DEPARTMENT OF ECOLOGY
State of Washington

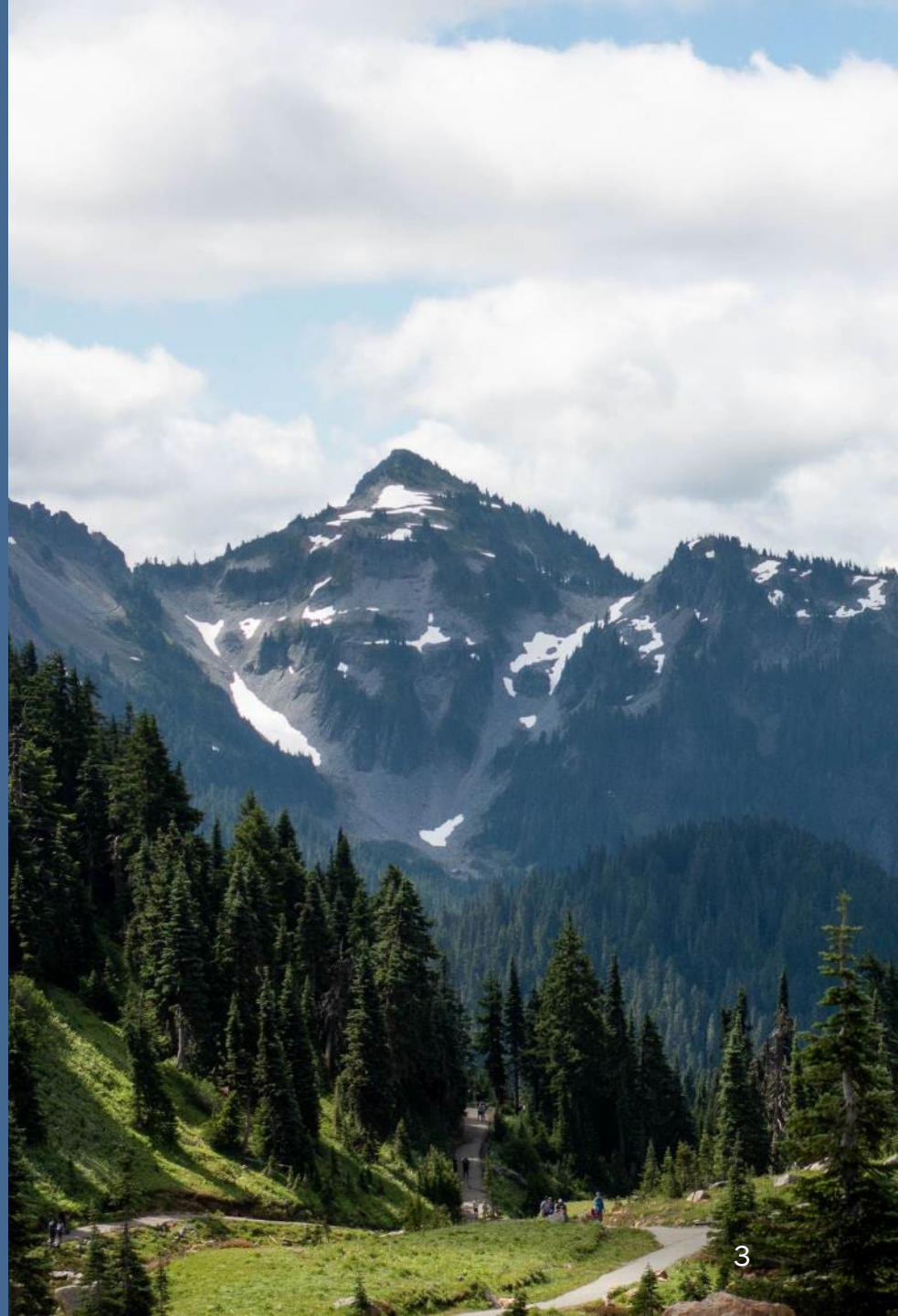
6PPD Action Plan Phase 1: Advisory Committee Kick-Off Meeting

January 24, 2024, from 10:00 a.m. to 12:00 p.m.

