PFAS
Informational Update

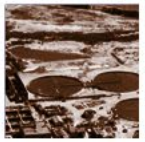
Lan Wiborg, Director of Environmental Services

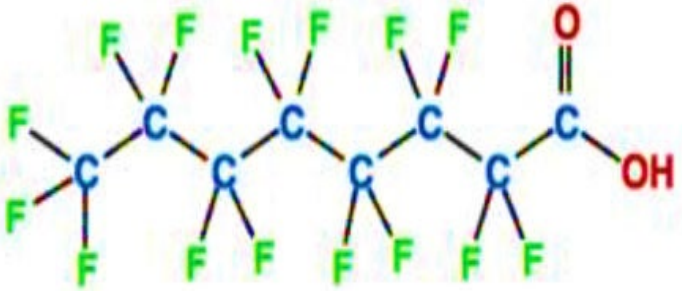
Operations Committee

March 4, 2020

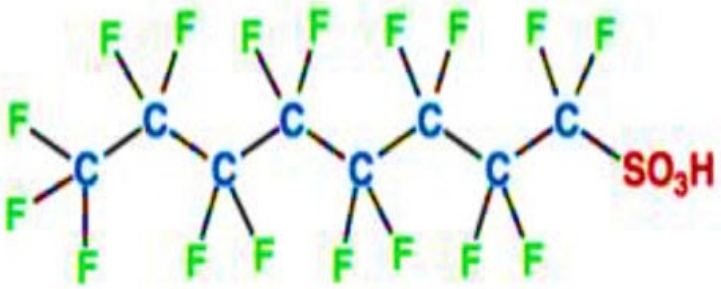
CELEBRATING 65 YEARS
ORANGE COUNTY SANITATION DISTRICT

PFAS
(per- and poly-fluoroalkyl substances)



PFOA - perfluorooctanoic acid



PFOS - perfluorooctanesulfonic acid

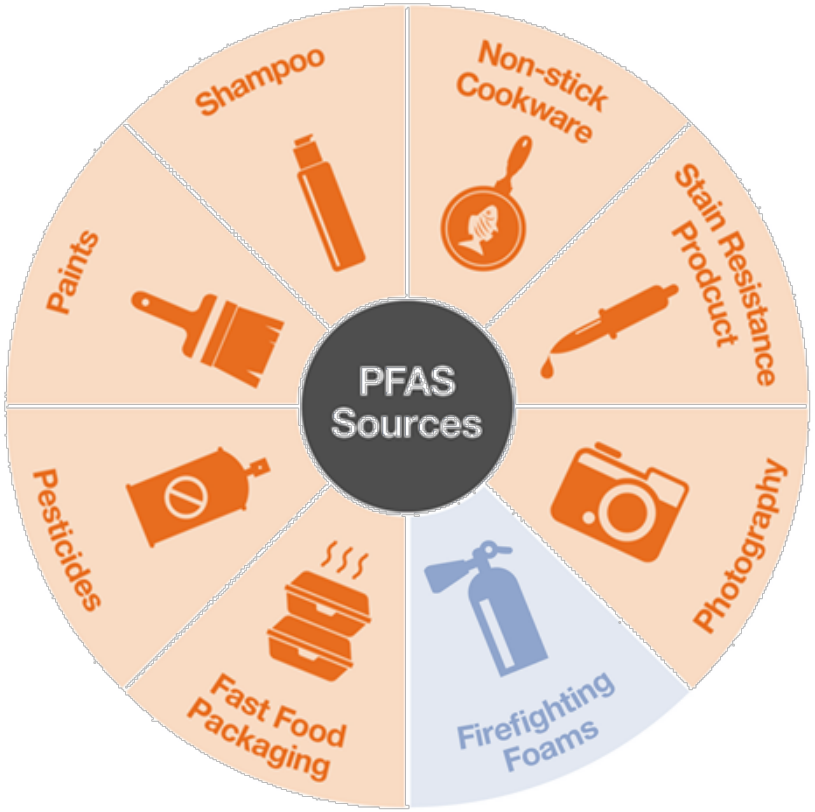
- Class of over 4,000 man-made chemicals
- Extremely stable and persistent
  - Upside: Stable, versatile, water/oil resistant
  - Downside: Persistent in environment and body

