Toxics & Emerging Contaminants

COASTAL CONCERNS, KNOWLEDGE & EMERGING ISSUES

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Mid & North Coast Water Monitoring Summit
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Coastal Concerns
Sources of Coastal Contaminants
Areas of Potential Impact

- Groundwater
- Coastal rivers & streams
- Estuaries
- Shellfish / Fishery Impacts
- Coastal & global oceans
## Monitoring Efforts

**Statewide Toxics Monitoring Program**
- Rotating basin approach
- > 500 analytes
- Water, tissue & sediment

**Drinking Water Protection Program**
- Targeted sampling
- Analyte list varies
- Source drinking water

**Statewide Groundwater Monitoring**
- Rotating area approach
- > 100 analytes
- Private drinking water, groundwater

**Collaborations**
- Varies, special studies
- Analyte list varies
- Tissue, drinking water source, sediment, surface water
Pesticides
Current use & legacy pesticides
Groundwater, surface water, source water, & tissue

[Bar chart showing percent detection of legacy and current use pesticides in groundwater, TMP-water, and TMP-tissue]

[Graph showing chlorinated pesticides in tissue, with tick marks indicating ng/L values]
Arsenic

• Naturally occurring
• Present in groundwater, surface water, estuaries, sediment
• Potentially enhanced by human activities
• Levels measured in shellfish led to advisory

Recreational Shellfish Advisories and Consumption Guidelines

- OHA has issued an advisory for recreationally harvested softshell and gaper clams along the Oregon coast. See the table below for details and resources.

<table>
<thead>
<tr>
<th>Zone</th>
<th>Affected species</th>
<th>Contaminant</th>
<th>Location</th>
<th>Consumption guidelines</th>
</tr>
</thead>
<tbody>
<tr>
<td>OREGON COAST</td>
<td>Softshell clams (Mya arenaria)</td>
<td>Inorganic Arsenic</td>
<td>North Coast (Mouth of Columbia to Nesquikin)</td>
<td>Siphon skin intact: 1 Siphon skin removed: 11</td>
</tr>
<tr>
<td></td>
<td>Gaper clams (Tresus capax)</td>
<td></td>
<td>Central Coast (Cascade Head to mouth of Umpqua River)</td>
<td>Siphon skin intact: 2 Siphon skin removed: 26</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>South Coast (Mouth of Umpqua River to California Border)</td>
<td>Siphon skin intact: 4 Siphon skin removed: 33</td>
</tr>
</tbody>
</table>

Inorganic arsenic, shellfish

- mg/kg, wet wt, tissue

- Inorganic Arsenic
- OHA Screening Level
Pharmaceuticals / Consumer Care Products

- Groundwater
- Surface water
- Limited shellfish data

Gaps
- No fish or sediment data
- Limited number evaluated

Study: Native Oregon oysters in Netarts, Coos bays contain low levels of pharmaceuticals, chemicals.
Flame Retardants (brominated)

- Estuary
- Coastal rivers
- Sediment
- Shellfish
Emerging Concerns
Perfluorinated Compounds

Sources

• Outdoor clothing
• Stain-resistant carpet / furniture
• Non-stick cookware
• Fire-fighting foam, etc...

Detected Worldwide

• Fish Tissue
• Surface water
• Groundwater

Images: NIEHS

Map Courtesy of EcoWatch: https://www.ecowatch.com/ewg-pfc-s-drinking-water-2436908585.html
Microplastics

How does Oregon stack up to other places?

Human Impact
Ocean Acidification & Hypoxia (OAH)

Consequences when occurring in areas with toxic and emerging contaminants?

West Coast OAH

West Coast OAH

Credit: Oregon Dept of Fish & Wildlife

West Coast Ocean Acidification Rates Among Highest In World

by Jes Burns

OPB/EarthFix June 2, 2017 9 a.m. | Updated: June 5, 2017 5:31 p.m. | Ashland, Oregon
Resources

• Oregon DEQ Statewide WQ Toxics Monitoring Program & Reports
  • http://www.oregon.gov/deq/wq/Pages/WQ-Monitoring-Statewide.aspx

  • https://www.sciencedirect.com/science/article/pii/S0048969716304697

• The West Coast Ocean Acidification & Hypoxia Panel
  • http://westcoastoah.org/