

# PFAS: Current and Future Regulatory Outlook

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# AGENDA

- ▶ WHAT ARE PFAS?
- ▶ WHY PFAS ARE A CONTAMINANT OF CONCERN
- ▶ FATE AND TRANSPORT OF PFAS
- ▶ ABBREVIATED REGULATORY CHRONOLOGY OF PFAS
- ▶ NATIONAL REVIEW
- ▶ IN THE NEWS
- ▶ SUMMARY

# WHAT ARE PFAS?

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- ▶ Large family of man-made chemicals with a complicated chemistry
- ▶ Discovered in 1930s and manufactured and used world-wide since 1940s
- ▶ Some are known to be persistent, bioaccumulative, and toxic at relatively low levels
- ▶ Two most studied
  - ▶ Perfluorooctanoic acid (PFOA) -  $C_8HF_{15}O_2$
  - ▶ Perfluorooctanesulfonic acid (PFOS) -  $C_8HF_{17}O_3S$



Airmen at Mountain Home AFB Idaho test fire suppression system inside hanger.

Image source: <https://www.mountainhome.af.mil/News/Article-Display/Article/308745/airmen-test-foam-suppression-system/>

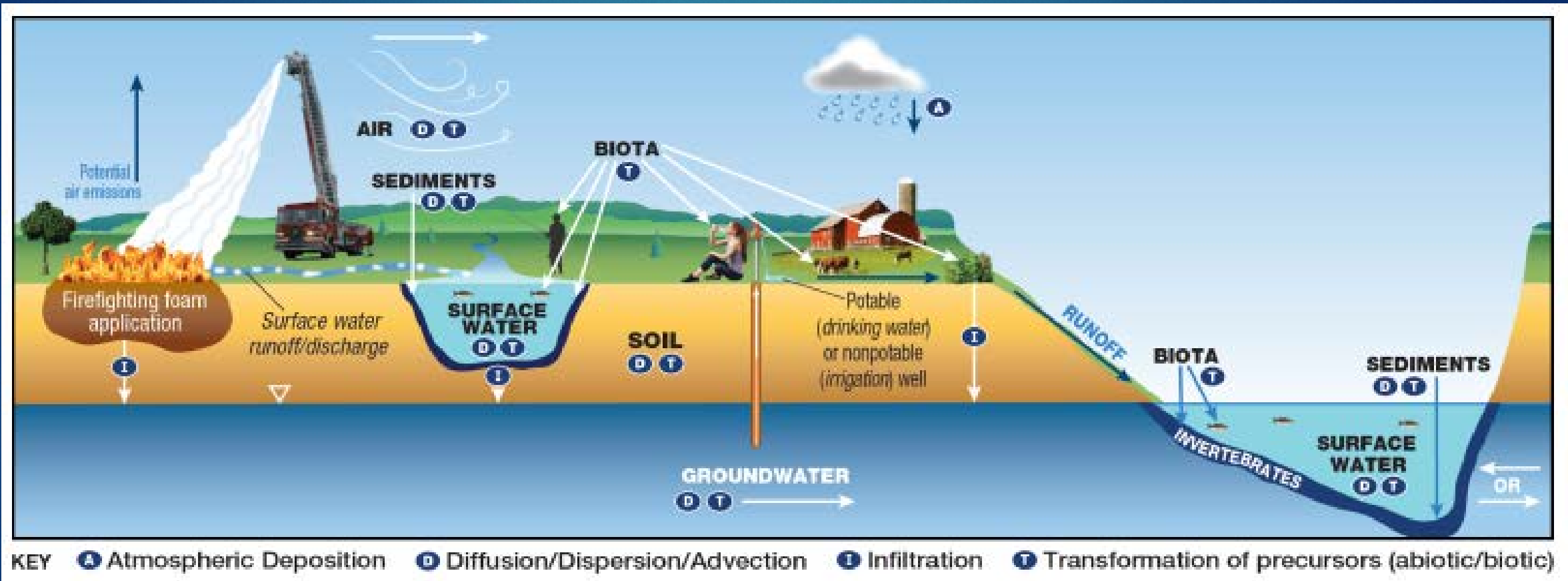
# WHY PFAS ARE A CONTAMINANT OF CONCERN

- ▶ Stable and persistent
  - Mostly resistant to biotic and abiotic degradation
- ▶ Most people in U.S. have one or more specific PFAS in their blood
- ▶ Geometric mean concentration in blood serum\*
  - PFOA 1.56 ppb
  - PFOS 4.72 ppb
- ▶ Health effects
  - Limited numbers of studies
  - Animal toxicological studies
  - Human epidemiological studies
- ▶ Limited options for remediation/destruction

