Emerging Contaminants & CERCLA Sites

Challenges and Response Strategies

PRESENTED BY: SITE ASSESSMENT AND POST CONSTRUCTION FOCUS GROUPS

Outline

- CEC Definition and Examples
- Research Toolbox Findings
- Reactive and Proactive Response Strategies
- Response Action Triggers
- Examples of State Screening Efforts
- Regulatory and Process Triggers
- Re-engaging with EPA and Community
- Resources

Contaminants of Emerging Concern (CEC)

- Any physical, chemical, biological, or radiological substance or matter in any environmental media that may pose a risk to human and/or ecological health, is under regulated, and the presence, frequency of occurrence or source of which is not well understood, routinely monitored, and/or may lack analytical methods.

What Kind Of CEC's Are We Talking About?

- Per- and Polyfluorinated alkyl substances (PFAS)
- Pesticides, Herbicides, Fungicides
- Nanomaterials/Microplastics
- Pharmaceuticals
- Neo-nicotinoids, hormones and sterols

Re-Emerging CEC

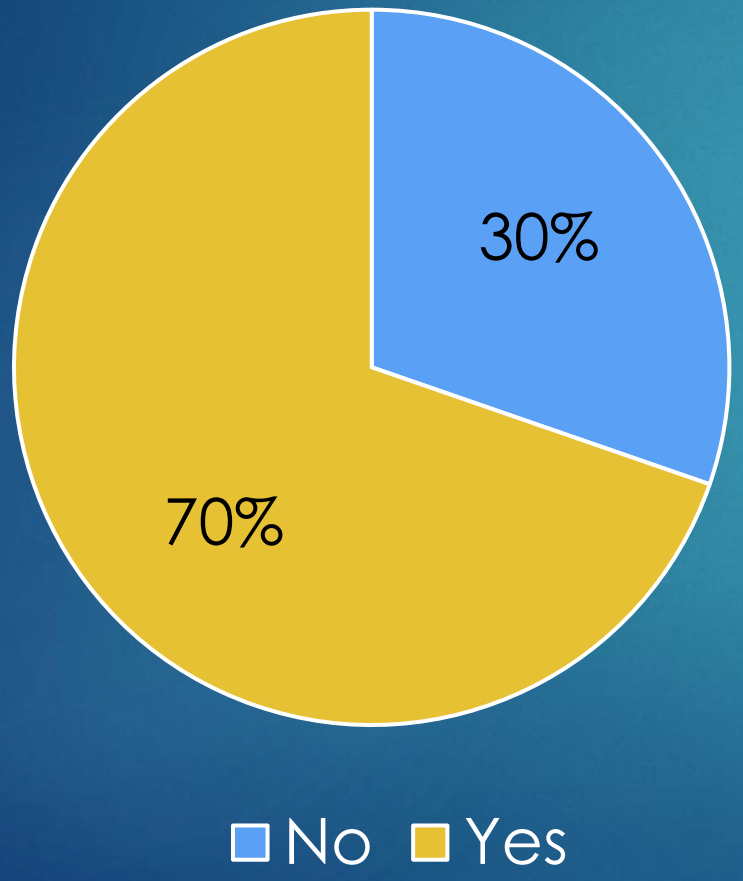
- Changes in awareness
  - 1,4-dioxane
  - PCBs in indoor air
- Changes in Toxicological Information and Pathway Evaluation
  - TCE
  - Lead
  - PFAS
  - Vapor Intrusion
- Laboratory reporting limits
  - Vinyl Chloride
- Policy
  - Perchlorate

Research Toolbox Findings

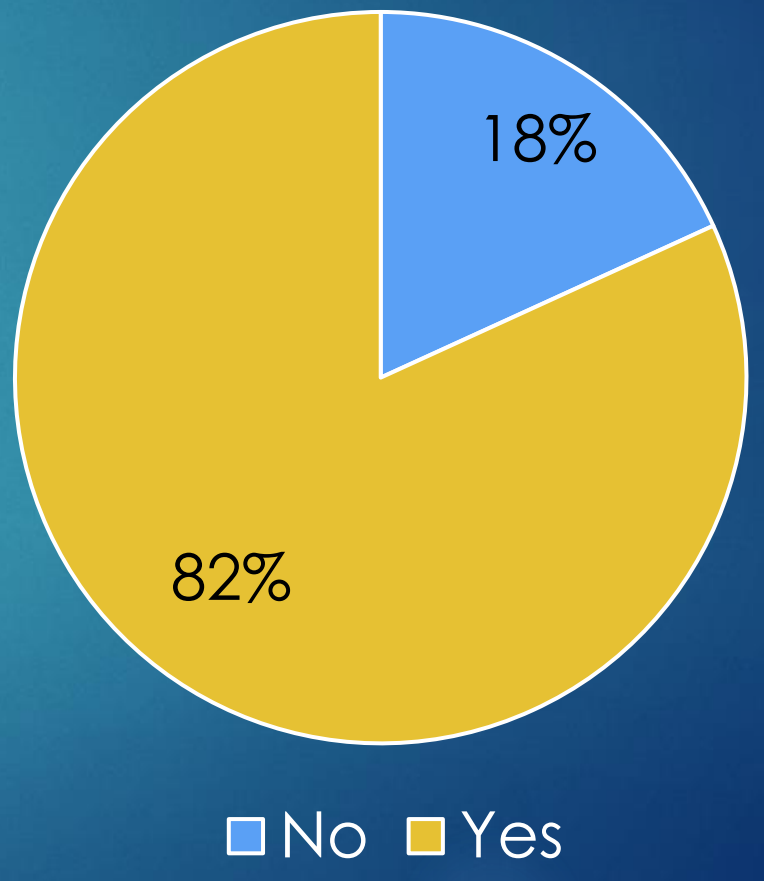
- Site Assessment Focus Group queried member organizations related to CECs
- 33 programs responded, including 27 states and 1 territory and all 10 regions

Are you investigating:

