

# PFAS: uses, environment, safer alternatives

Sept, 11, 2018

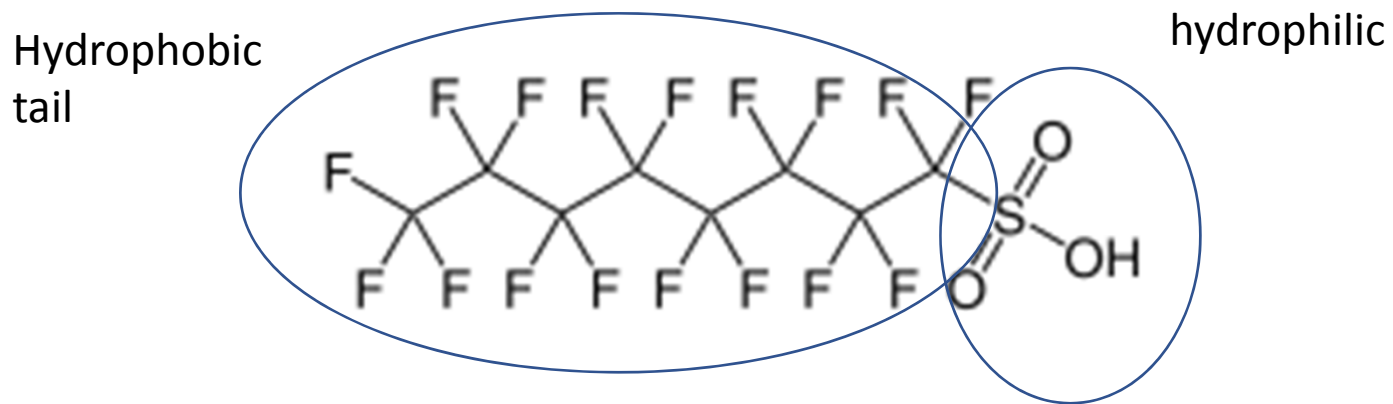
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**Local Hazardous Waste  
Management Program  
in King County, Washington**

Local Governments for Health and the Environment:  
*King County, City of Seattle, Sound Cities Association*

# Per- and Poly-Fluorinated Alkyl Substances



perfluorooctane sulfonic acid (PFOS)  
perfluorooctanoic acid (PFOA)

# Uses

- Carpets
- Paper and packaging
- Apparel
- FF foam
- Performance chemicals
- Adhesives
- Paints and stains
- Metal plating
- Cleaning agents
- Semi-conductors
- Aviation