PFAS
Contaminant of Emerging Concern (CEC)

CECs may or may not be regulated but pose some health or environmental concerns

Some Examples CECs	Timeline
PCBs	1970s-1980s
DTC & NDMA	1990s-2000s
1,4-dioxane	2000s-2010s
Microplastics	2010s-
PFAS	2010s-

PFAS
In Everyday Lives



Examples

Liquid – surfactants, AFFF, cleansers, industry

Coatings – carpets, textiles, waxes, paints

Materials – clothing, food package, pans, floss

Source: Australian Department of Defense

PFAS
Potential Human Health Effects

➢ Carcinogenicity	*Kidney and testicular cancer*
➢ Immunotoxicity	*Ulcerative colitis, immune dysregulation*
➢ Endocrine toxicity	*Thyroid disease*
➢ Reproductive toxicity	*Pregnancy-induced hypertension*
➢ Cardiovascular toxicity	*Increased serum cholesterol*

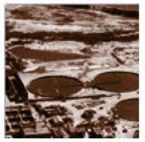
PFAS
Reducing Exposure

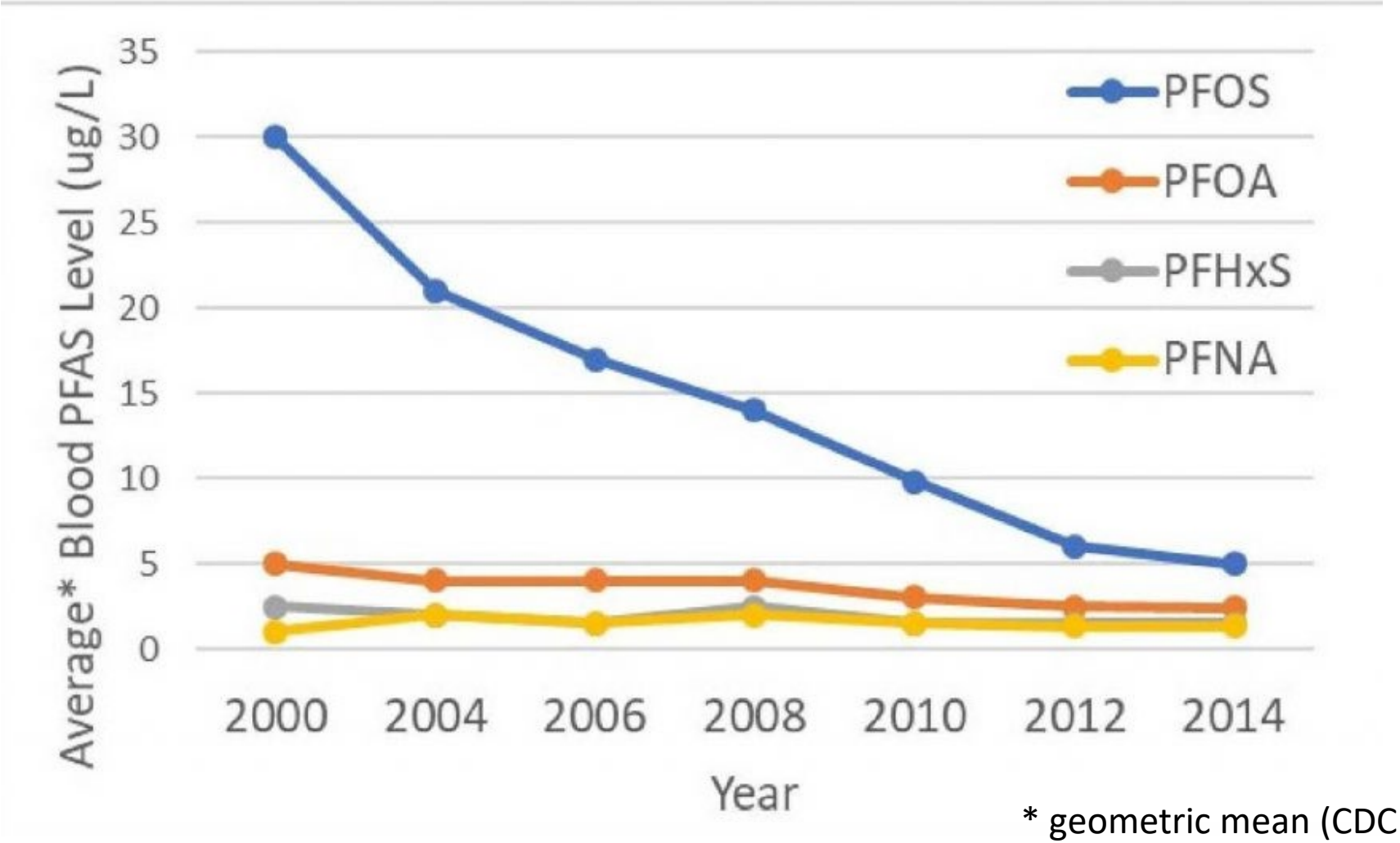
	US Phase-out	1999-2014 Blood Level	2018 Background levels (ppt)	
			Household Dust	Foundation Cosmetic
PFOS	2002	70% ↓		
PFOA	2015	84% ↓	10,000-50,000	2,370,000