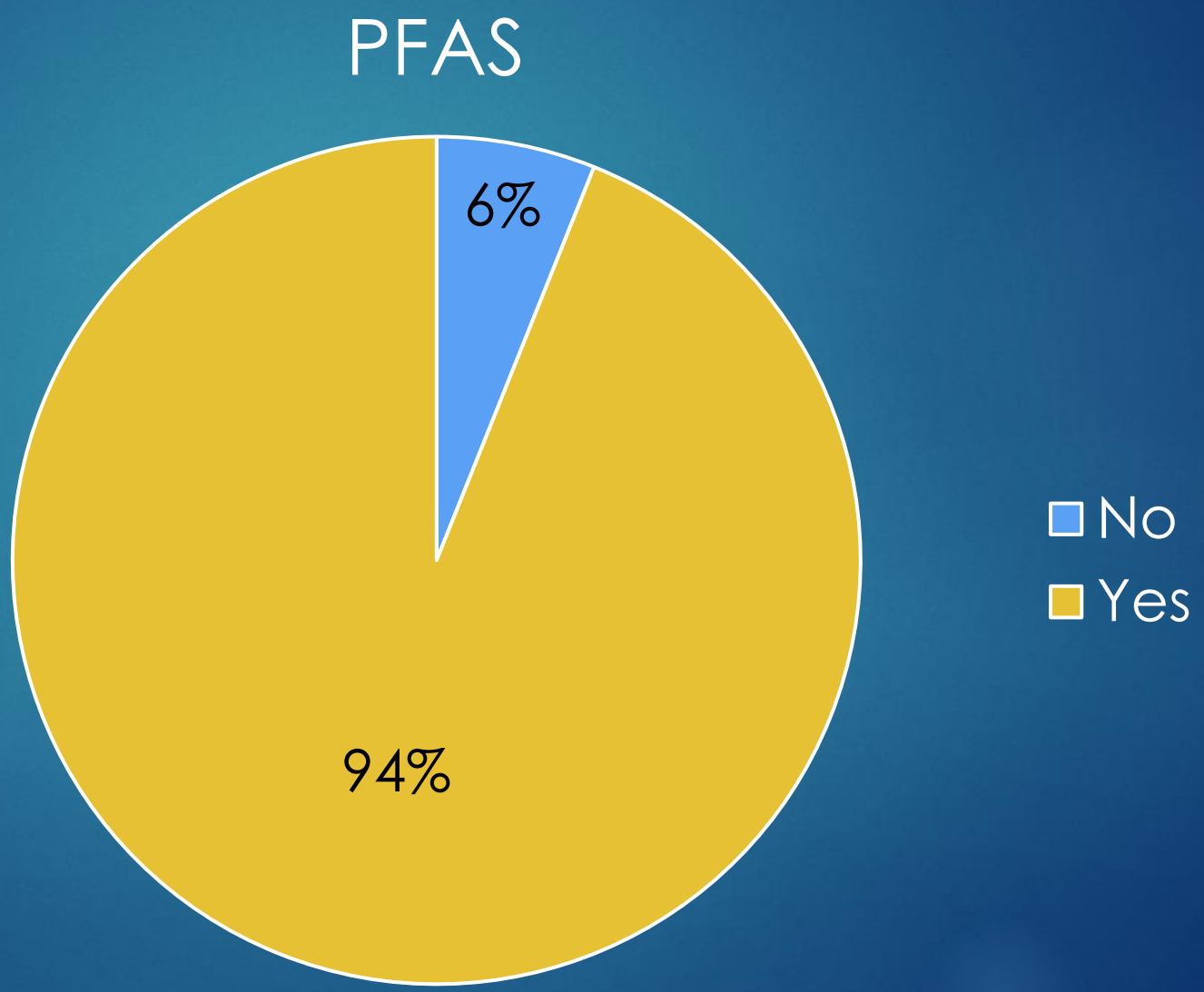
1,4 Dioxane



Pesticides, herbicides, fungicides

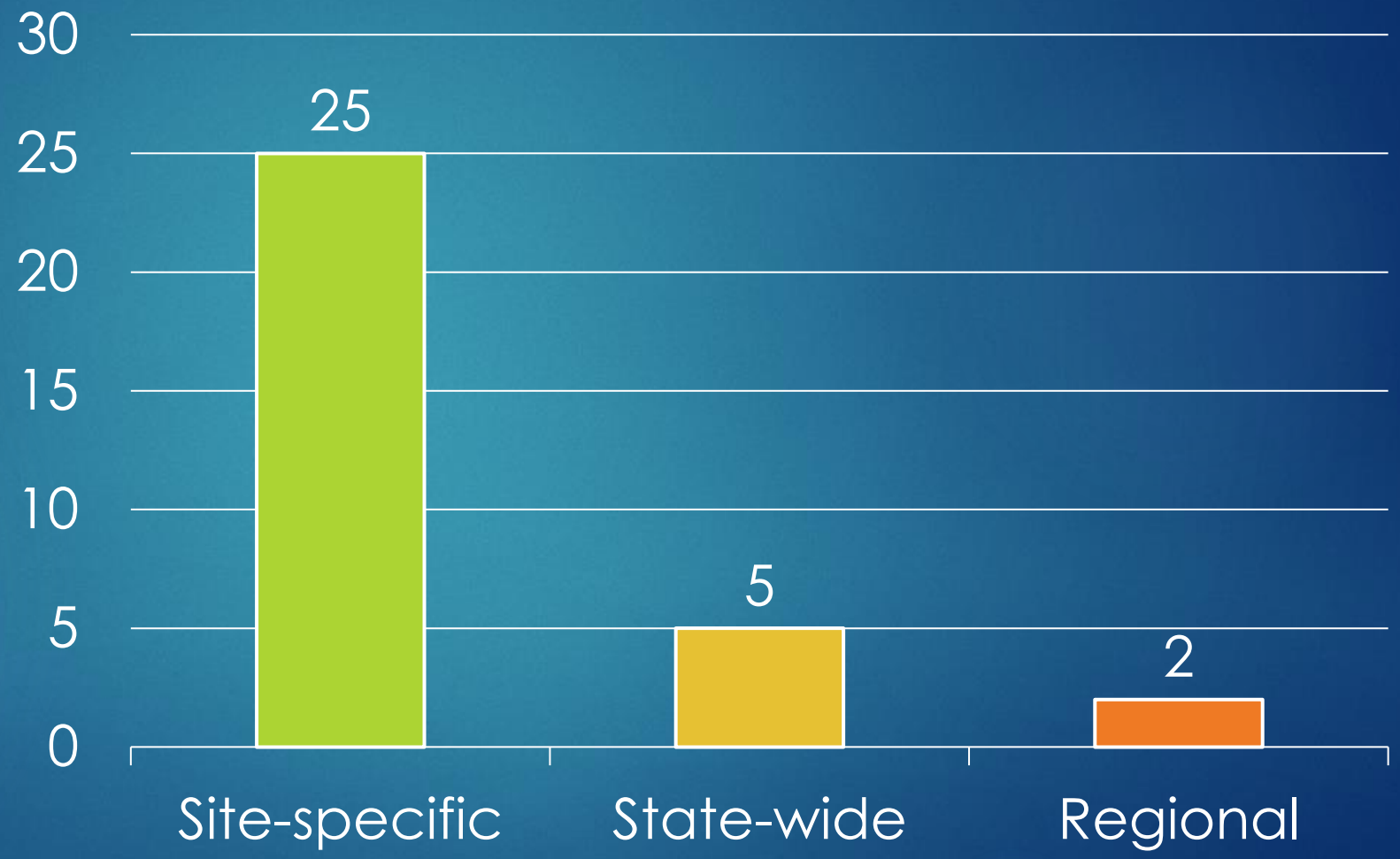


Are you investigating:



Has your CEC investigation been:

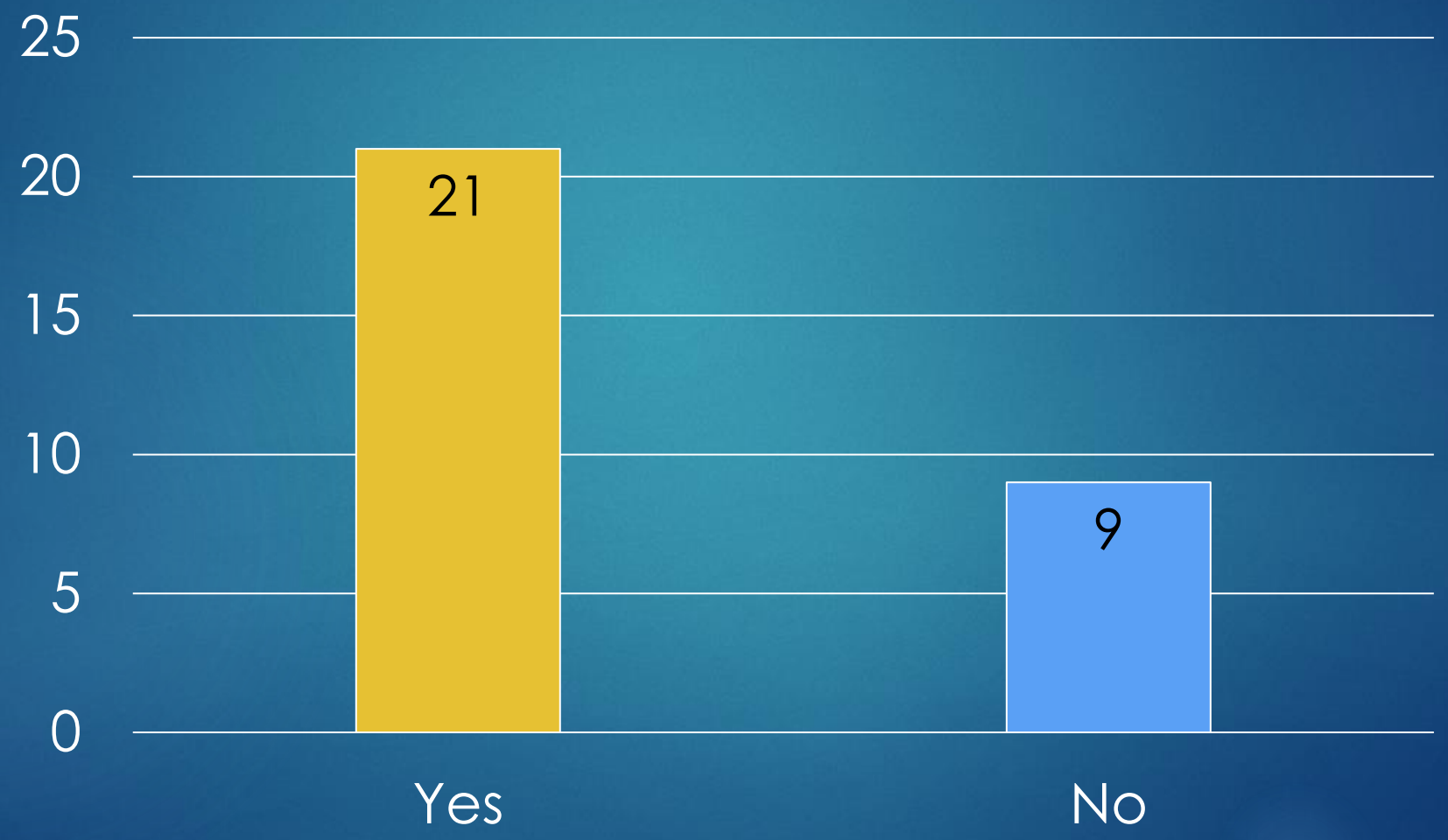
State-wide, Regional, and/or Site-Specific?



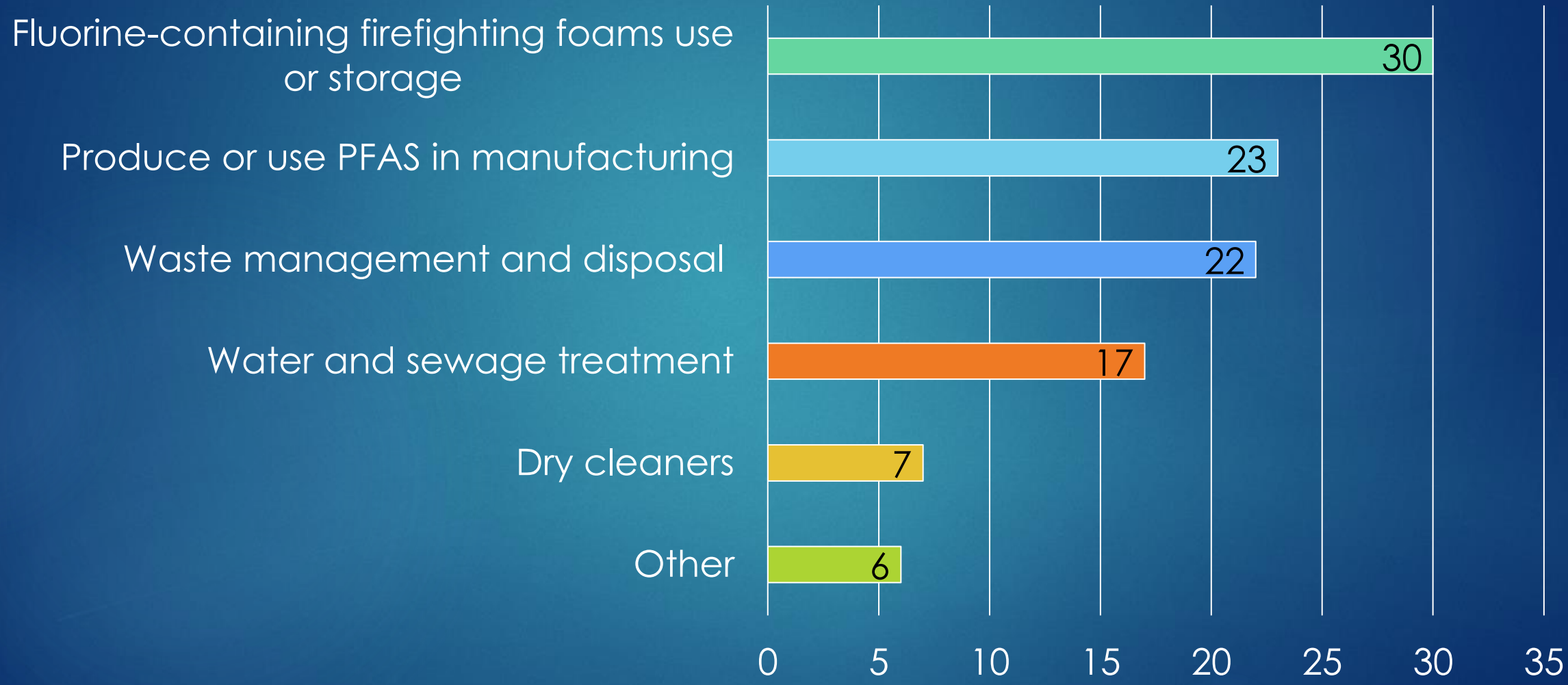
What media is being sampled?