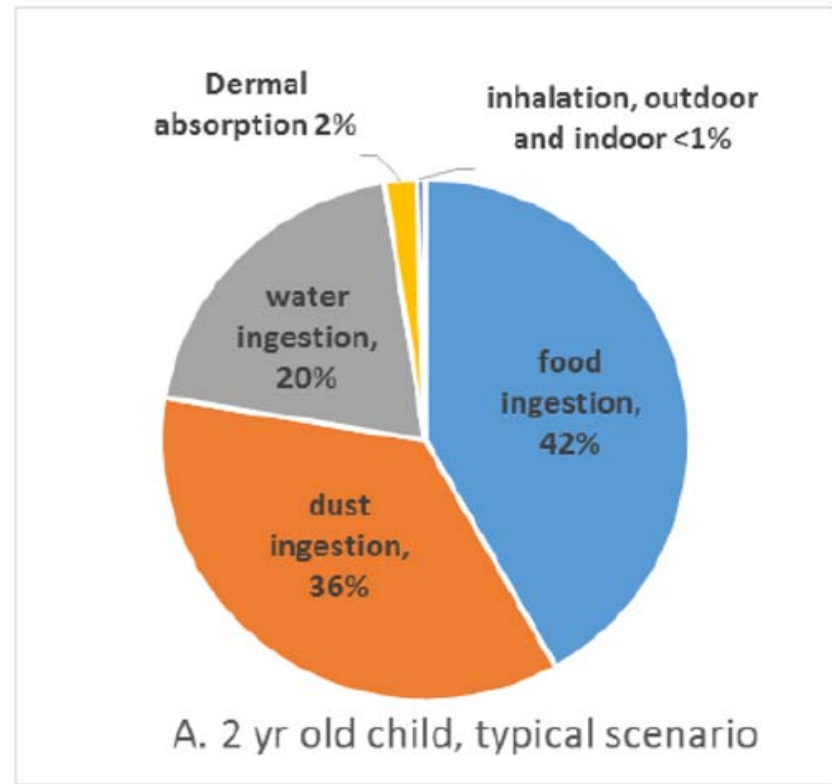
# Human Health

## Widespread exposure

- Drinking water, food, dust
  - Children
  - Occupational
- CDC biomonitoring

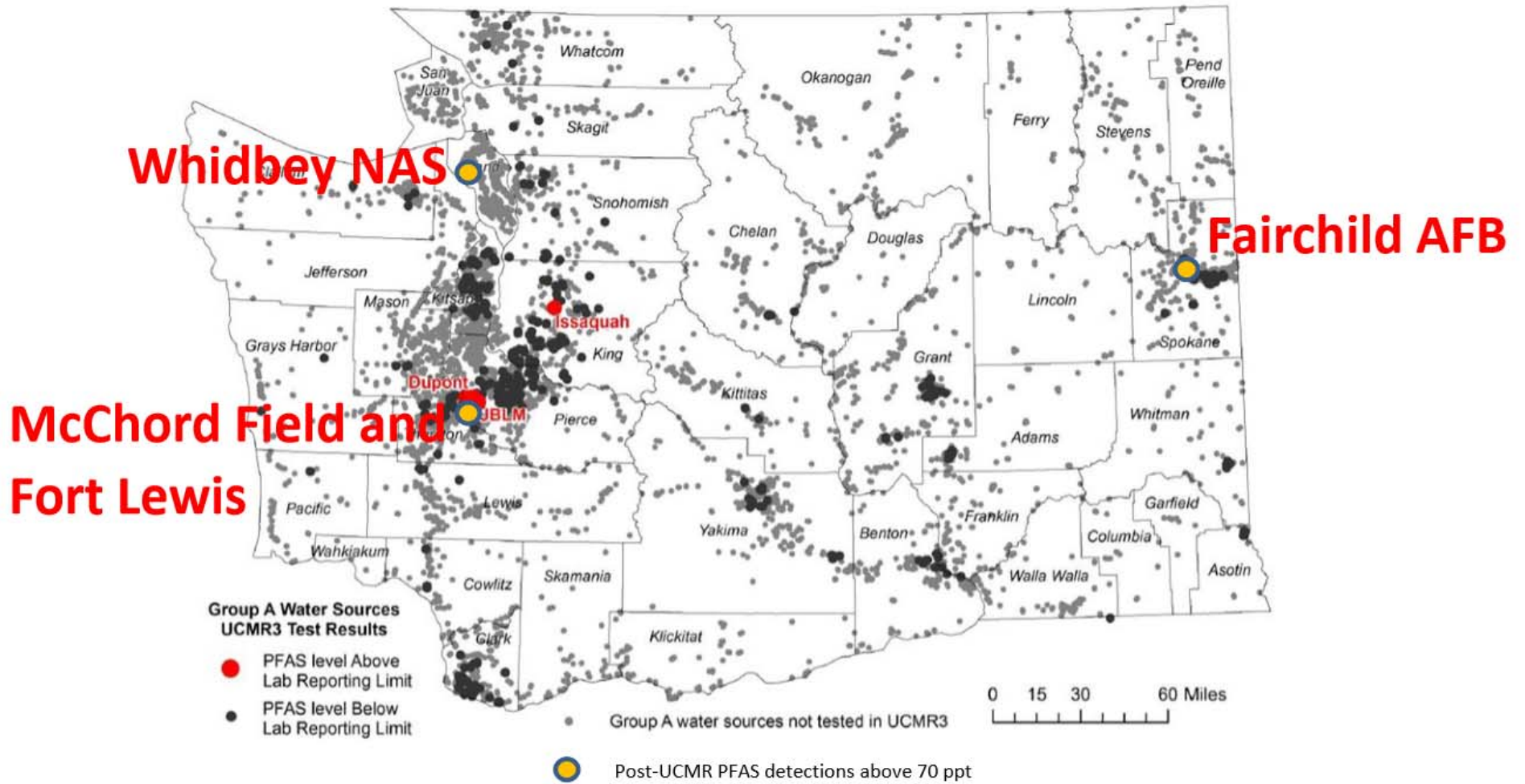
## Health effects

- Inc. cholesterol levels
- Liver damage
- Immune system
- Thyroid disease
- Developmental effects
- Decreased fertility
- Cancer

