Same convention as hydrocarbons
  - Includes C in the carboxylate group
- **Y** = functional group
  - S = sulfonate (R-SO<sub>3</sub><sup>-</sup>)
  - A = carboxylate (R-COO<sup>-</sup>)

4	B	(buta-)
5	Pe	(penta-)
6	Hx	(hexa-)
7	Hp	(hepta-)
8	O	(octa-)
9	N	(nona-).....

### ► Example:

- **X**: 8 carbons = "octa"
- **Y**: S = sulfonate



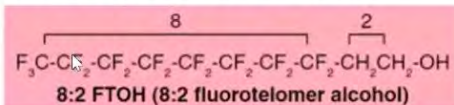
Harry

ITRC Module 2



## Polyfluoroalkyl Substances

- ▶ Partially fluorinated
- ▶ Non-fluorine atom (usually H or O) attached to at least one, but not all, of the carbons in the alkane chain



- ▶ Creates a "weak link" susceptible to biotic or abiotic degradation
- ▶ Often named using a "n:x" prefix
  - ▶ n = number of fully fluorinated carbons
  - ▶ x = number of non-fully fluorinated carbons

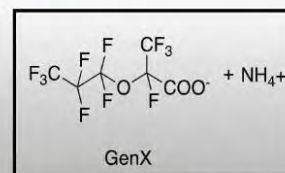
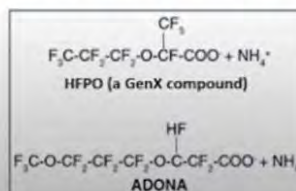
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ITRC Module 2

## Replacement Chemistry

- ▶ Short chain PFAS chemistries do not degrade to longer PFAAs
- ▶ New applications, but not necessarily new chemicals
  - ▶ HFPO-DA (Hexafluoropropylene oxide dimer acid), a component of GenX processing aid technology (Shoemaker and Tetttenhorst 2018)
  - ▶ used for decades in fluoropolymer production
- ▶ For most replacement chemistries, limited information on toxicities, properties, fate and transport, and treatment options
  - ▶ USEPA released a draft toxicity assessment for GenX chemicals in November 2018

### GenX and ADONA



Harry

Modified from ITRC Module 2

## Highlights of PFAS Properties

- ▶ Chain length and functional group generally determine bioaccumulation
  - ▶ Longer chain and sulfonates tend to accumulate more than shorter chain and carboxylates
  - ▶ PFHxS breaks this "rule" – longer half-life in humans than PFOS
  - ▶ Some PFAAs are "proteinphiles", so bioaccumulation process may be more complicated than for other environmental contaminants.
- ▶ Surfactant properties are important
  - ▶ Partitioning to interfaces (air-water, soil-water, NAPL-water) and micelles
    - ▶ Micelles are an aggregation of molecules that form a sphere that has the hydrophobic portion of the molecules on the inside
  - ▶ PFAAs can be both hydrophobic and hydrophilic

Harry

ITRC Module 2

## A Brief History of PFAS Discovery and Manufacture

- ▶ Two major production processes
  - Electrochemical fluorination (ECF)
    - ~70% linear and 30% branched PFAS
  - Fluorotelomerization
    - Primarily even numbered, linear PFAS

PFAS <sup>1</sup>	Development Time Period							
	1930s	1940s	1950s	1960s	1970s	1980s	1990s	2000s
PTFE	Invented	Non-Stick Coatings			Waterproof Fabrics			
PFOS		Initial Production	Stain & Water Resistant Products	Firefighting foam				U.S. Reduction of PFOS, PFOA, PFNA (and other select PFAS) <sup>2</sup>
PFOA		Initial Production		Protective Coatings				
PFNA					Initial Production	Architectural Resins		
Fluoro-telomers					Initial Production	Firefighting Foams		Predominant form of firefighting foam
Dominant Process <sup>3</sup>		Electrochemical Fluorination (ECF)						Fluoro-telomerization (shorter chain ECF)
Pre-invention of Chemistry /			Initial Chemical Synthesis / Production			Commercial Products Introduced and Used		