Drinking water and wastewater systems do not produce or use PFAS chemicals

Human Blood Levels

Decreasing Trend Following Phase-out

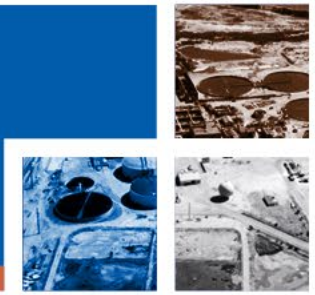


* geometric mean (CDC 2017)

USEPA's PFAS Action Plan

Released in February 2019 (*Source: SWRCB*)



TOXICOLOGY

Develop toxicity thresholds for 21 PFAS

DRINKING WATER

Consider MCLs & broader PFAS regulation

MONITORING

Enhanced nationwide PFAS drinking water monitoring in next Unregulated Contaminant Monitoring Rule (UCMR4)

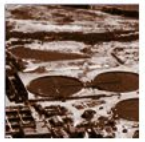
CLEANUP

Designate PFOS & PFOA as hazardous substance & develop interim groundwater cleanup recommendations

CALIFORNIA
Water Boards

State Action: Drinking Water

Source: SWRCB



2013-2015

- USEPA Third Unregulated Contaminant Monitoring Rule (6,400 samples collected in CA)

May 2016

USEPA – Lifetime Health Advisory of 70 ppt

June 2018

- State Water Board Interim Notification Levels
- PFOA: 14 ppt, PFOS: 13 ppt

February 2019

USEPA – PFAS Action Plan

March/April 2019

- Water Quality Investigative Orders to Landfills and Airports
- Public Water System Sampling Orders adjacent to the Airports and Landfills

July 2019

- California Assembly Bill 756
- Requires notification to consumers for PFAS detected above NL
- Effective Jan 1, 2020

August 2019

Lower notification levels

- PFOA: 5.1 ppt
- PFOS: 6.5 ppt

October 2019

- Water Quality Investigative Orders to Chrome Plating Facilities

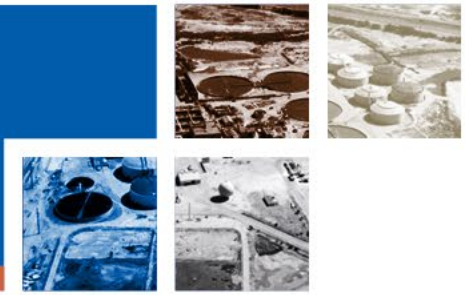
February 2020

Lower response levels

- PFOA: 10 ppt
- PFOS: 40 ppt

State Action: AB 756

Source: SWRCB



Authorizes SWRCB to order public water systems to monitor, report, notify the public and/or remove water sources that exceed the NLs/RLs