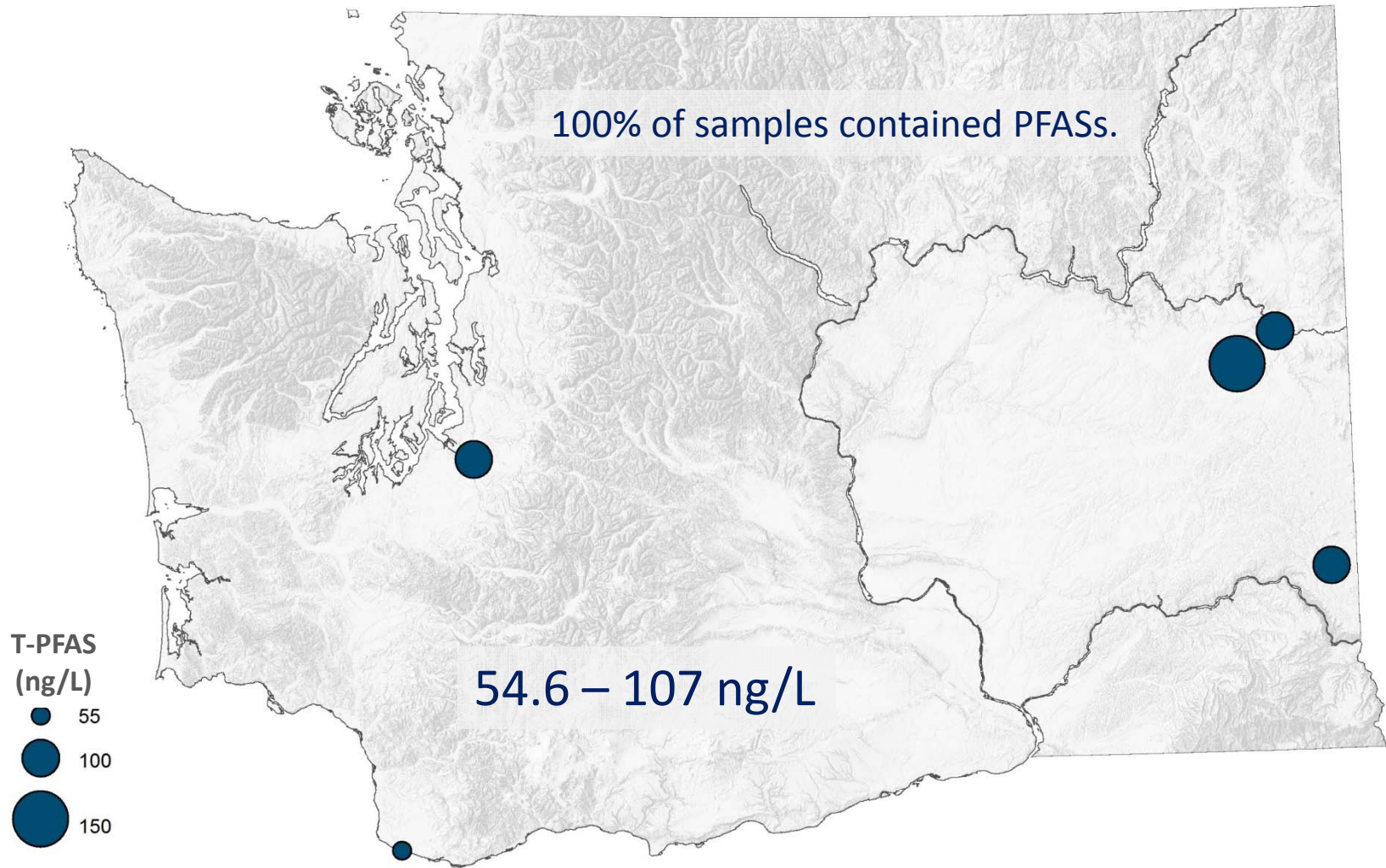


Source: Egeghy and Lorber, et al. 2010

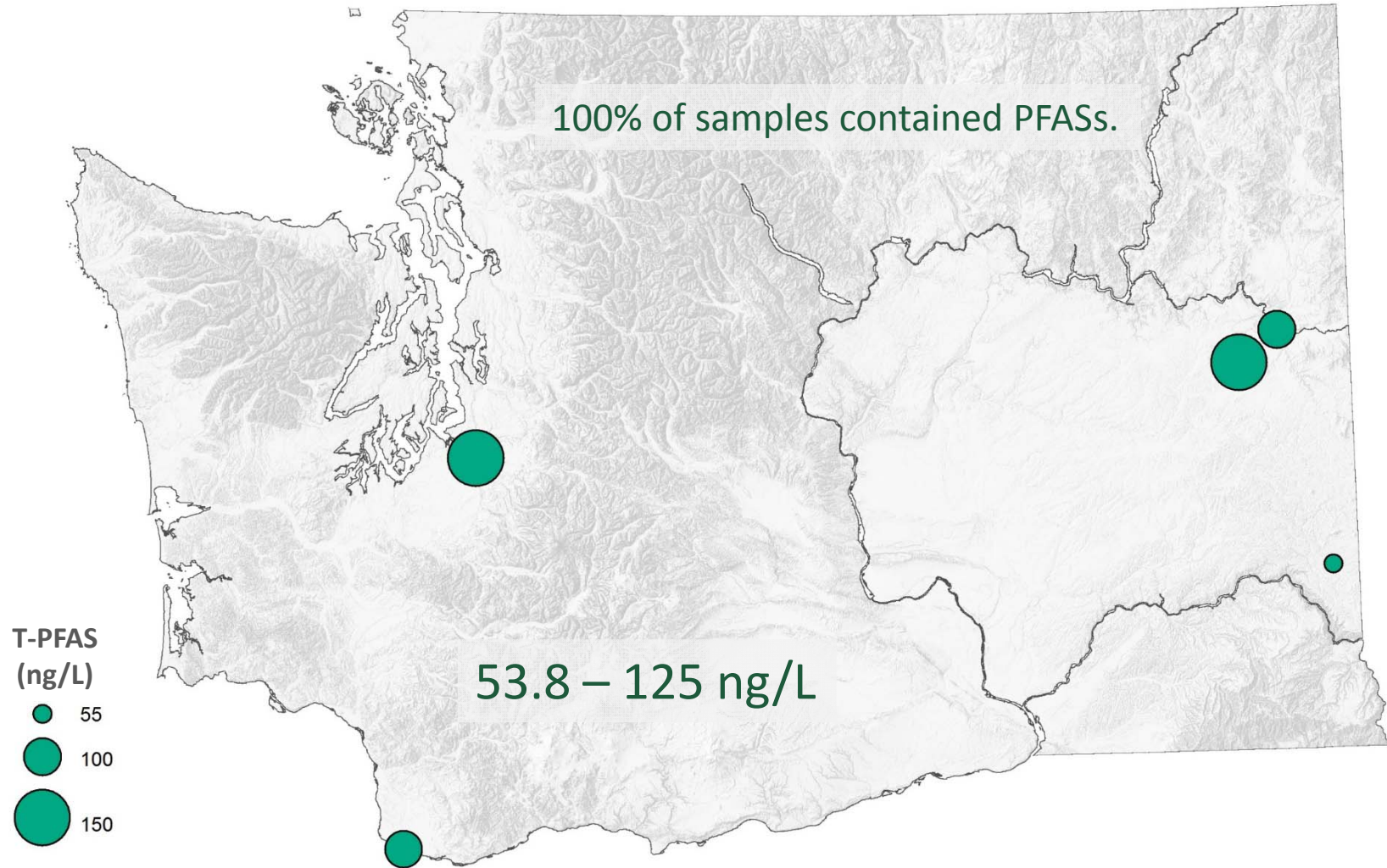