Agenda

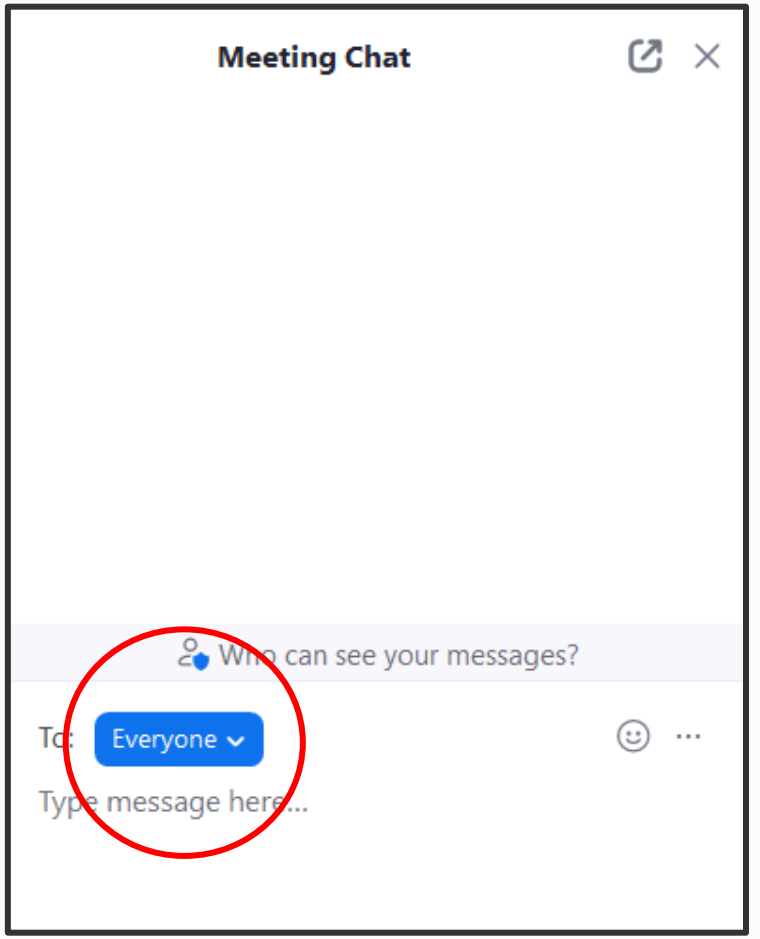
- Welcome and introductions
- Our purpose
- State actions
- 10-minute break
- 6PPD Action Plan – Phase 1
- Developing recommendations
- Next steps and subgroup breakout session

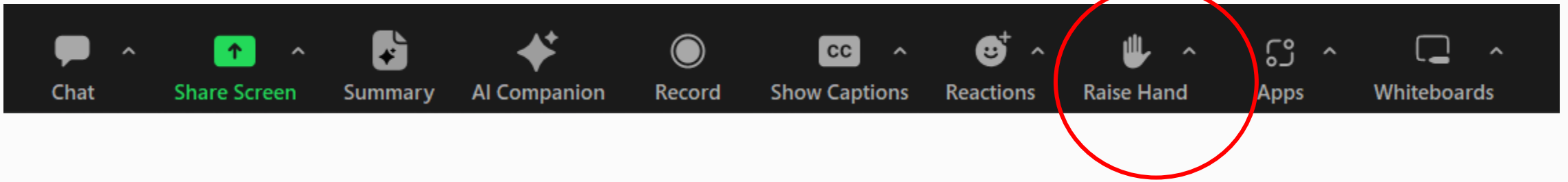
Welcome and Introductions



Zoom Logistics

- To raise your hand, find the Raise Hand button on the tool bar at the bottom of the screen.
- To participate in the chat, make sure your responses are sent to Everyone.





