PFAS
A Growing Public Health Crisis

So Cal Water Dialogue
October 23, 2019

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Talk Outline

- Why we are concerned about PFAS
  - General problematic properties
  - State of science on health effects
- Current regulatory efforts to address PFAS
  - Examples of federal and state efforts
  - California-specific needs
Increasing Concern - Individual PFAS

Health Thresholds Over Time

- PFOA
- PFOS

Year
- 2009
- 2011
- 2013
- 2015
- 2017
- 2019
- 2021

Parts per trillion
- 400
- 350
- 300
- 250
- 200
- 150
- 100
- 50
- 0

New science on health effects & vulnerability of fetuses, infants, children
Increasing Concern - PFAS as a Class

1. Extremely persistent
2. Highly mobile
3. Associated with a wide variety of adverse health effects
Increasing Concern - PFAS as a Class

- Found all over: air, water, soil, food, animals, plants, humans
- Increasing amounts of unknown PFAS in humans and the environment as more and more varieties produced and used
- Close to 5,000 PFAS now…
- How to evaluate such a large class from a regulatory and public health perspective?

All Roads Lead to PFAAs

## Health Effects Linked to PFAA Exposure

Summary of ATSDR’s Findings on Health Effects from Perfluoroalkyl Acid Exposure

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Additive and/or synergistic effects likely
Short-chain PFAS Health Concerns

• Introduced as ‘safer’ alternatives due to their supposed shorter half-lives in humans
  • Found to accumulate in organs, some at concentrations that are higher than long-chain PFAS\(^1\)
  • Highly persistent, more mobile in the environment and harder to treat than long-chain PFAS\(^2\)
  • Continual exposure - elimination rate may be an inadequate measure of health threat to humans\(^3,4\)

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Health Conclusions

• PFAS are a serious public health threat
  • Wide-spread exposure
  • Health risks at extremely low level exposures
  • Likely additive/synergistic effects
• Need to reduce PFAS exposures, as a class:
  • Stop production, use and release of PFAS
  • Clean up PFAS from our environment, i.e. drinking water
  • Ensure safe disposal, destruction of PFAS
Stop Further Release of PFAS

• Federal legislation
  • Previous – FDA petition on PFAS in food packaging
  • Current – NDAA (phase out AFFF, require reporting of industrial discharges)

• Consumer products
  • Phase out of PFAS in carpets and rugs
    • Home Depot
    • CA Safer Consumer Products program
Sources

- Industrial sites
- AFFF use – DOD sites, airports
- Food packaging
- Carpets, rugs, furniture
- Apparel
- Personal care products
- Cookware
- Landfills
- Wastewater and recycled water
- Artificial Turf

A wide variety of PFAS found at most sources.
Clean Up PFAS

• Federal legislation (proposed NDAA amendments)
  • Accelerate PFAS cleanups at military facilities through the use of cooperative agreements
  • Require ground and drinking water monitoring
  • Add to CERCLA and CWA
• State-level engagement – MI, CA, NY, NH, NJ, etc…
  • Increased monitoring in drinking water
  • Strict water standards
National UCMR3 vs. Michigan Testing

3 detects in 2 zip codes

60+ contamination sites
100+ public water systems

https://www.michigan.gov/pfasresponse/0,9038,7-365-86511---,00.html
https://www.michigan.gov/pfasresponse/0,9038,7-365-86510_87918-464299--,00.html
State Action

Selected U.S. Groundwater and Drinking Water Standards

Figure 1: States are evaluating the health effects of PFAS and generating their own, more health-protective standards or guidelines for concentrations in drinking water or groundwater, much lower than the federal EPA health advisory of 70 ppt. Data reported here include both proposed and adopted levels as of August 2019. Figure is adapted from The Endocrine Disruption Exchange.
Safe Disposal, Destruction of PFAS

- Federal Legislation (proposed NDAA amendments)
  - Ensure safe and effective disposal of military PFAS waste
  - Provide general guidance on disposal of PFAS waste
  - Funding for research
- Still need end-of-life solutions for: AFFF, biosolids, treatment waste, consumer products, etc.
California
CA PFAS Contamination - UCMR3

Testing limitations + many potential PFAS sources...

Phase 1 Site Investigation Data

Dectes by Chemical

COUNT

PFOS 257
PFHxS 247
PFOA 226
PFBS 185
PFHxA 167
PFHDA 107
PFNA 44
PFDA 12
ADONA 6
NMeFOSAA 0
PFuA 0
NEFOSAA 0
PFHx 0
PFDoA 0
ADONA 0
11-Cl-PF30U05 0
HFPO-DA 0
9-Cl-PF3ONS 0

https://www.waterboards.ca.gov/pfas/
CA Biomonitoring Data

California Regional Exposure Study, Los Angeles County (CARE-LA)

- Collected in 2018
- Over 90% detection rate: Me-PFOSA-AcOH, PFHxS, PFNA, PFOS, PFOA
- 11 different PFAS detected

Asian/Pacific Islander Community Exposures (ACE) Project

- Collected 2016-2017
- Over 90% detection rate: Me-PFOSA-AcOH, PFHxS, PFNA, PFOS, PFOA, PFUA, PFHxA
- 14 different PFAS detected
Key Actions Needed in CA

Comprehensive approach

• PFAS as a class
• Multi-Agency Taskforce
• Phase out use of PFAS
• Expanded monitoring
• Clean up drinking water
• Invest in better, low-cost testing, treatment, disposal solutions
• Ensure polluters pay fair share of the costs
Thank you

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