# Drinking Water Testing

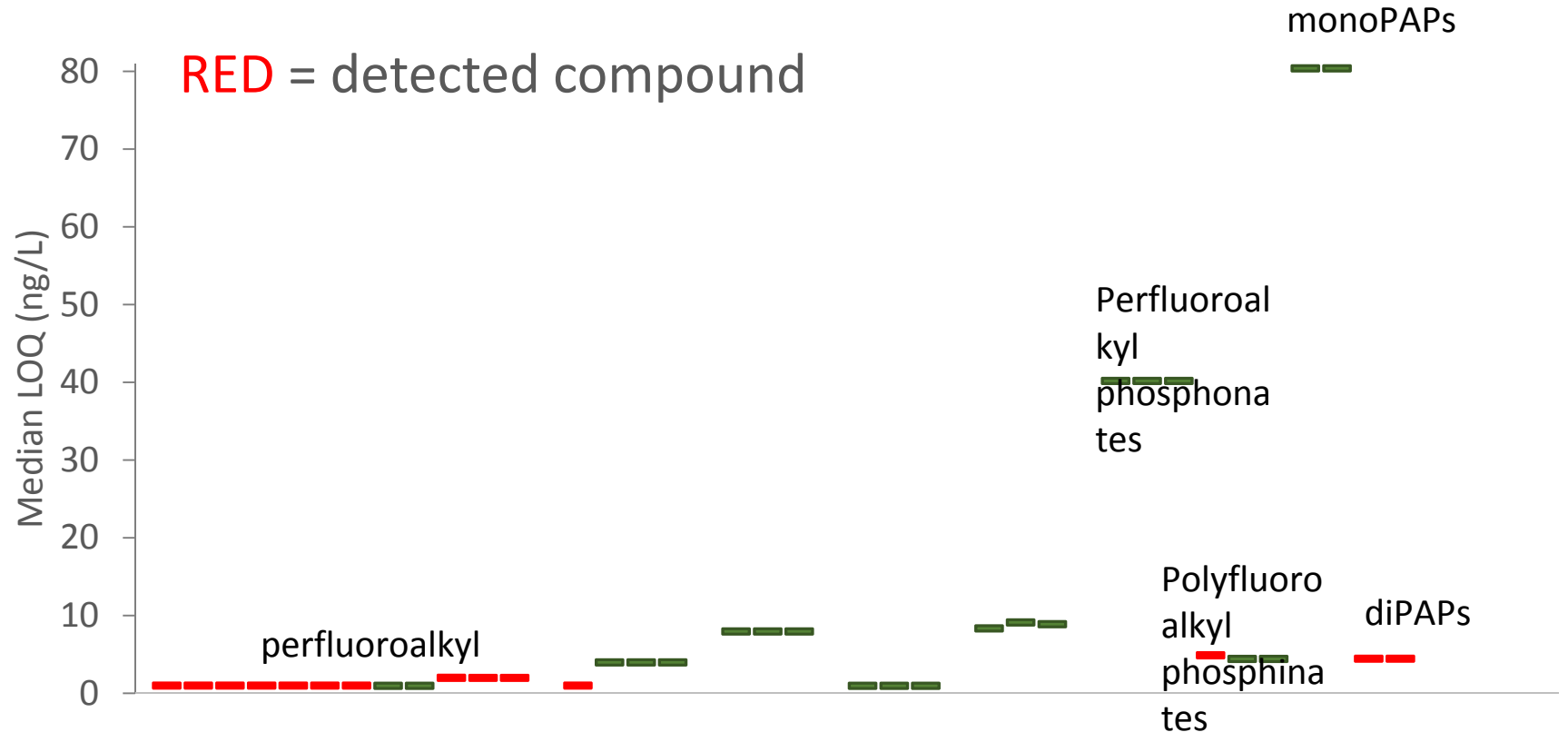


# WWTP Effluent - spring



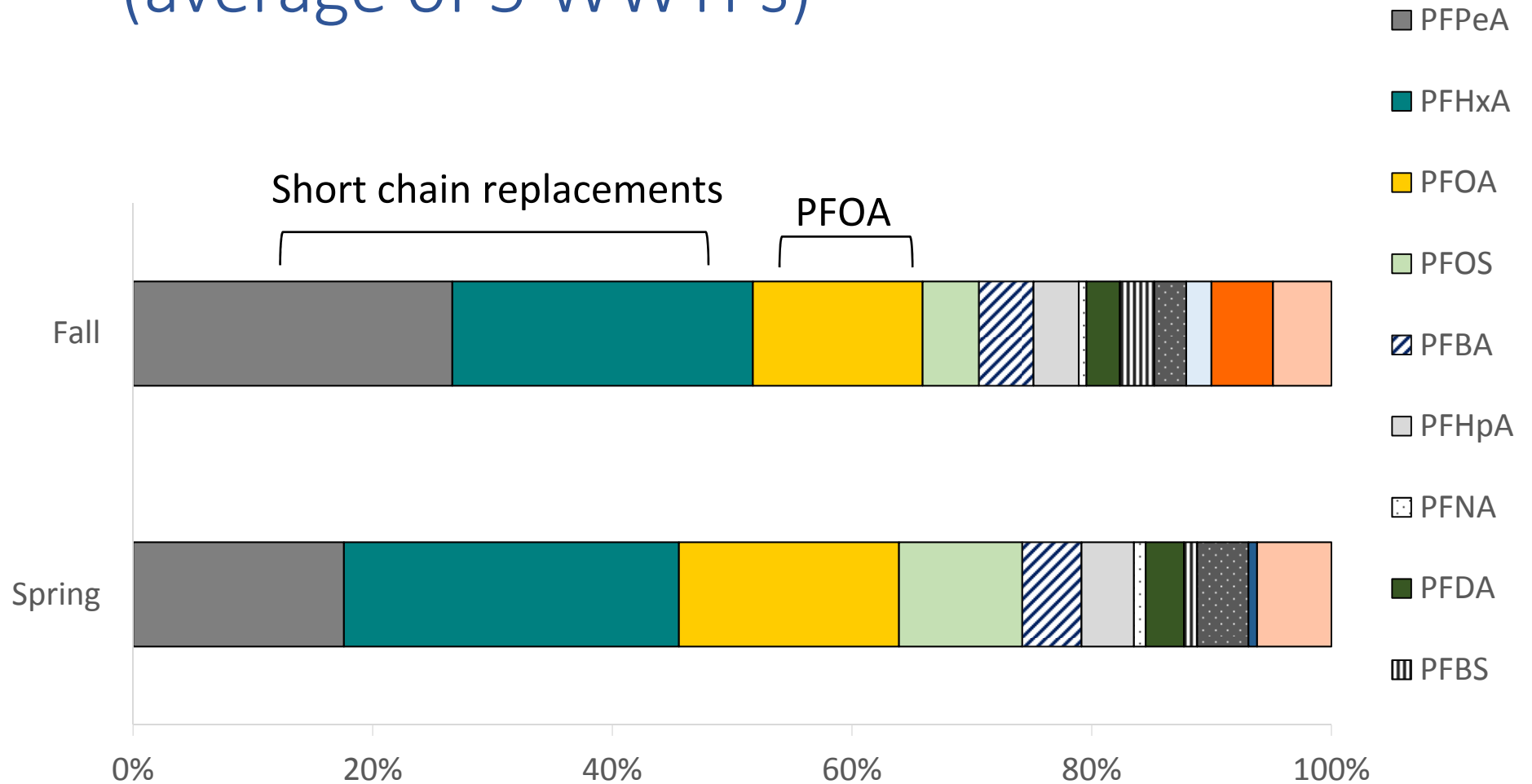