\* Centers for Disease Control 2015–2016 national biomonitoring results

# FATE AND TRANSPORT OF PFAS

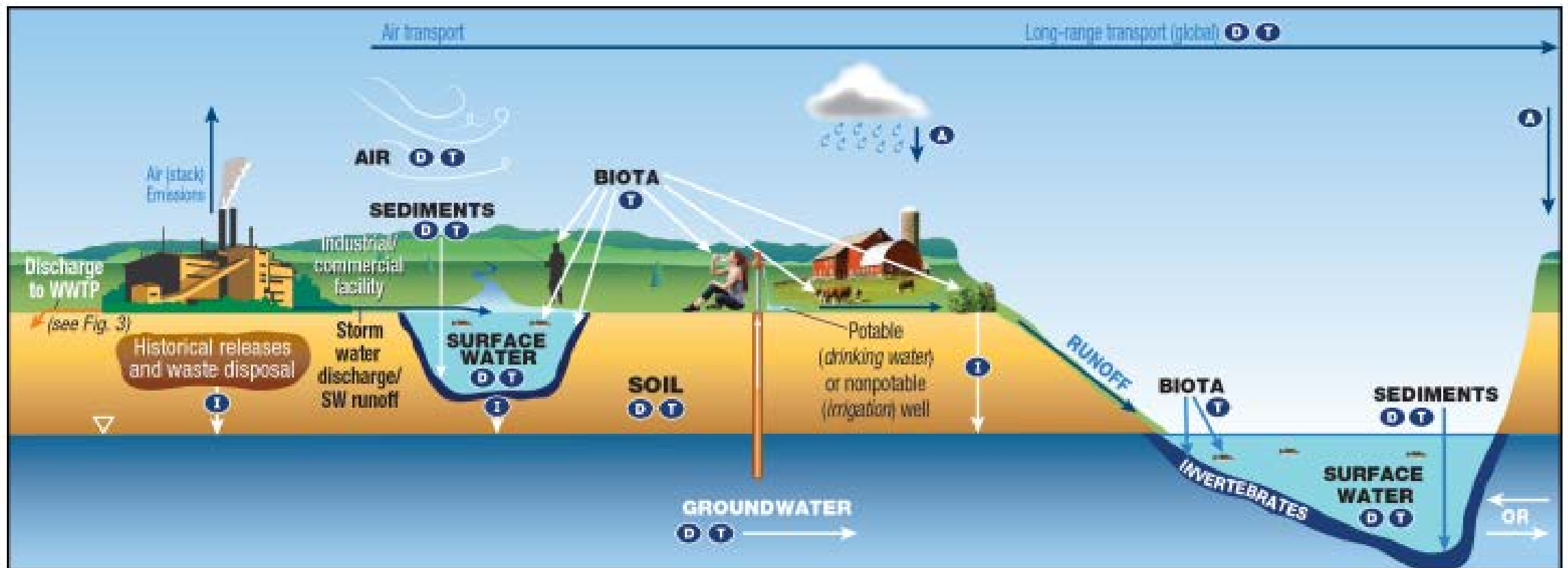
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Source: ITRC - [https://pfas-1.itrcweb.org/wp-content/uploads/2018/03/pfas\\_fact\\_sheet\\_fate\\_and\\_transport\\_3\\_16\\_18.pdf](https://pfas-1.itrcweb.org/wp-content/uploads/2018/03/pfas_fact_sheet_fate_and_transport_3_16_18.pdf)

# FATE AND TRANSPORT OF PFAS

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KEY A Atmospheric Deposition D Diffusion/Dispersion/Advection I Infiltration T Transformation of precursors (abiotic/biotic)

Source: ITRC - [https://pfas-1.itrcweb.org/wp-content/uploads/2018/03/pfas\\_fact\\_sheet\\_fate\\_and\\_transport\\_3\\_16\\_18.pdf](https://pfas-1.itrcweb.org/wp-content/uploads/2018/03/pfas_fact_sheet_fate_and_transport_3_16_18.pdf)

# ABBREVIATED REGULATORY CHRONOLOGY OF PFAS

FEDERAL

**2000s**  
 Voluntary phase out  
 SNUR and other initiatives  
 2009 Action Plan

**2010s**  
 Limited enforcement authority  
 Limited toxicity data  
 2012 UCMR3

**2016**  
 EPA issues HA for PFOS/PFOA  
 Inadvertent PFAS impacts identified

**2017**  
 Exposure assessments & health study

**2018**  
 ATSDR issues draft toxicological profiles for PFOA/PFOS

**2019**  
 EPA issues PFAS action plan  
 Numerous state agencies adopt lower criteria or enforce EPA HA levels  
 About 30 PFAS Bills in play  
 National Defense Authorization Act & Omnibus Appropriations

CALIFORNIA

**NOV 2017**

- OEHHA adds PFOA & PFOS under Proposition 65
- DTSC adds food packaging to Safer Consumer Products Work Plan

**FEB 2018**

- DTSC releases Product-Chemical Profile on Carpets and Rugs

**JUN 2018**

- ARB begins rulemaking effort related to Cr(VI)
- DDW establishes interim NLs for PFOA & PFOS
- Response level equal to EPA HA

**MAR 2019**

- DDW issues sample orders to 600 water systems and 250 airports and MSW landfills
- Investigatory orders for landfills and airports (non-drinking water)