- Drinking Water
- Soil
- Groundwater
- Surface water
  - foam
- Indoor Air/Soil Gas
- Waste Water
- Sludge
  - Recycled paper sludge
- BioSolids
- Sediment
- Stormwater
- Fish Tissue and Shellfish
- Wildlife
- Food Consumption Advisory
- Compost
- Landfill Leachate
- New products
  - Hydro seeding with mulch made with recycled paper in substrate

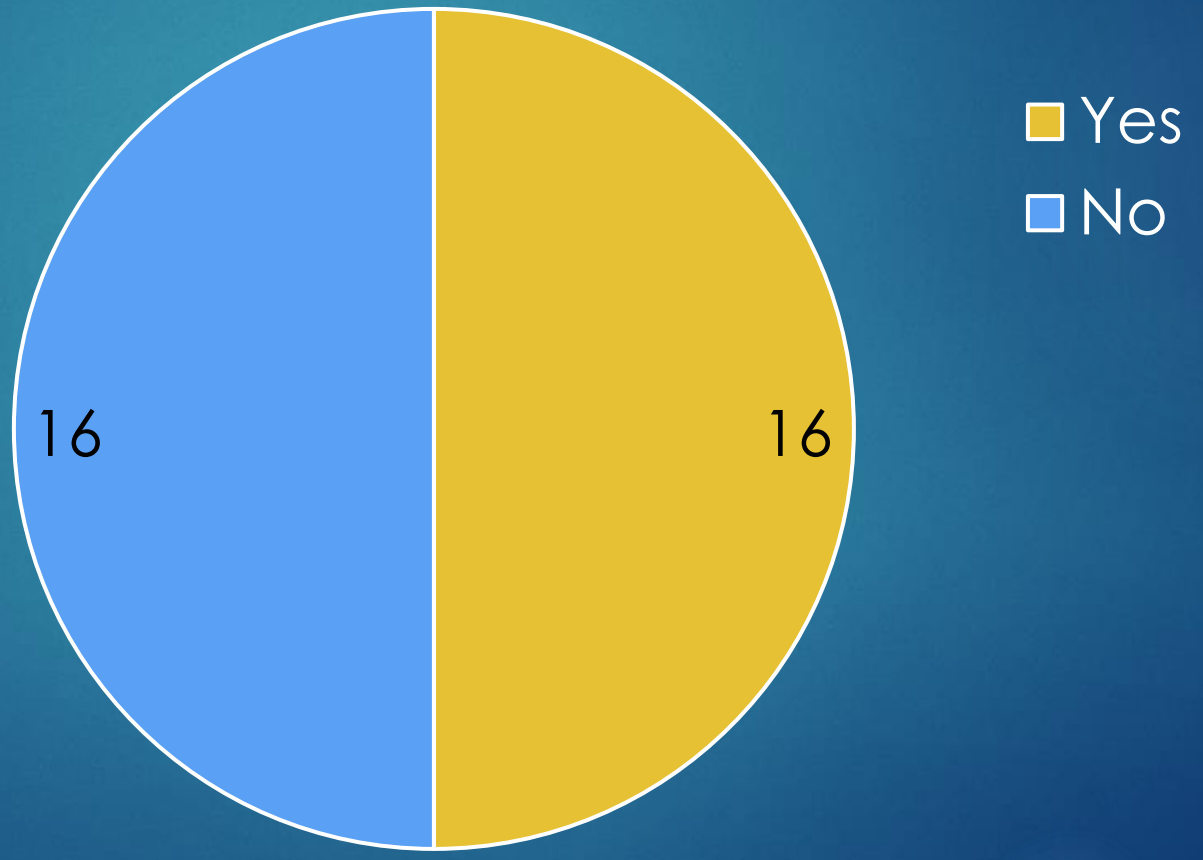
Does your State have approved lab methods for soil and groundwater CEC analysis?



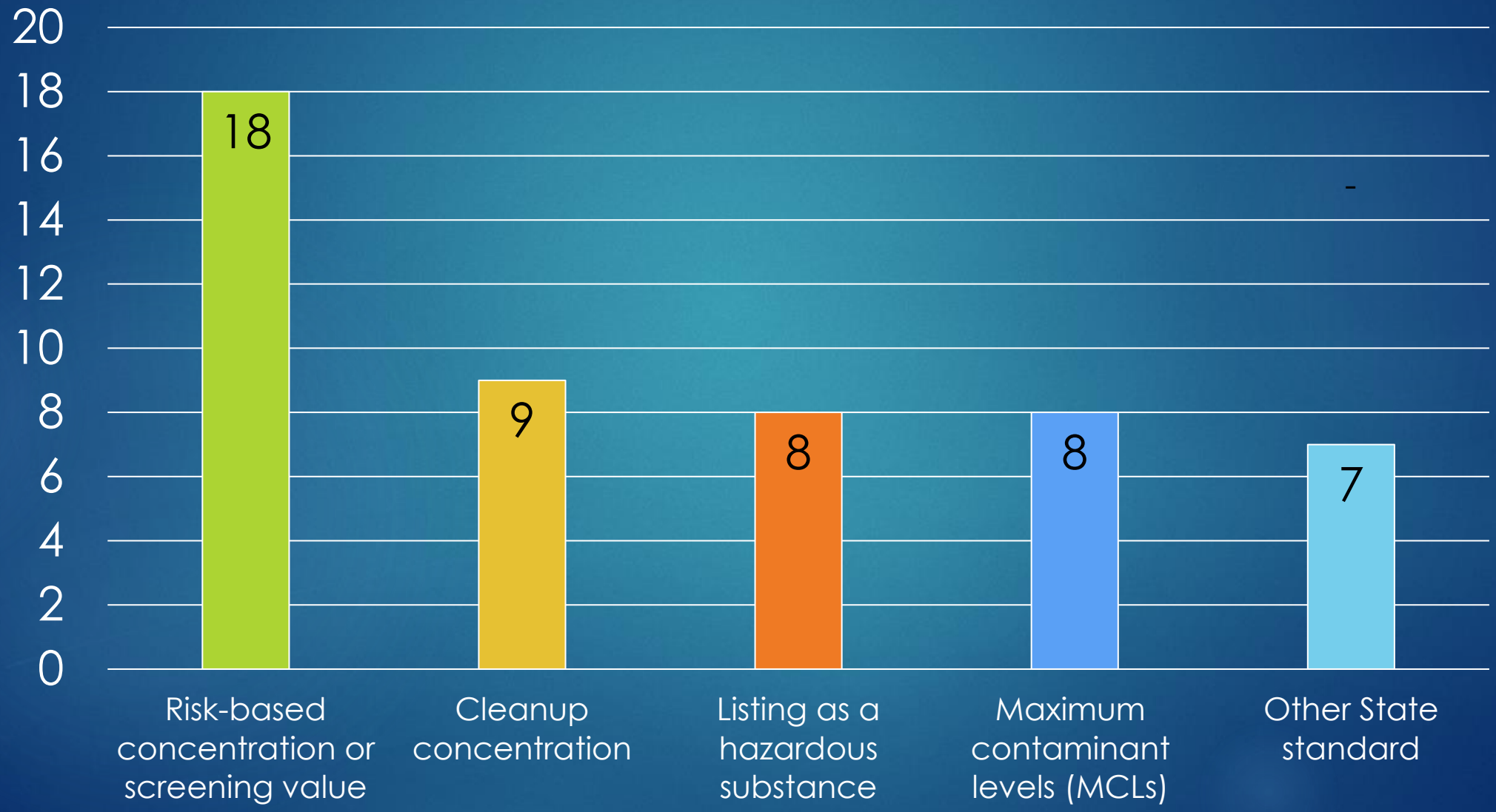
Industries Identified with PFAS



Is your State actively adopting guidance, standards or regulations?



Does your State have the mechanism to create the following?