# WWTP Effluent - fall





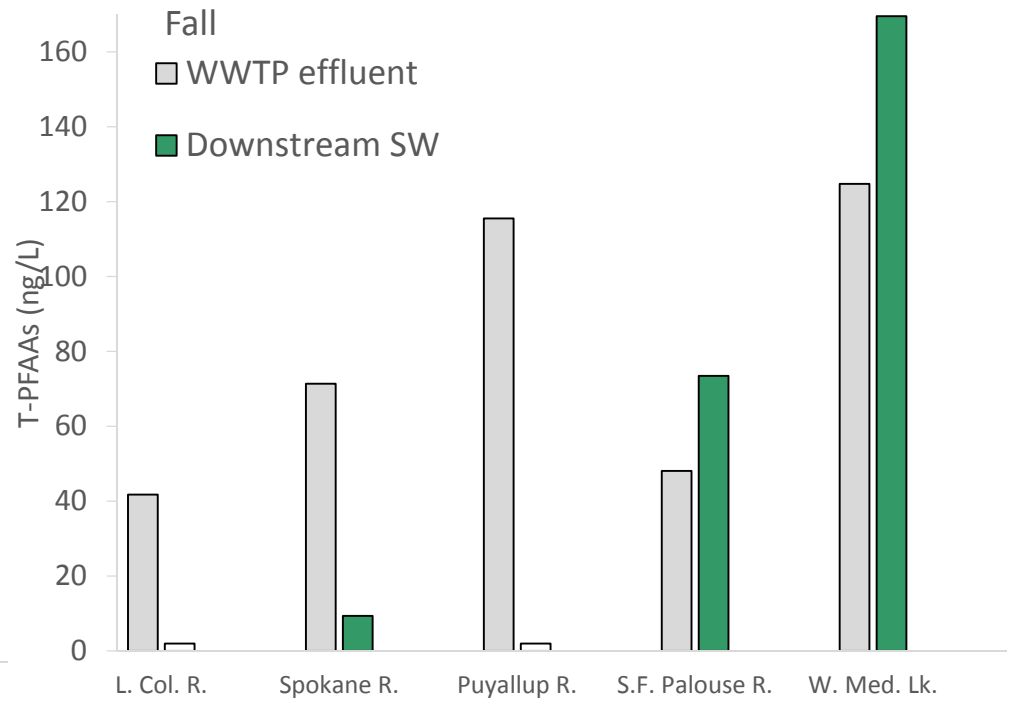
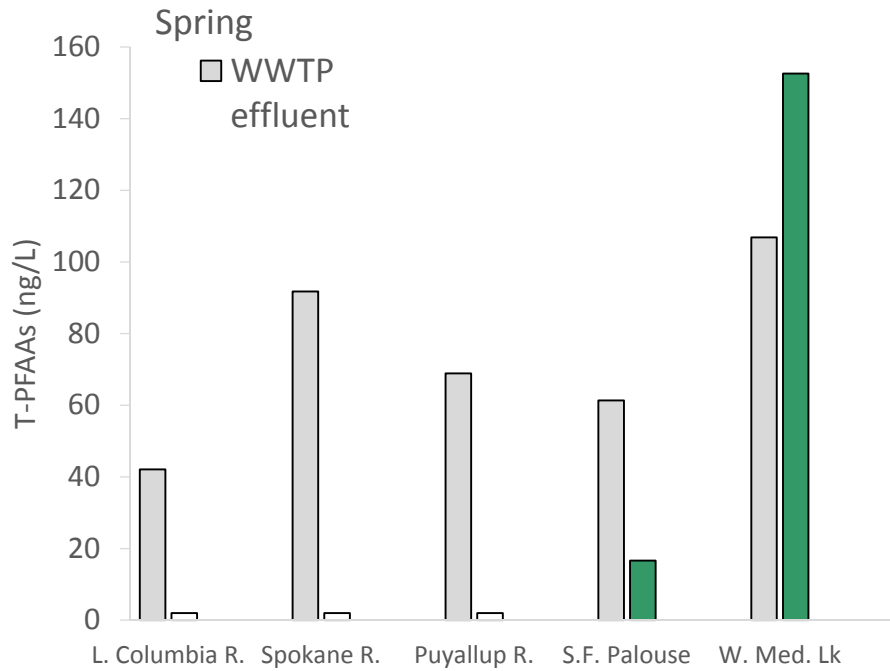