Harry

ITRC Module 3



## Major Uses of PFAS

- ▶ Industrial (primary production and secondary manufacturing)
  - Surfactants, resins, molds, plastics
  - Plating and etching (esp., chrome)\*
  - Coatings (textiles, leather, paper, carpets)
- ▶ Aqueous Film Forming Foam (AFFF) to fight fires involving flammable, combustible liquids and gases; petroleum greases, tars, oils and gasoline; and solvents and alcohols
  - Military installations and civil airports
  - Petroleum refineries and chemical facilities
  - Fire fighting training and response areas

\*From late 1980s to 2015, PFOS used as primary chemical fume suppressant in chrome plating in U.S.

Harry

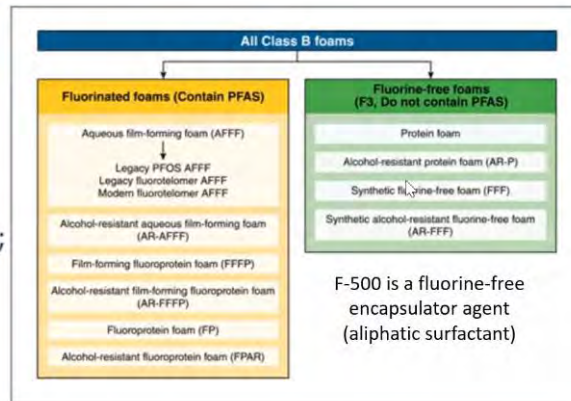
Modified from ITRC Module 3

## Classes of Firefighting Foams

- ▶ **CLASS A Foams-** Developed in the 1980s for fighting wildfires and used structure fires.
  - ▶ Do not contain PFAS
- ▶ **CLASS B Foams-** Used to fight fires involving flammable, combustible liquids and gases; petroleum greases, tars, oils and gasoline; and solvents and alcohols

Several Class B foams contain PFAS

AFFF are the primary Class B foam that contain fluorosurfactants



ERIS  
ENVIRONMENTAL RESEARCH  
INSTITUTE OF THE STATES

Source: S. Thomas, Wood plc, used with permission. ITRC  
Aqueous Film-forming Foam fact sheet.

3

Module 9: Aqueous Film-Forming Foam (AFFF)

<http://www.itrcweb.org/>

Harry

Modified from ITRC Module 9



## Why is a PFAS sampling event different from other sampling events?

- ▶ Unusually low screening/regulatory criteria for PFAS
- ▶ Increased cross-contamination potential
- ▶ Sampling equipment and materials typically used for sampling contain or may contain PFAS



larry

ITRC Module 4

## EPA PFAS Analytical Methods

- ▶ USEPA 537.1
  - ▶ Finalized Method (published 2018)
  - ▶ Compound-Specific Analyses (18 PFAS)
  - ▶ Drinking Water
  - ▶ Laboratories allowed some modifications, but not:
    - Sample collection/preservation
    - Extraction
    - Quality control
  - ▶ Multi-laboratory validated method