CEC Response Strategies

Reactive

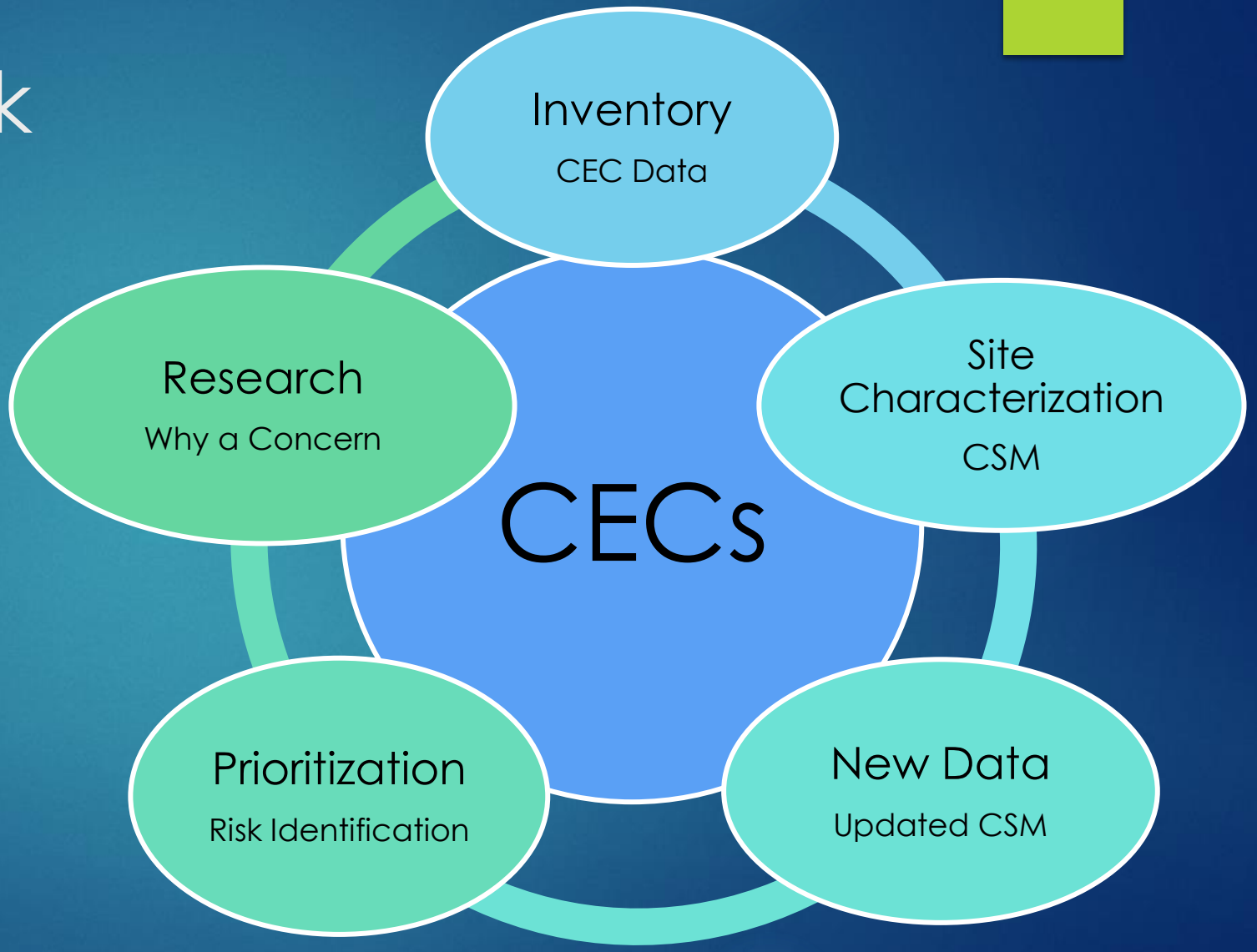
Proactive

Reactive
Immediately Abate Risk

- Trigger = A cause for Response.
  - Impact to water supply wells.
  - Vapor Intrusion.
- Response Strategy.
  - Provide alternative water supply.
  - Vapor mitigation system.
- Work with EPA counterpart.
- Response time is critical!

Proactive Evaluation of Risk

- A Response Strategy to determine if CECs are a potential issue.
- Includes several steps to evaluate this potential.



Proactive

- Research – Why the concern?
  - Stay current on the science
  - Understand when/if a CEC is likely to be a concern
  - Understand fate and transport
- Inventory – Where are CEC?
  - Historical Land Use
  - Data Reports
  - Database Research
  - Permitting Information
  - 5-year Reviews

Proactive

Site Characterization

- Historical Information
  - Previous review comments/recommendations.
  - Past monitoring or sampling data.
  - Prior treatment system (O&M) data.
  - Prior land use and facility past practices.
  - Prior MDL higher than current standards?
- Conceptual Site Model (CSM)

Proactive

Site Characterization

- New Data
  - Collecting New Data to better Characterize and screen in/or out CECs.
  - Consider new onsite and offsite sources.
  - Updates to CSM

Proactive
Site Characterization

OnSite:

- Groundwater data
- Soil data
- System O&M or monitoring data
- Surface Water and
- Sediment data

OffSite:

- Public or Private Well data
- UCMR 3 and upcoming UCMR 5
- Surface Water
- Sediment Impacts
- Atmospheric deposition
- Nearby “sites”

Proactive
Prioritization and Risk Identification

- Human Health?
  - Drinking water supply wells,
  - Irrigation wells.
  - Consumption of fish or wildlife.
  - Indoor Vapor.
  - Appropriate Site Use.

Proactive
Prioritization and Risk Identification

- Environment and Ecology?
  - Surface water
  - Sediment
  - Wildlife and Biota.

Proactive
Site Screening Strategies

- Screening Data for CECs may be performed:
  - To evaluate a Specific Site (case-by-case basis),
  - To evaluate a “Site Type”, or
  - To evaluate risk to a receptor or pathway (e.g., surface water, indoor air or drinking water).