January 2020
- AB 756 statute changes become effective

April/May 2020
- OEHHA releases draft PHGs for public comment

July/August 2020
- OEHHA initiates scientific peer review of draft PHGs

Fall 2020
- OEHHA releases 2nd public review draft of PHGs for public comment

Summer 2021
- OEHHA releases final PHGs and responses to comments

Summer 2022
- Water Board releases draft MCLs regulation package and begins public comment period

Fall 2022
- Board Hearing on MCLs and close of comment period

Spring 2023
- Board adoption hearing on MCLs

Summer 2023
- Water Board submits regulation package to Office of Administrative Law (OAL) for approval

Fall 2023
- OAL approval, MCLs become effective

CALIFORNIA Water Boards

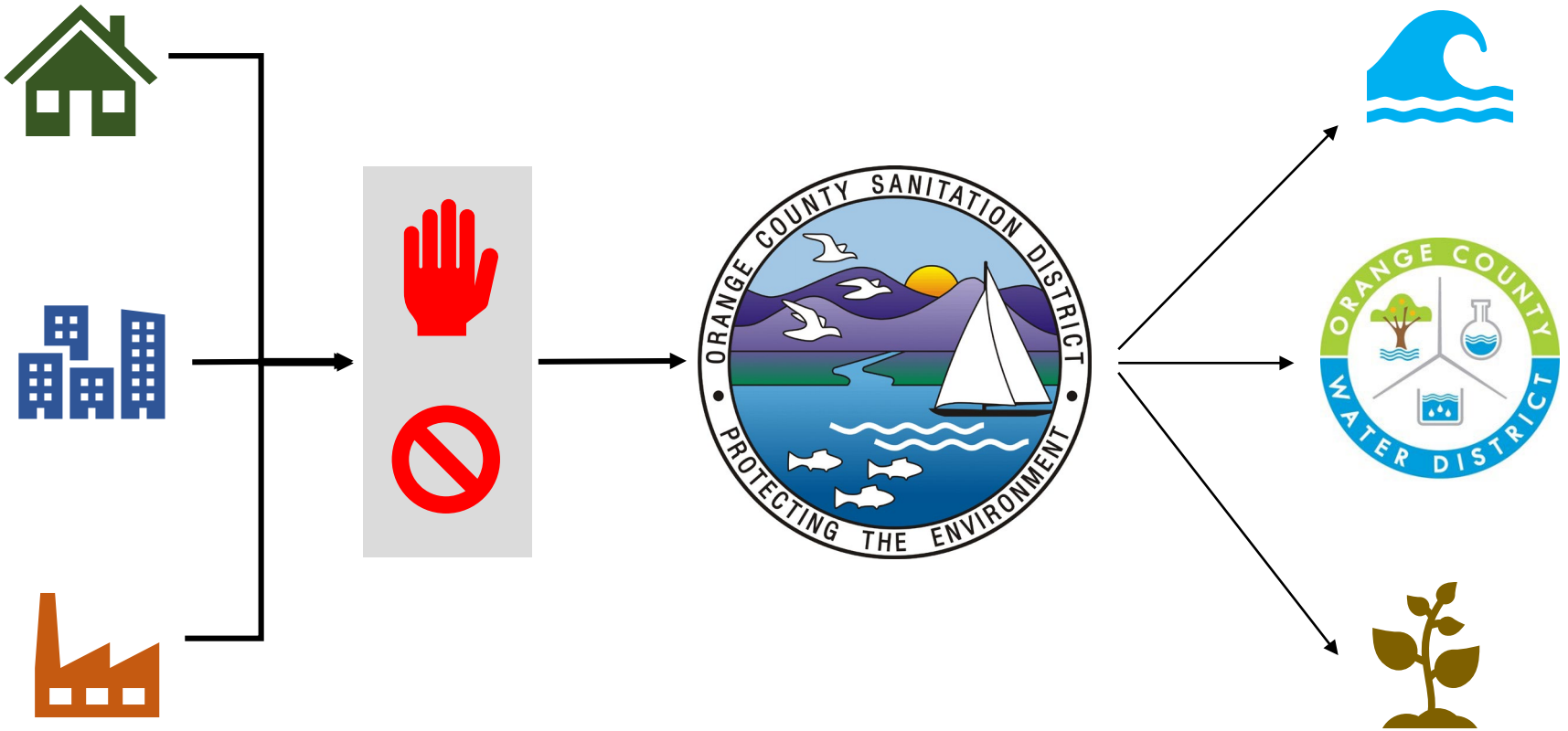
Upcoming State Actions

Source: SWRCB

- Additional sampling outwards from impacted public water supply wells
- Focused watershed-based source & public water system investigations
- Sampling at Wastewater Treatment Facilities (influent, effluent, and biosolids)
- Source investigations at Refineries and Bulk Terminals
- Integration of data from DoD and additional sampling of public water system wells around impacted installations
- Identify strategies for domestic well sampling in impacted areas
- Data analysis and visualizations to inform the public and decision makers

PFAS

Potential Impact to OCSD



OCSD Current Actions

- Communication
  - Aligning messaging and resources with other agencies
  - Engaging regulators, legislators, and community stakeholders
  - Federal and state advocacy
  - Participating in method development