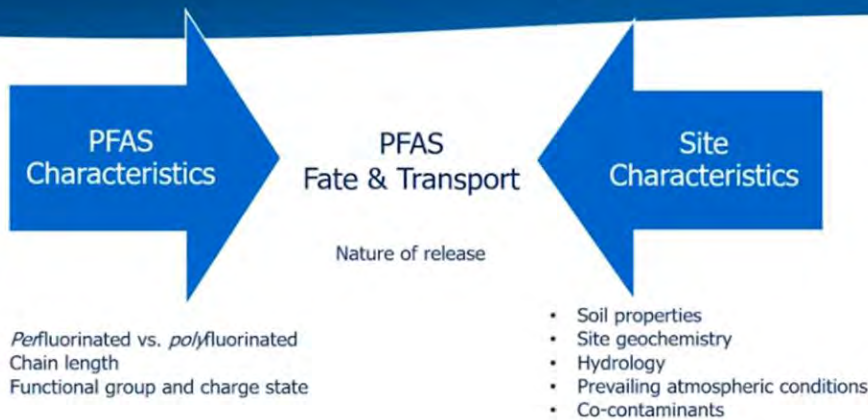
larry

ITRC Module 4

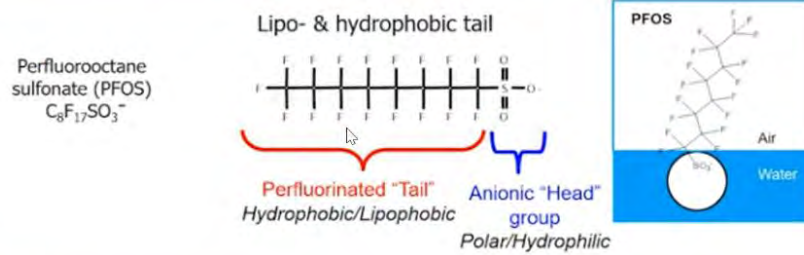
## Key Method Consistencies

- ▶ Utilize liquid chromatography tandem mass spectrometry (LC-MS/MS)
- ▶ Do not address neutral/volatile PFAS (i.e., fluorotelomer alcohols and derivatized PFCAs)
- ▶ Standards must be analyzed in order to identify and quantify individual PFAS
- ▶ Same equipment and supply concerns associated with field sampling apply to sample preparation and analysis

Note: There are currently no finalized EPA methods for non-potable water, sediment, soil, etc. Consequently, labs often modify existing methods.



# The heads and tails of PFAS



PFAAs are extremely persistent in the environment

PFAAs partition at interfaces



Images used with permission from Jennifer Field, Oregon State University

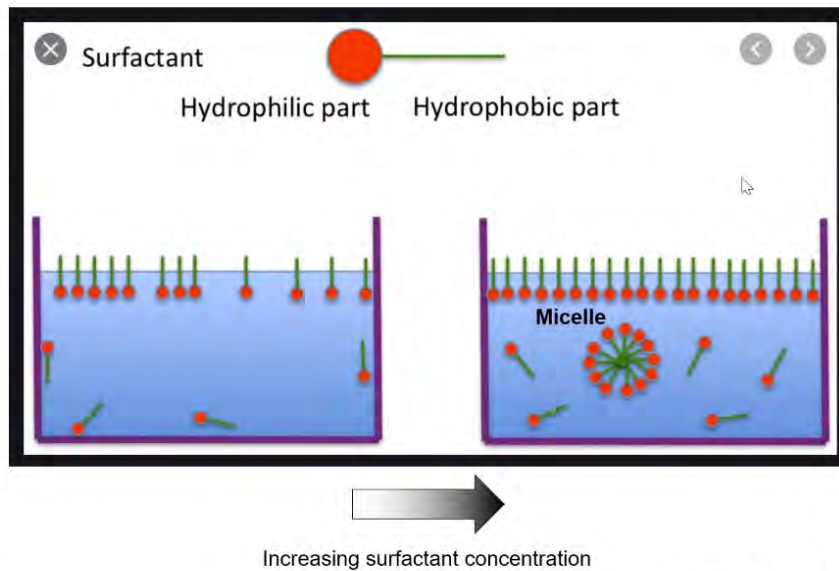
Module 5: Fate and Transport

<http://www.itrcweb.org/>

6

ITRC Module 5

## Surface active behavior of PFAS



Modified from Dr. Hiroshi Yamamoto



## Key Takeaways for PFAS Fate and Transport

- ▶ Perfluorinated substances
  - ▶ Extremely stable
  - ▶ Mobility is chain-length dependent, affected by OC, pH, inorganic cations, etc.
- ▶ Precursors (polyfluoroalkyl substances and side-chain fluorinated polymers)
  - ▶ Varying stability
  - ▶ Highly variable in terms of transport
- ▶ Increased concentrations at air/water or water/NAPL interfaces
- ▶ Source zones may be significant: long-term discharge potential
  - ▶ Exceptionally low criteria + high transport potential = large investigation areas
  - ▶ Oxidizing remedial techniques (ISCO, air sparge, aerobic bioremediation) can transform precursors to persistent PFAAs