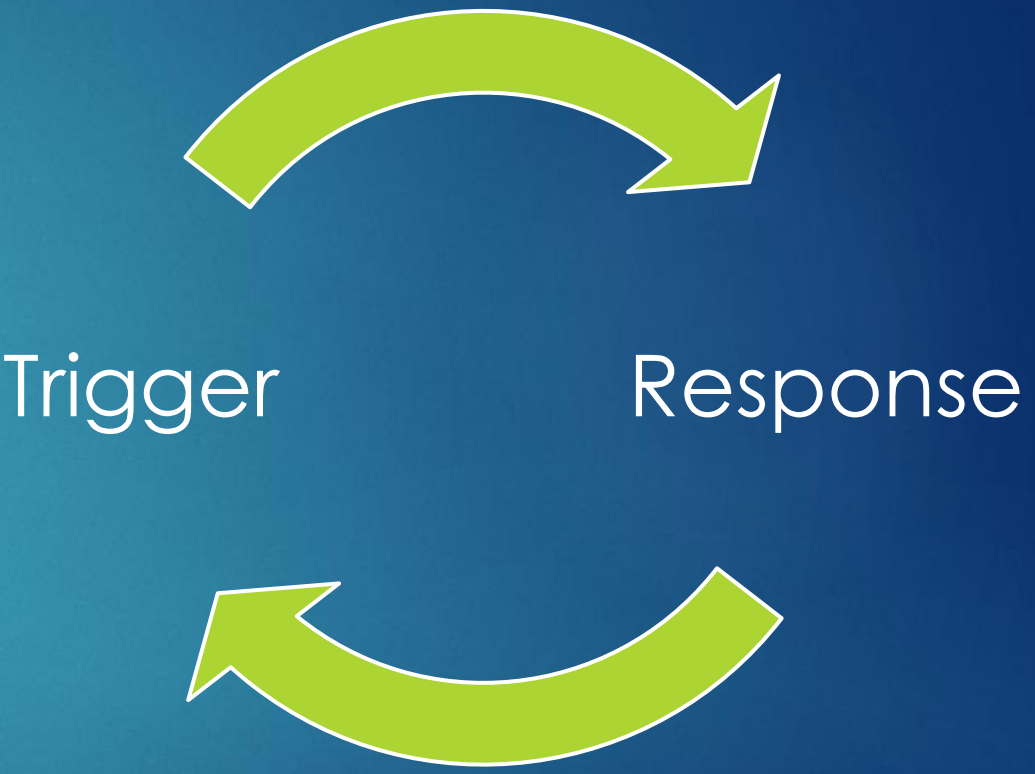
STATE	FUNDING SOURCE	TYPE OF SITE(S)	CECS	SCREENING	RESPONSE
California	Responsible Party	Chrome Plating Shops	PFAS	In October 2019, State Water Board orders 271 sites to collect soil, GW monitoring well samples	More information can be found at: https://www.waterboards.ca.gov/pfas/
California	Responsible Party	Publicly Owned Treatment Works (POTWs)	PFAS	In July 2020, State Water Board orders POTWs to collect samples of influent, effluent and biosolids	More information can be found at: https://www.waterboards.ca.gov/pfas/
California	Responsible Party	Refineries and Bulk Fuel Terminals	PFAS	In March 2021, State Water Board orders 161 facilities to sample soil, groundwater, surface water, influent and effluent wastewater	More information can be found at: https://www.waterboards.ca.gov/pfas/
California	State & RP Funded	Drycleaners	CVOCs	Statewide Discovery and Enforcement Program to investigate Vapor Intrusion risk	Year 1 of the D&E Program to evaluate top 112 sites statewide in 2022.
Florida	State Funding	Fire Training Facilities	PFOA/PFOS	26 of 45 sites sampled	23 > 70 ppt (total or combined)
Florida	State Funding	Drycleaners	PFOA/PFOS	15 sites sampled	10 > 70 ppt (total or combined)
New York	Responsible Party & Fund Lead	Superfund Sites	1,4-Dioxane, PFAS	Sampled all RP and Fund-Lead NPL Sites	If CECs are found, sample for nearby drinking water wells.
Washington	State Funding	Landfills	PFAS	Characterization of landfill leachate in select landfills (total 19)	PFAS up to 170,000 ppt found (all samples >70 ppt). Response recommendation to sample monitoring wells for possible GW contamination.

State CEC Screening

Examples Of State Screening Efforts For CECs

Response Action Triggers

- Identifying, responding to and managing CECs is an iterative process.



Regulatory and Process Triggers

Regulatory and Process Triggers
(Chemical and site specific)

Regulatory

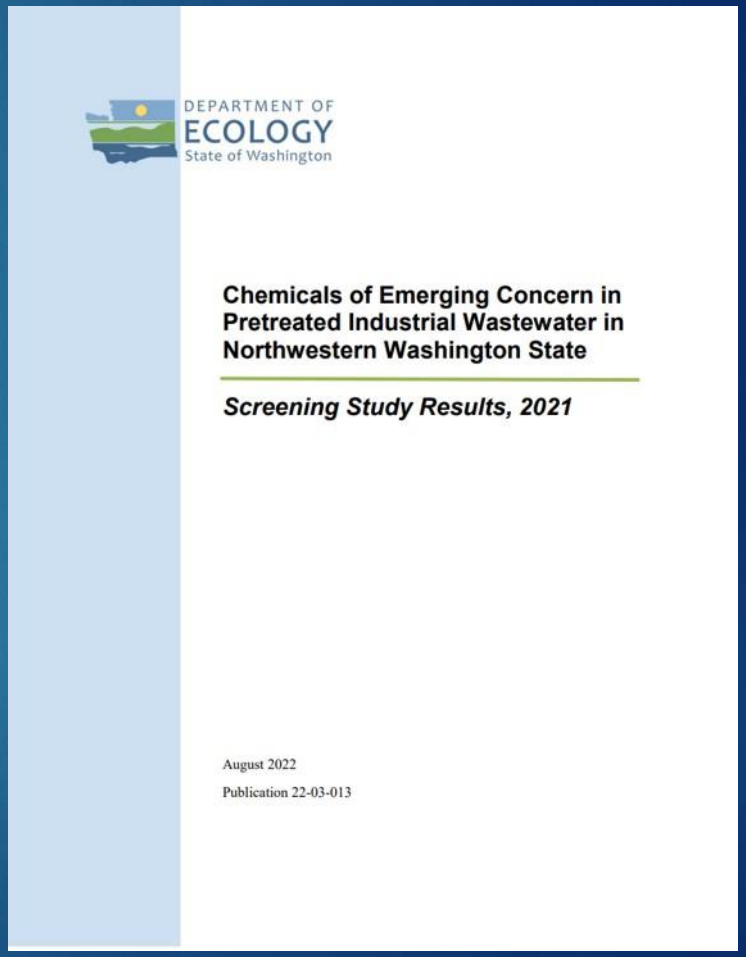
- Standard Development and Guidance
- Compliance with permitted discharges
- Material management

CERCLA Process

- Transfer of site to State and Delisting
- Remedy Specific Considerations

New Standard or Guidance

- Developed new CEC standards or ARAR
- Updated toxicological data
- Identified New exposure pathway
- Decision document may need to updated
- May require closed sites to be reopened



Compliance with Permitted Discharges

- A POTW may require CEC sampling
  - To meet effluent limits
  - Beneficial use of Biosolids
- States may require sampling for discharge to ground
- May trigger new requirements for post construction site permits

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Material Management

- CECs may be identified as Hazardous Substances
- Guidance/policy on handling CEC contaminated media
- Project managers should consider
  - characterization of CEC contaminated media
  - characterization of waste stream
  - Characterization of excavated soils

Excavation in Florida, State-funded Cleanup

Process Trigger: Transition to Post Construction

Evaluate CECs

- before the site is transferred to the state
- After Transfer to State (O&M stage)
- During Site Delisting
  - Final Close Out Report

Details on Final Close Out Report (FCOR)

- Prior to Deletion
- Documented in Draft and Final Close Out Report (FCOR) or Partial Deletion Justification (PDJ)
- EPA Region Obtains State Concurrence
  Concurrence Letter
- Deletion does not preclude eligibility for subsequent Fund-financed or responsible party actions

Remedy Specific Considerations

- Project Managers evaluate, if any CECs are identified
  - Is Remedy Sufficient to Address CECs?
  - Is the Remedy Protective?
  - Discharge to POTW, surface water, ground
  - Sludge disposal
  - Offsite disposal Vs. onsite containment
- Request Remedy Optimization
- Update the CSM