# Compounds in WWTP Effluent (average of 5 WWTPs)



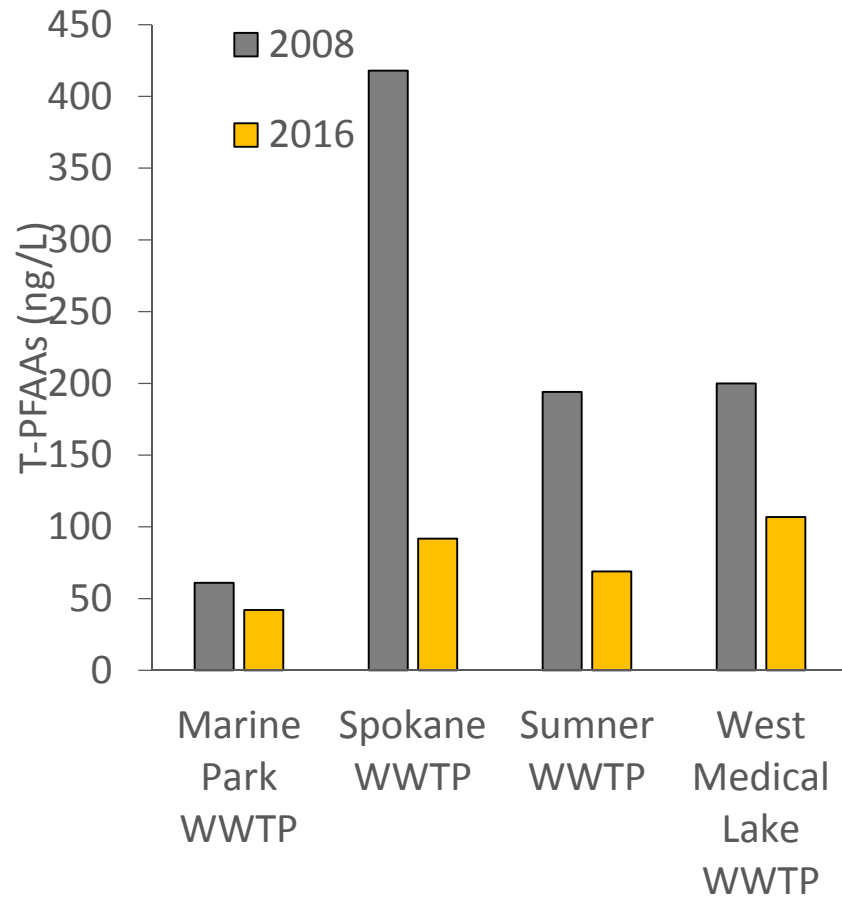


# WWTP Effluent → Surface Water