Module 5: Fate and Transport

<http://www.itrcweb.org/>

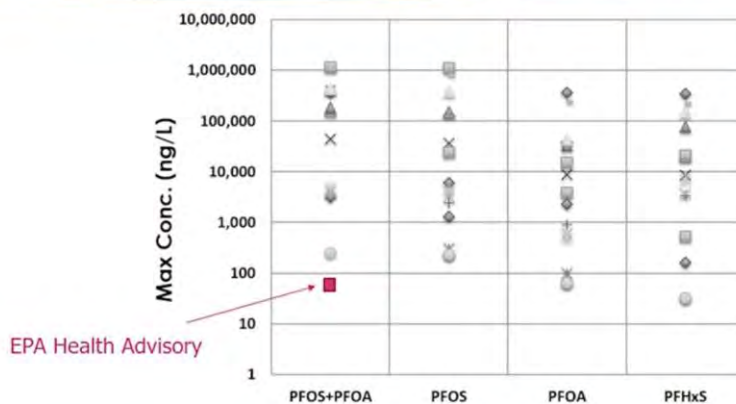
21

Harry

ITRC Module 5

## Site Characterization at AFFF Sites

Groundwater PFAS Concentration Ranges at AFFF Sites



Expect to find high PFAS concentrations



Source: Figure courtesy of AECOM

Module 3: PFAS Production, Uses, Sources & Site Characterization

<http://www.itrcweb.org/>

20

Harry

ITRC Module 3

## UCMR3: PFOS and PFOA Detections in Public Water Supplies (2013-2015)

US EPA  
Lifetime  
Health  
Advisory(LHA):  
70 parts per  
trillion (ppt) for  
PFOS + PFOA

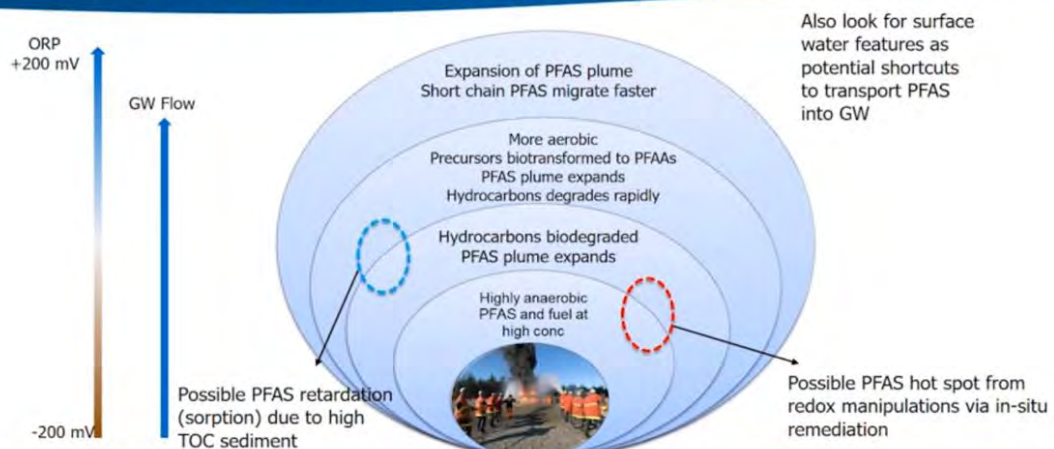


Basemap source:  
Map data ©2016 Google

Harry

ITRC Module 3

## Site Characterization at AFFF Sites Conceptual PFAS Fate and Transport



Source: Image from MS Office ClipArt

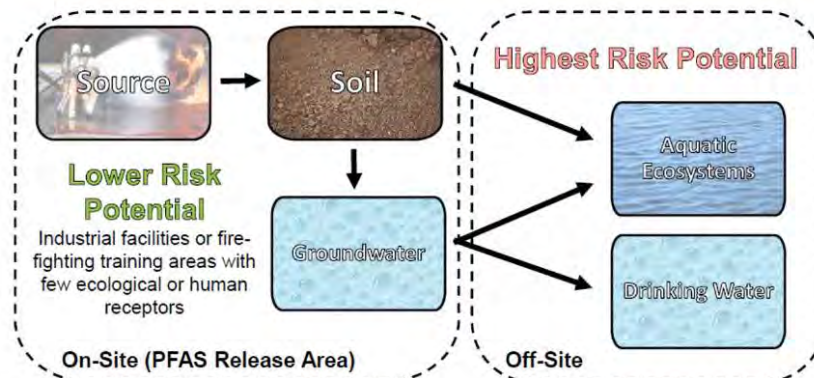
Module 3: PFAS Production, Uses, Sources & Site Characterization <http://www.itrcweb.org/>