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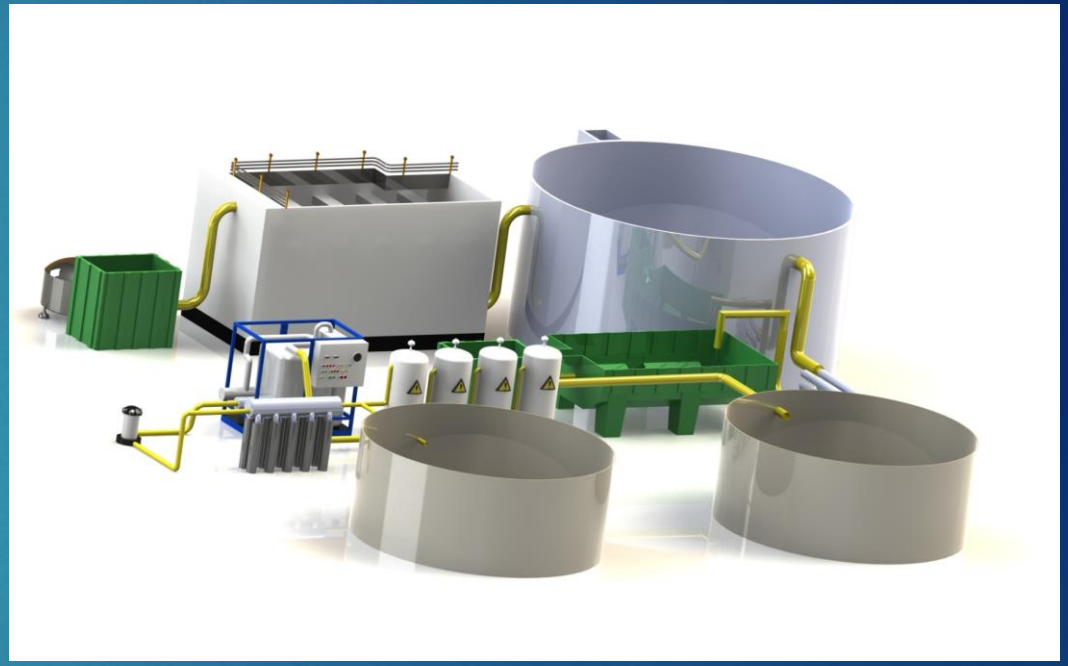
Remedy Specific Considerations

Are changes to the treatment system required?

If so,

- Identify treatment technologies that can meet standards
- Identify costs associated with treatment
- Will O&M be significantly higher?



Significant Changes to Remedy?

If change is needed

- EPA leads for a new or expanded Remedial Action
- O&M agreement may need to be renegotiated
- Check for Reopeners
  - Look to Agreements (Consent Decrees)

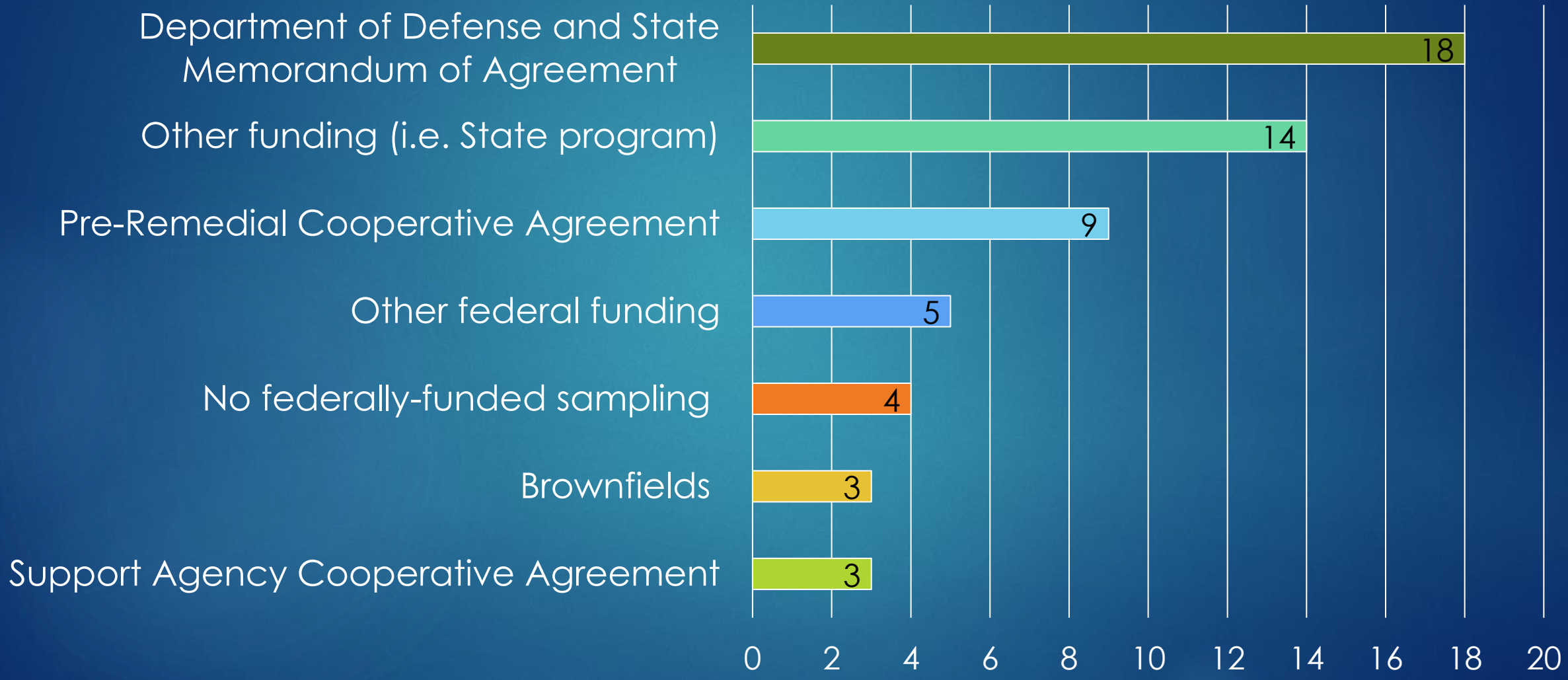
Large Diameter Auger (LDA) advancing with casing