**AUG 2019**

- DDW revises (lower) NLs for PFOA & PFOS
- A web-based GIS tool is developed

No surface water quality criteria

# NATIONAL REVIEW

## SCREENING/ HEALTH-BASED LEVELS

- ▶ California\*
- ▶ Delaware\*
- ▶ Michigan
- ▶ Minnesota
- ▶ Nevada
- ▶ North Carolina
- ▶ Oregon
- ▶ Pennsylvania

## PROMULGATED STANDARD

- ▶ Alaska
- ▶ Colorado\*
- ▶ Delaware\*
- ▶ Indiana
- ▶ Iowa\*
- ▶ Maine
- ▶ Massachusetts\*
- ▶ Michigan\*
- ▶ Montana\*
- ▶ New Hampshire
- ▶ New Jersey
- ▶ North Carolina
- ▶ Rhode Island
- ▶ Texas
- ▶ Vermont

## EPA HEALTH ADVISORY

- ▶ Alabama
- ▶ Alaska
- ▶ Arizona
- ▶ Kansas
- ▶ Maine
- ▶ Nebraska
- ▶ West Virginia

\*Value based on EPA HA of 70 parts per trillion





# IN THE NEWS

- ▶ Recent news articles provide examples of ongoing investigations in California
- ▶ Some wells below prior Notification Levels and others removed from service
- ▶ A lot of information presented to the public
  - Challenging to report accurately given complexities of the chemicals
  - Inadvertent misinformation
- ▶ Important for stakeholders to know directly rather than through breaking news
  - Builds trust
  - Provides basis for understanding potentially sensational headlines

Seven of those agencies have shut down wells in the past year because of the presence of those chemicals and two more plan closures, an investigation by the Southern California News Group found. Tests of tap water, military bases and industrial sites have found PFAS contamination in more than 712 locations in 49 states. Drinking water for up to 110 million Americans may be contaminated with PFAS.

## Results of San Bernardino County wells tested for PFAS

16 county agencies ordered to test 45 wells for the chemicals



By **MARTIN WISCKOL** | mwisckol@scng.com and **HANH TRUONG** | htruong@scng.com | Orange County Register  
PUBLISHED: August 30, 2024 at 7:18 am | UPDATED: August 30, 2024 at 2:02 pm

This agency roundup of San Bernardino County is "PFAS toxins found in drinking water throughout"

None of the wells ordered for testing in San Berna reached reportable levels for PFOA and PFOS tox

The 15 county water agencies responsible to test said their wells were below report had been ordered by the State Wa

## California on PFAS: Missing the Forest Through the Trees

### Drinking water in California contaminated with toxic PFAS, report says

### PFAS toxins found in drinking wa

'Forever chemicals' rapidly emerging as a potential he

(CNN) - Chemical contaminants were detected in water sources serving more than 7 million Californians, according to a new ...

large class of toxic, 'forever' chemicals, known as per- and polyfluoroalkyl substances

(PFAS) in our drinking water. Last Friday, the California State Water Resources



California. Orange County had 52 and Riverside County had 13.

### In a First, California Moves to Protect People from Toxic PFAS Chemicals in Carpets

By **Tasha Stoiber Ph.D.**,



### California Water Sources Contaminated With Potentially Deadly 'Forever Chemicals'

According to the Center for Disease Control and Prevention, practically every American has PFAS in their blood. A

Yuba Links Water recharge the grou for PFAS chemical here and possibl

But the county's apparently clean slate could be in jeopardy in the next round of testing later this year because the State Water Resources Control Board has dramatically lowered the reportable thresholds for future monitoring.

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ermatives to the use of these potentially chemicals in carpets and rugs.



Image source:  
<https://en.wikipedia.org/wiki/Stormwater>

## Client Perspective

- Current and future regulation
- Stakeholder involvement
- Source and pathway evaluations
- Cost limitations
- Risk mitigation
- Limitations on remedial options

## Action Strategies

- Look to what the science says
- Start with receptor risk evaluation early
- Constant communication and engagement with stakeholders
- Evaluate options for iterative approach

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- ▶ Center for Disease Control Biomonitoring Information: [https://www.cdc.gov/biomonitoring/PFAS\\_FactSheet.html](https://www.cdc.gov/biomonitoring/PFAS_FactSheet.html)
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- ▶ EPA 2019 Action Plan: [https://www.epa.gov/sites/production/files/2019-02/documents/pfas\\_action\\_plan\\_021319\\_508compliant\\_1.pdf](https://www.epa.gov/sites/production/files/2019-02/documents/pfas_action_plan_021319_508compliant_1.pdf)
- ▶ California Water Boards PFAS: <https://www.waterboards.ca.gov/pfas/>
- ▶ California Water Boards' web-based PFAS mapper: <https://gispublic.waterboards.ca.gov/portal/apps/webappviewer/index.html?id=4feba1766c224dc99eadea06ef3bd019>