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## On- and Off-Site Risk Issues



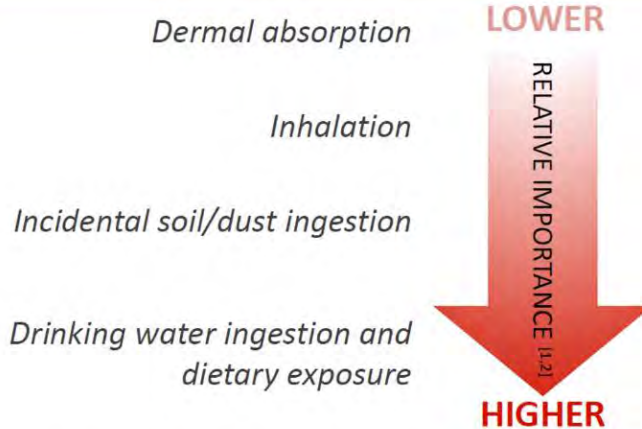
★ PFAS plumes are miles long, even from small sources

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## Human Exposure Pathways (Generalization)



<sup>1</sup> Oliaei et al., 2013. Environ. Sci. Pollut. Res. Manag. 20:1977-1992  
<sup>2</sup> Domingo, 2012. Environment International 40:187-195

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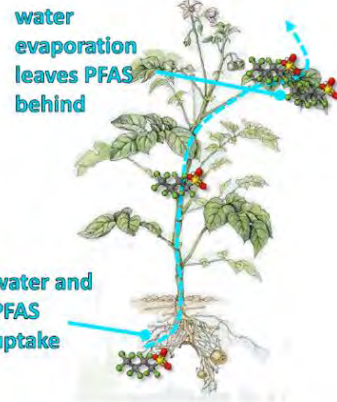
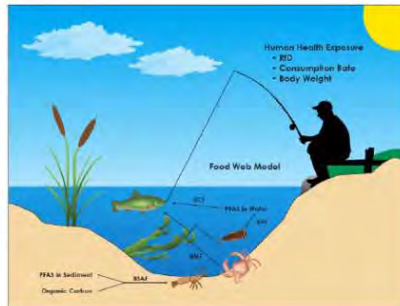
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## Bioaccumulation Exposures

- PFAS bioaccumulates into ecological and agricultural food webs
  - Fish and seafood
  - Homegrown produce
  - Agriculture
- Bioaccumulation varies according to several factors

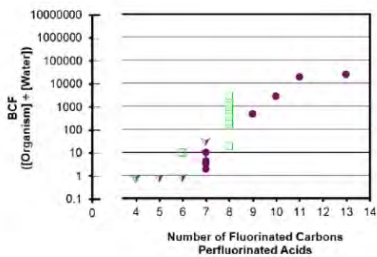


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## Chemical Size Affects Bioaccumulation



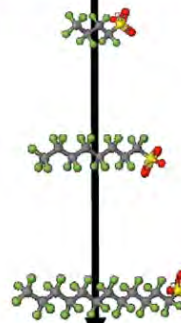
Animals



Less bioaccumulative

More bioaccumulative

Short PFAS



Long PFAS

Plants



More bioaccumulative

Less bioaccumulative

Conder et al. (2008)