- Participate in a CASA-led review of PFAS health effects
- Conducting industrial surveys in line with state's approach
- Evaluating screening levels for discharge requests

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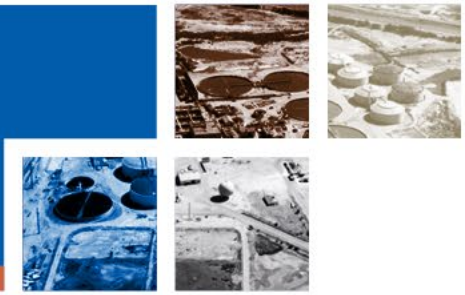
OCSD Future Actions



- Coordinate PFAS management with other agencies
- Implement Policies & Standards (limits, conditions, etc.)
- Find, inspect, monitor, and permit potential sources
- Sample and analyze using EPA-approved methods
- Track and adapt to evolving federal/state regulations
- Optimize monitoring and reporting process

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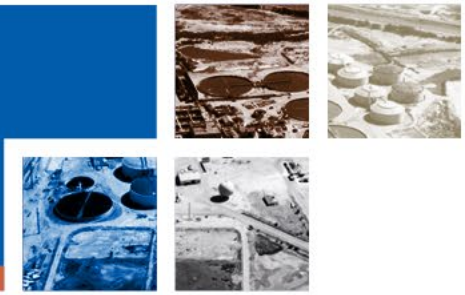
Key Messages



1. PFAS are ubiquitous in our homes and environment
2. OCSD is committed to protecting the environment and public health against the adverse impact of PFAS
3. PFAS producers and heavy users are not the same as ‘receivers’
4. Remove and treat PFAS at the source
5. Base regulation and response on sound science
6. Avoid risk transfer and unintended consequence
7. Need permanent disposal/sequestration options

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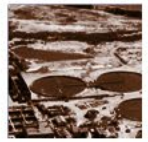
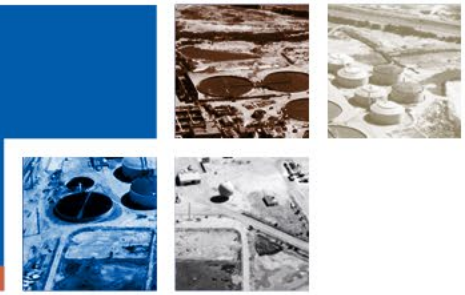



Questions?

Comparison (Source NEBRA)



Foundation cosmetic	2,370 ppb PFOA
Pork liver in Taiwan	283 ppb PFOA
Dust in daycare center	142 ppb PFOA (median)
Household food waste	6 ppb all PFAS (mean)
US human blood serum (NHANES)	2 ppb PFOA (mean)
Control garden soil	0.36 ppb PFOA (median)
DDW Notification Levels	0.014 ppb PFOA; 0.013 PFOS