SMARM

September 30, 2020

Benzyl Alcohol and the SMS Benthic Criteria

WA Department of Ecology, Toxics Cleanup Program

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For Today

- What is the issue?
- Challenges: legal, technical, policy
- Potential options
- Next steps

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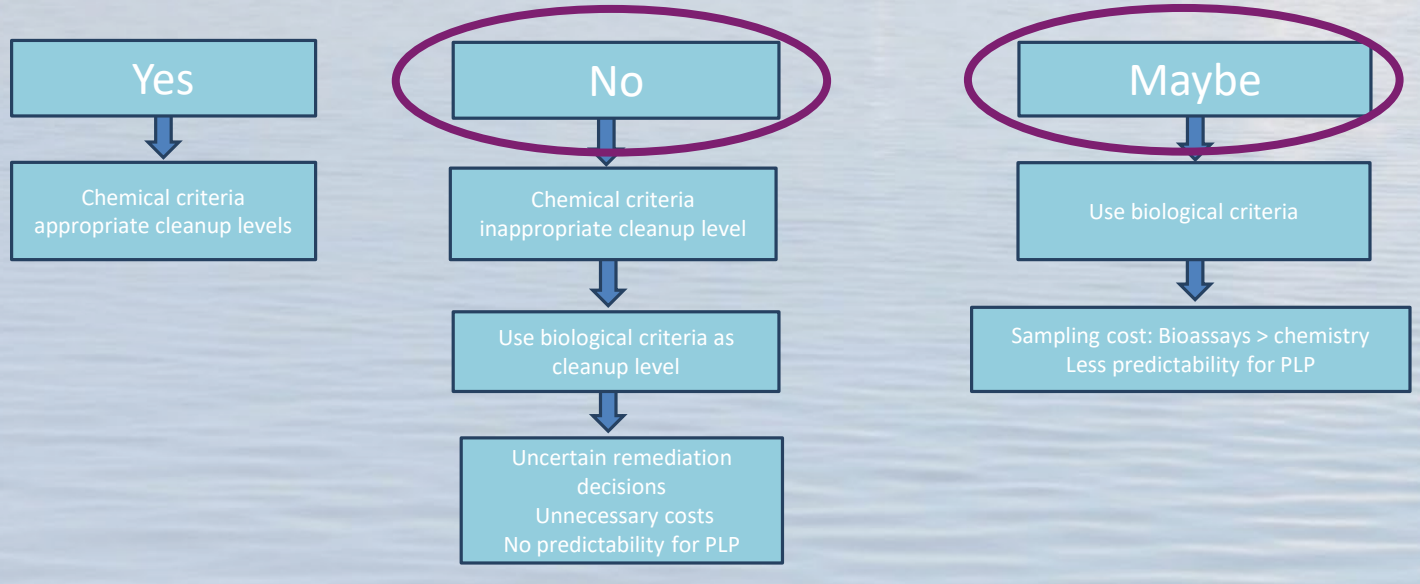
The Issue

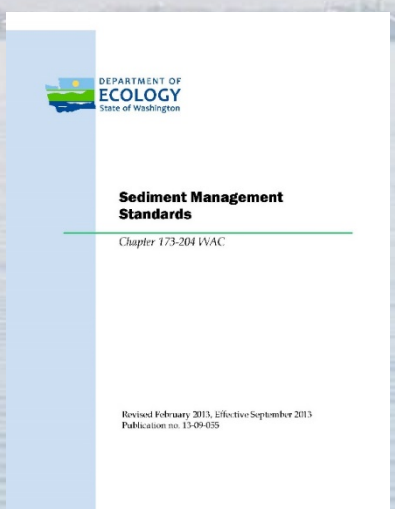
Are the SMS benzyl alcohol criteria predictive of benthic toxicity?



Challenges: Legal

Sediment Management Standards WAC 173-204

- Adopted benthic chemical criteria
  - Intent: *Predictor* of biological toxicity
  - Problem: Science >30 years old
- Adopted benthic biological criteria
  - Intent: *Confirm* benthic toxicity (override chemistry)
  - Problem: $$$ bioassays
- Use of latest science to:
  - Revise criteria by rulemaking
  - Propose technical methods - not to alter adopted criteria
- Tenuous authority to develop site-specific criteria for CoCs in rule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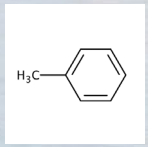
Sediment Management Standards