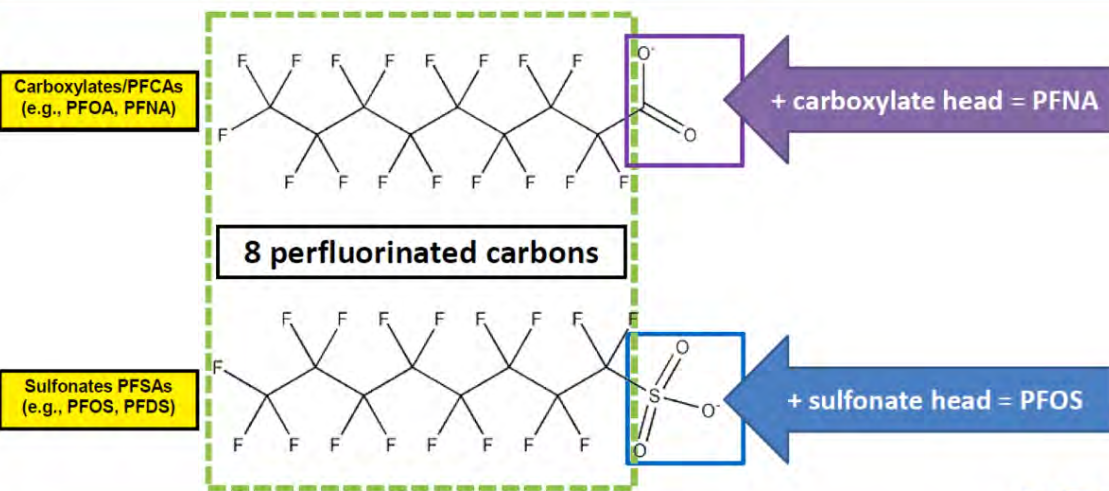
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# Chemical Type Affects Bioaccumulation

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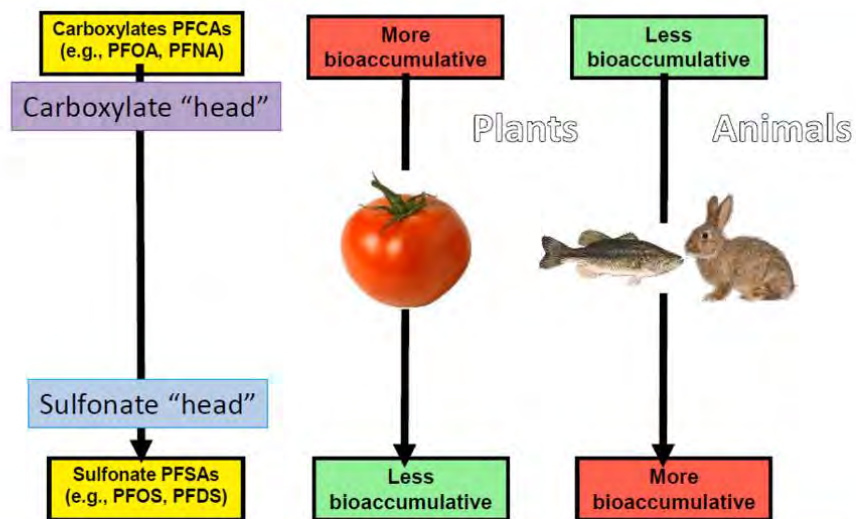


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# Chemical Type Affects Bioaccumulation

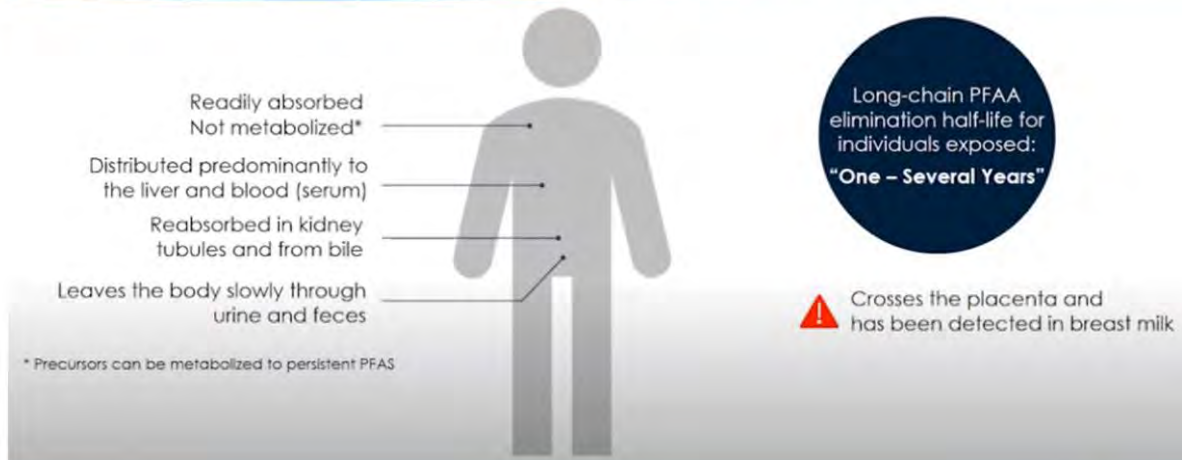
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## Biological Fate PFAAs