Other Considerations for CECs at Post Construction Sites

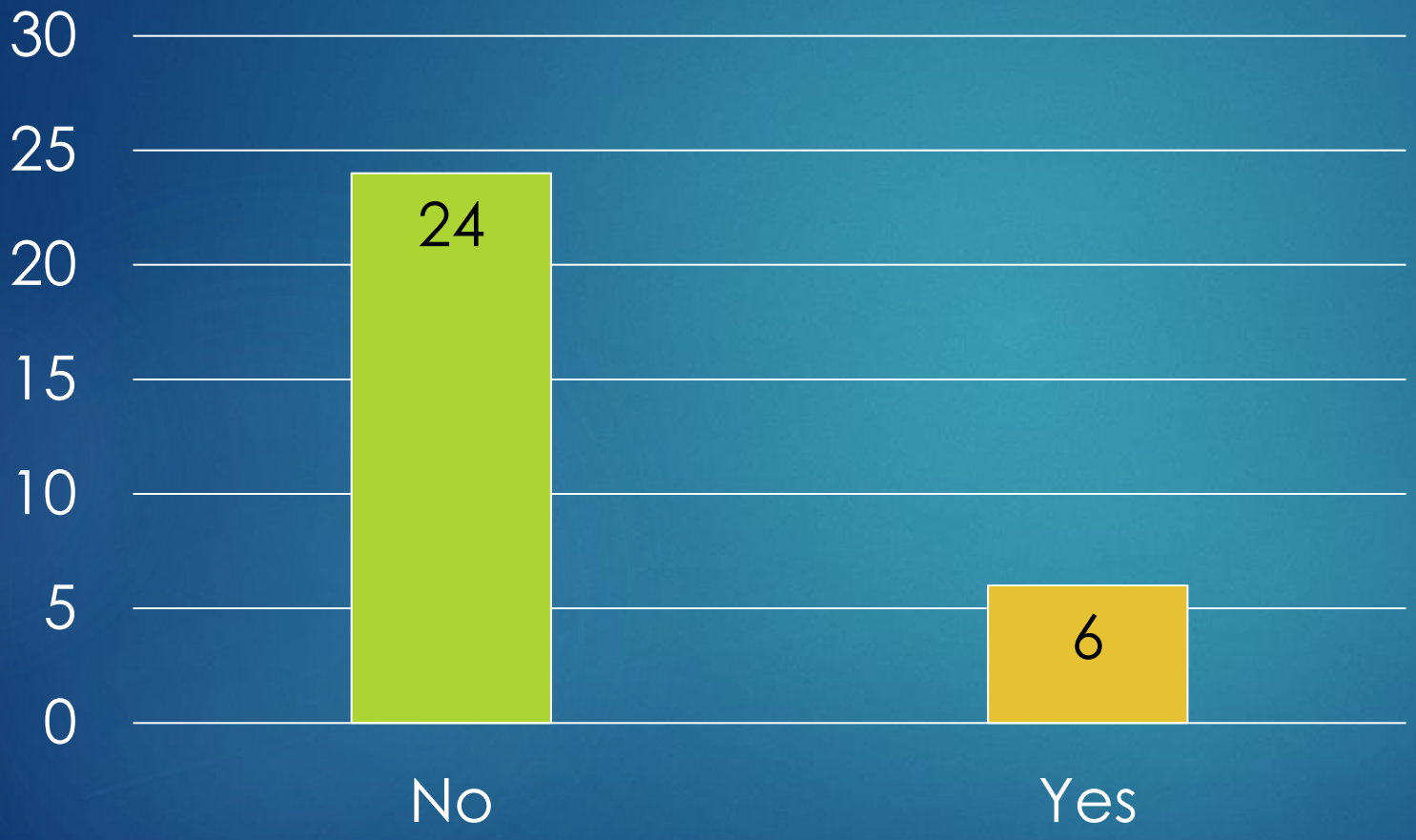
CEC Investigation Process: Who Samples? Who Pays?

- Sampling Considerations?
  - Discuss sampling process
  - Special sampling precautions
- Payment Considerations?
  - PRP samples own sites
  - State pays for sampling
  - EPA conducts sampling
  - State requests through CA

Funding Options used to sample for CECs



Issues in moving CEC sites forward with NPL listings, removals, or 5-year reviews?



Issues mentioned:

- Lack of federal standards
- CEC not identified in ROD
- No acceptance of ARAR

Note: "No" response likely includes States that have not attempted to use CECs to move forward with an NPL listing, removal action, or incorporate it in the five-year review evaluation.

What If There Is No Promulgated Standard For The CEC?

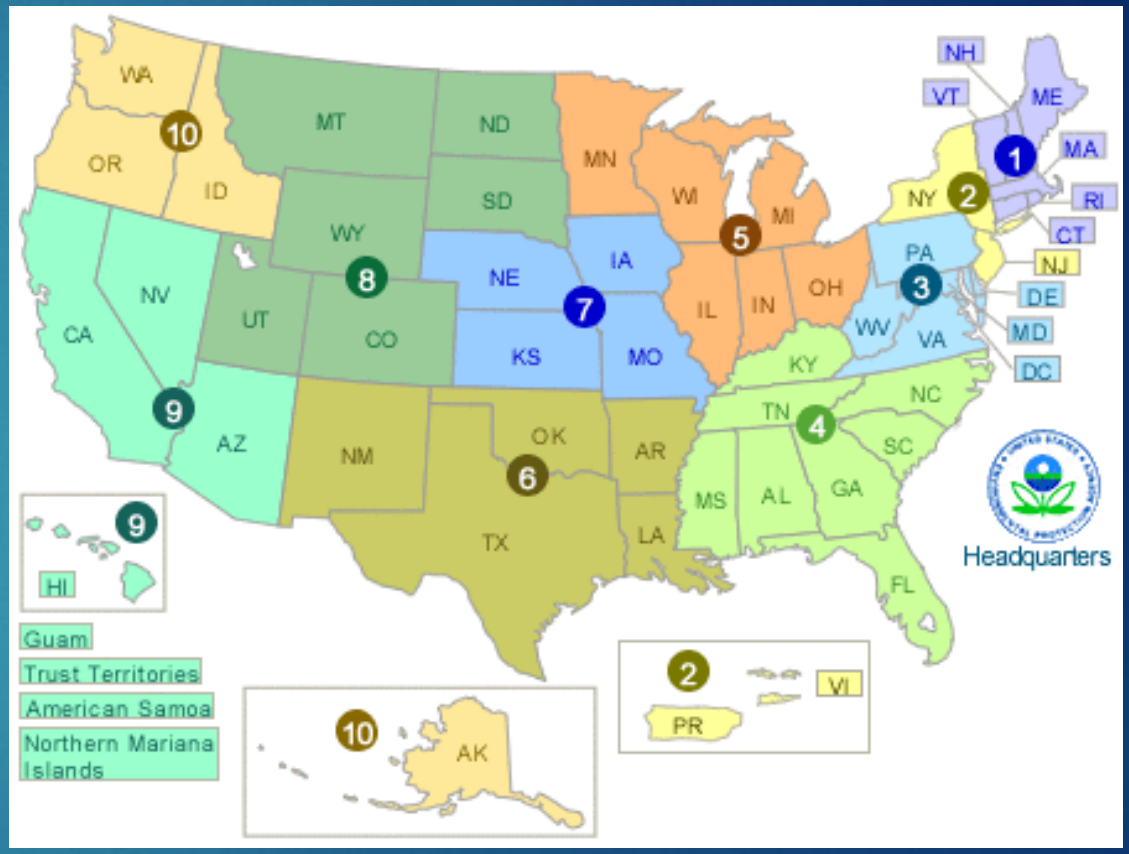
- State or PRP will address
- A site-specific risk assessment may be needed
- If the CEC is addressed by guidelines
  - State may have to conduct an "enhanced" remedy
  - State would have to pay for that remedy

Communication: Re-engaging with EPA and the community Post Construction

Communicate With EPA About CECs

If new CECs are identified:

- State should reach out to the Regional Office of EPA
- There may be other requirements depending on the particular CEC.



Community Outreach

- Involve the community depending on the level of interest
- Issue Fact Sheets, Press Releases
- Organize Public Outreach meetings, if necessary
- Maintain mailing/contact lists

Web Resources

- ITRC Contaminants of Emerging Concern: https://itrcweb.org/teams/active/cec
- EPA CECs Including Pharmaceuticals and Personal Care Products: https://www.epa.gov/wqc/contaminants-emerging-concern-including-pharmaceuticals-and-personal-care-products
- EPA Technical and Emerging Contaminant Fact Sheets: https://www.epa.gov/fedfac/emerging-contaminants-and-federal-facility-contaminants-concern
- EPA Actions to Address PFAS: https://www.epa.gov/pfas/epa-actions-address-pfas
- ASTSWMO PFAS: http://astswmo.org/pfas/
- The Environmental Council of the States (ECOS) : https://www.ecos.org/areas-of-focus/chemicals-and-emerging-contaminants/

Questions?

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