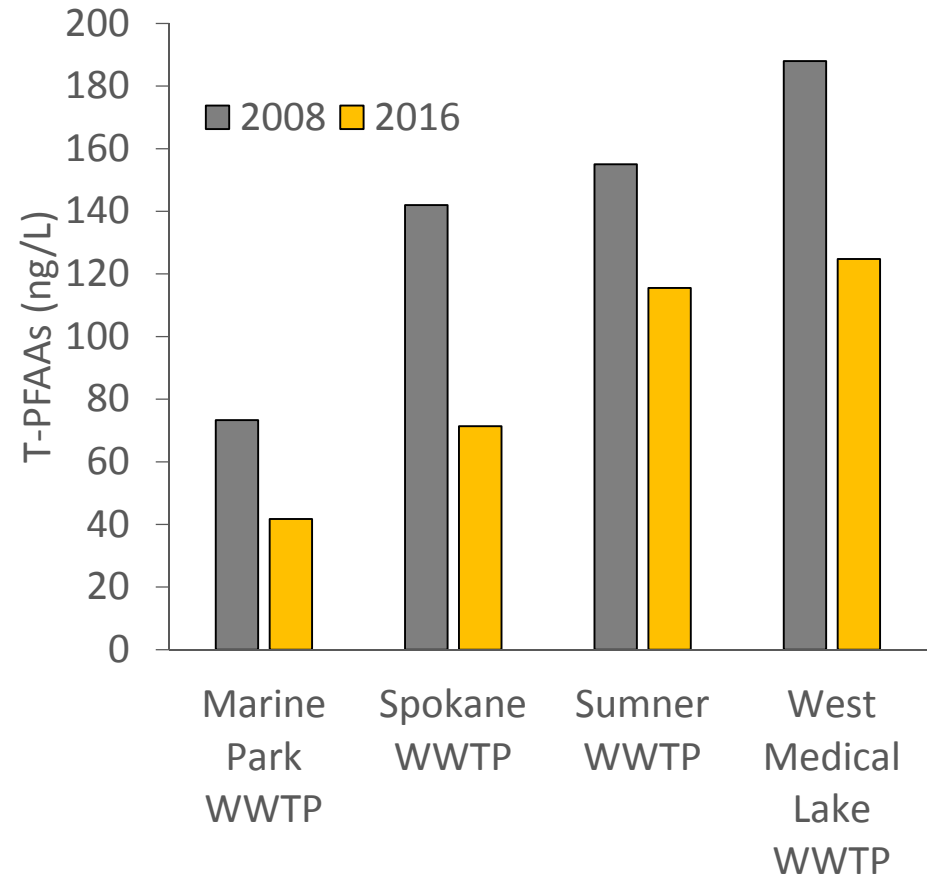


# WWTP Effluent

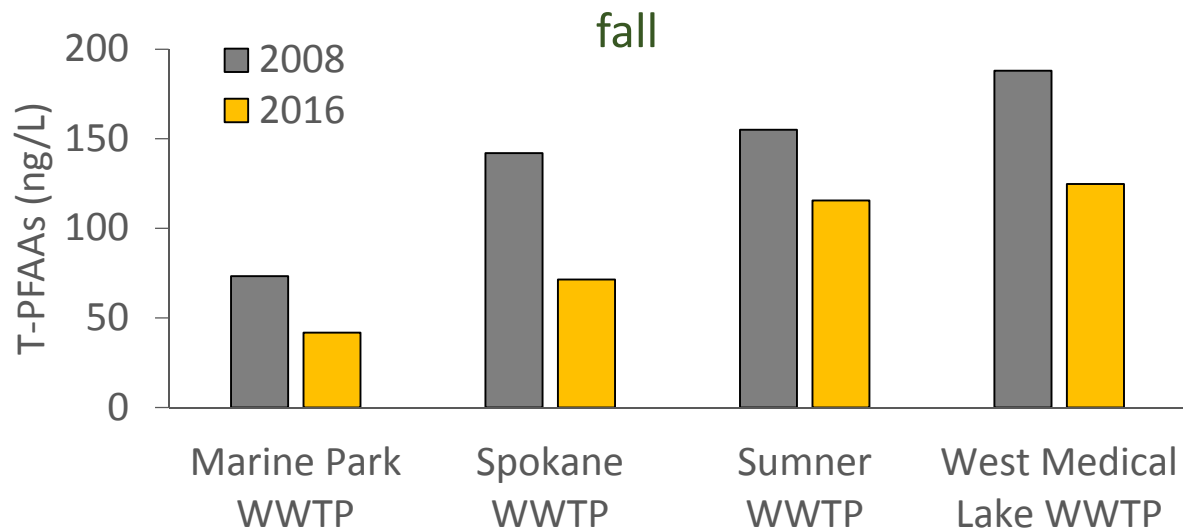
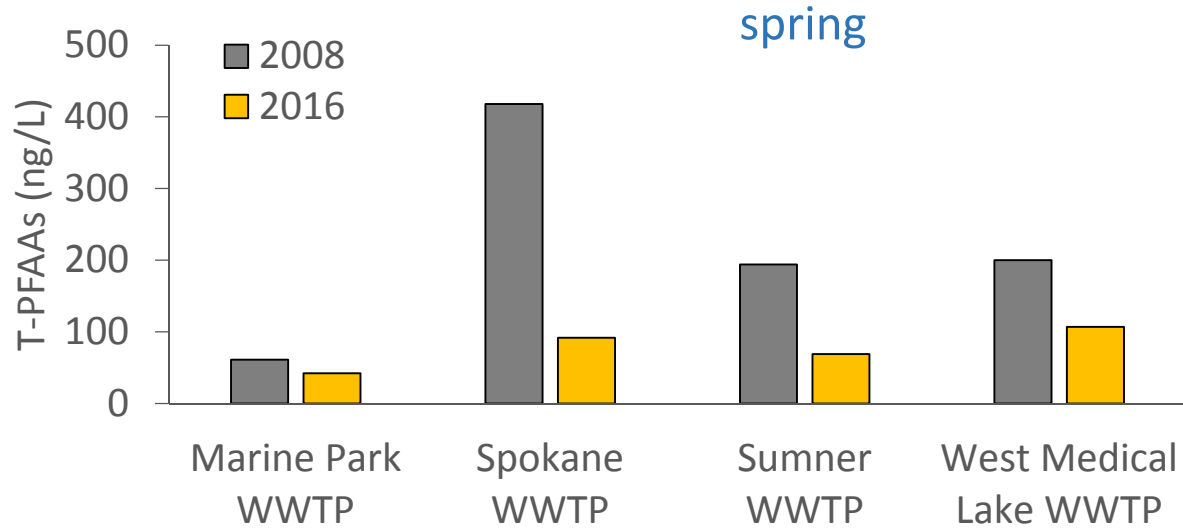
spring