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## Ecological Exposure Pathways

- ▶ Incidental soil and sediment ingestion
- ▶ Diet (biomagnification)
  - ❑ Aquatic food webs susceptible to longer-chained PFAA
  - ❑ Plants accumulate shorter-chained PFAA
- ▶ Dermal absorption (Aquatic animals)

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## Health Effects of PFOA and/or PFOS

### ► Animal

- ❑ Liver effects
- ❑ Immunological effects
- ❑ Developmental effects
- ❑ Endocrine effects (thyroid)
- ❑ Reproductive effects
- ❑ Hematological (blood) effects
- ❑ Neurobehavioral effects
- ❑ Tumors (liver, testicular\*, pancreatic\*)

\* PFOA Only

### ► Human (possible links)

- ❑ Liver effects (serum enzymes/bilirubin, cholesterol)
- ❑ Immunological effects (decreased vaccination response, asthma)
- ❑ Developmental effects (birth weight)
- ❑ Endocrine effects (thyroid disease)
- ❑ Reproductive effects (decreased fertility)
- ❑ Cardiovascular effects (pregnancy induced hypertension)
- ❑ Cancer\* (testicular, kidney)

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## PFAAs: Biological Persistence and Health Effects

Serum half-life	PFBS (C4)	PFHxS (C6)	PFOS (C8)	PFBA (C4)	PFHxA (C5)	PFOA (C8)	PFNA (C9)
Mouse	NA	26-29 days	34-40 days	2.9-13 hours	~1 hour	17-19 days	26-69 days
Humans	26 days*	4.7-7.4 years	3.4-7.4 years	3-3.6* days	32 days*	2.3-4.6 years	2.5-12 years

Biological half-lives can differ dramatically among different PFAS in humans and also can differ for a given PFAS compound in humans vs. animal models

\*Occupational exposure data

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Modified from ITRC Module

## Carcinogenic Potential of PFAS

### ► PFOA

- ❑ IARC - "Possibly carcinogenic to humans" (Group 2B)
- ❑ USEPA - "**Suggestive evidence of carcinogenic potential in humans**" Oral cancer slope factor (SF) for PFOA of  $0.07 \text{ (mg/kg-day)}^{-1}$

### ► PFOS

- ❑ USEPA - "**Suggestive evidence of carcinogenic potential in humans**". Data insufficient for quantitative assessment

### ► HFPO-DA (a GenX chemical)

- ❑ USEPA (draft) - "**Suggestive evidence of carcinogenic potential in humans**". Data insufficient for quantitative assessment

### ► PFHxA

- ❑ Did not induce tumors in male or female rats (Klaunig et al., 2015)

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## Drinking water Levels ( $\mu\text{g/L}$ )

Chemical	CA ESL	CA Notif. Level	CA Response level	EPA HAL	EPA RSL
PFOS	1.7 E-3	6.5 E-3	4 E-2	7 E-2 combined	0.4
PFOA	5.4 E-4	5.1 E-3	1 E-2		0.4

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Interstate Tech Reg Council (ITRC) <https://pfas-1.itrcweb.org/fact-sheets/>

# Treatment and Disposal

See EPA (December, 2020)

“Interim guidance on the destruction and disposal of PFAS and materials containing PFAS”

Harry

Frank Granados