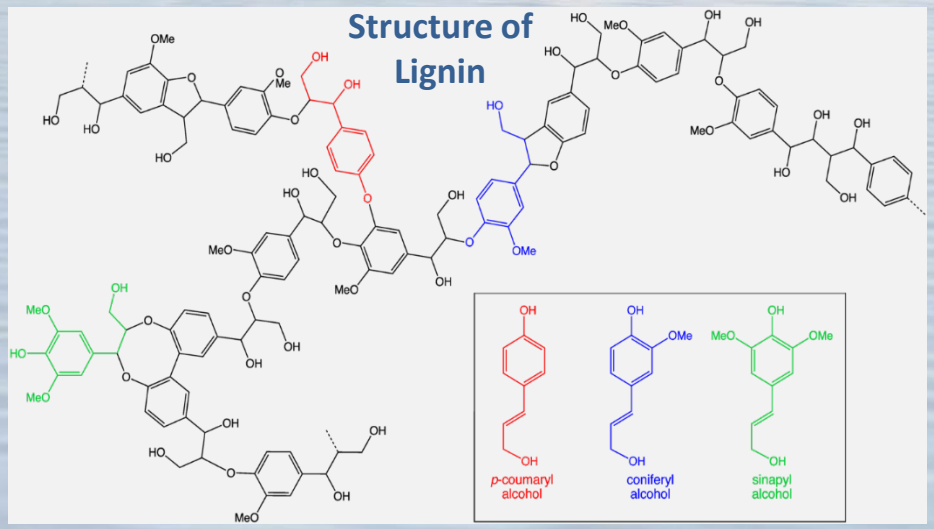
Chapter 173-204 WAC

Revised February 2013, Effective September 2013
Publication no. 13-09-055

Challenges: Technical Sources of Benzyl Alcohol

- Fruits, teas, leaves/plants[1], natural fragrances
- Toluene: oxidation product
- Personal care products[2]
- Woody debris/wood waste - a pre-dominant by-product of degradation?
  - Literature lacking
  - Lignin major component
  - Assumes lignin degrades into phenolic compounds that include benzyl alcohol
  - Chemical structure cross-linked with phenolic polymers
  - More likely to degrade into more complex phenolics





[1]Daffodil, peppermint, blueberry, gardenia, roses, narcissus, peony
[2]https://comptox.epa.gov/dashboard/dsstoxdb/results?search=DTXSID5020152#exposure

Challenges: Policy

- Options for site-specific decisions
- Consistent with Sediment Management Standards rule
- Based on sound science
- Recognize technical challenges
- Protective of benthic community
- Minimize uncertainties
- Maximize predictability for PLP
- Does not result in illegal rulemaking

Potential Options

Option A	Option B	Option C	Option D	Option E
Analyze benzyl alcohol	Analyze benzyl alcohol	Do not analyze benzyl alcohol	Do not analyze benzyl alcohol	To Be Determined
Bioassays for **each station** that exceeds chemical criteria	Bioassays for **subset of stations** that exceed chemical criteria	Statewide: Remove benzyl alcohol from potential CoC list	Site-specific basis: remove benzyl alcohol from potential CoC list	
Continue bioassays for future sampling	Continue bioassays for future sampling	Undergo SMS rulemaking to update marine benthic criteria		

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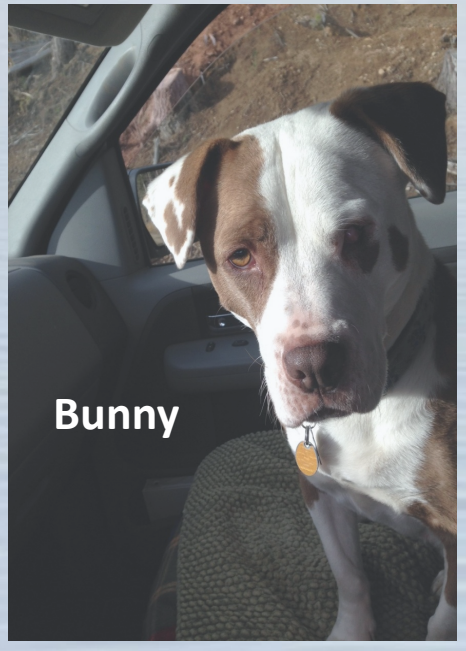
Next Steps

What we would like to do:

- Provide detailed options and recommendations for chemicals that may need updated criteria
- Update SMS marine benthic chemical criteria

What we may need to do:

- Work on a site-specific solution for priority sites

Questions?