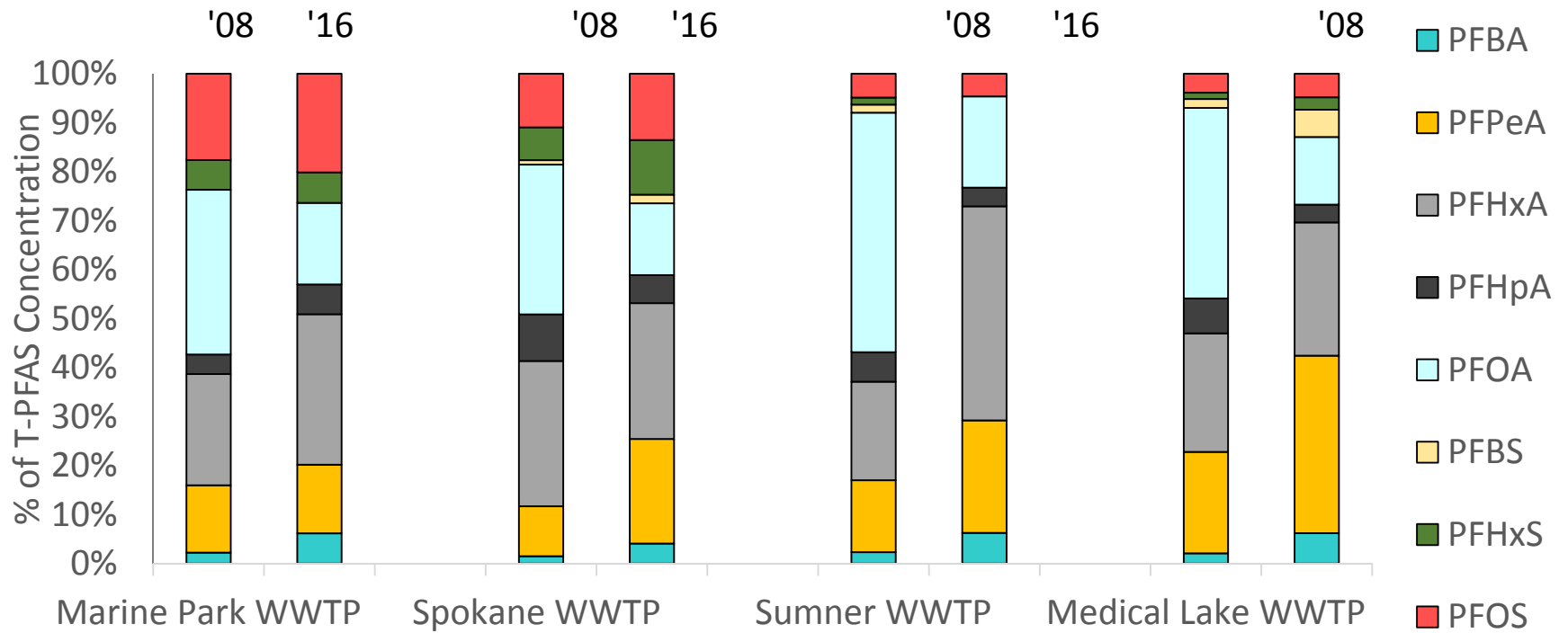
fall



# WWTP Effluent by year



# WWTP Effluent compounds by year



# EPA Intentions

- Existing Superfund law for clean up of PFOS and PFOA
- Drinking water regulation for PFOS, PFOA, GenX
- High throughput toxicity screening on about 75 PFAS
- Lab method development
- TCSA- voluntary phase out of PFOS, PFOA

# 2018 WA State Laws

- Food contact paper (RCW 70.95G)
  - Entire class
  - After Ecology alternatives assessment
- Class B firefighting foam (RCW 70.75A)
  - Entire class
  - Use in training as of July 1, 2018
  - Sale as of July 1, 2020, with exceptions
  - Firefighting PPE notification to purchasers



# Safer Alternatives

- Avoid regrettable substitutes
- Alternatives assessment
  - Hazard
  - Exposure
  - Performance
  - Cost and availability



- King Co, Toxics Free Future, Clean Production Action
- 100 F-free products from 24 manufacturers
- Goal: GreenScreen certified