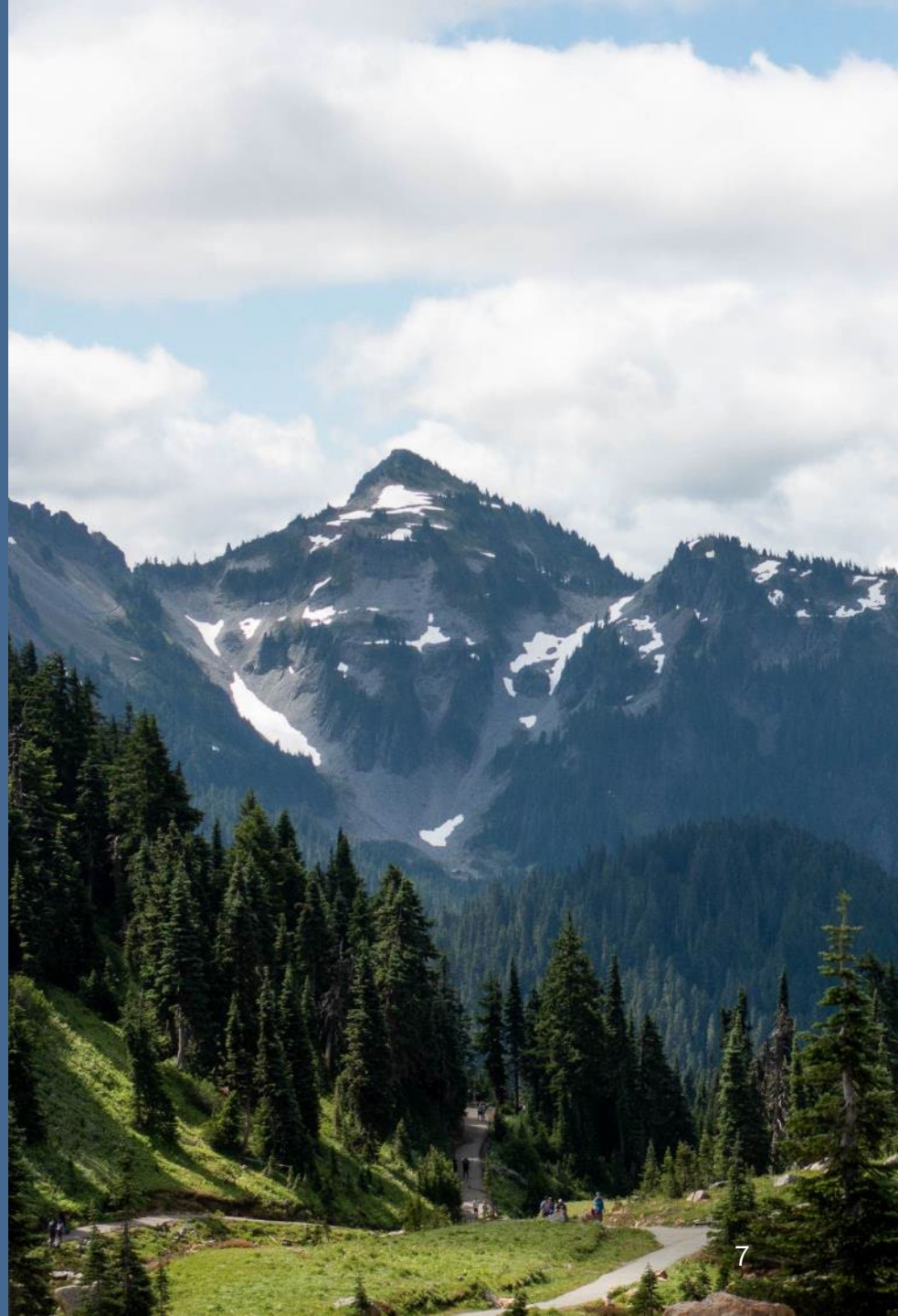
Project Team Leads

- **Tanya Williams**, 6PPD Action Plan Project Manager and Advisory Committee Co-Lead
- **Lindsey Bineau**, Advisory Committee Co-Lead
- **Monica Cornell**, Project Coordinator
- **Mallory Little**, Human Health Toxicologist and Dept. of Health Co-Lead
- **Elinor Fanning**, Human Health Toxicologist and Dept. of Health Co-Lead

Icebreaker

- Please share your:
  - Name
  - Title
  - Agency/organization affiliation
- Question: What is your favorite winter drink?

Our Purpose



2023 - 25 Legislative Proviso

- "…**develop a 6PPD action plan**… The action plan should identify, characterize, and evaluate uses and releases of 6PPD and related chemicals, and **recommend actions to protect human health and the environment.**"

- "Department shall **provide a progress report on the action plan**… to the governor's office, the office of financial management, and the appropriate committees of the legislature **by December 31, 2024.**"

What is an Action Plan?

- Chemical Action Plans
  - WAC 173-333 Persistent, Bioaccumulative, Toxins Rule
- Action Plans
  - Not required by regulation
  - Can develop preferred format and process that best aligns with needs of the state based on contaminant
  - Will follow some of WAC 173-333
    - Advisory committee - **more to come on your role later**
    - Environmental justice review
    - Identify impacts to human health and the environment

What are 6PPD and 6PPD-quinone?

- 6PPD is a chemical anti-degradant that prevents tire rubber from cracking when exposed to ozone
- 6PPD + ozone = 6PPD-quinone
  - Discovered at University of Washington in 2020.
  - 20 years of research to find the chemical that is causing instant death in coho salmon.
- No safer alternative

Photo credit: U.S. Tires Manufacturer's Association

6PPD-quinone in Stormwater and Surface Water

- Cause of urban runoff mortality syndrome (URMS)*
- Coho salmon die before they can spawn
- Toxic to brook trout and rainbow trout.
- 2nd most toxic chemical ever measured in aquatic organisms.

Photo: Deceased female carcass with eggs retained, Wild Fish Conservancy, 2021

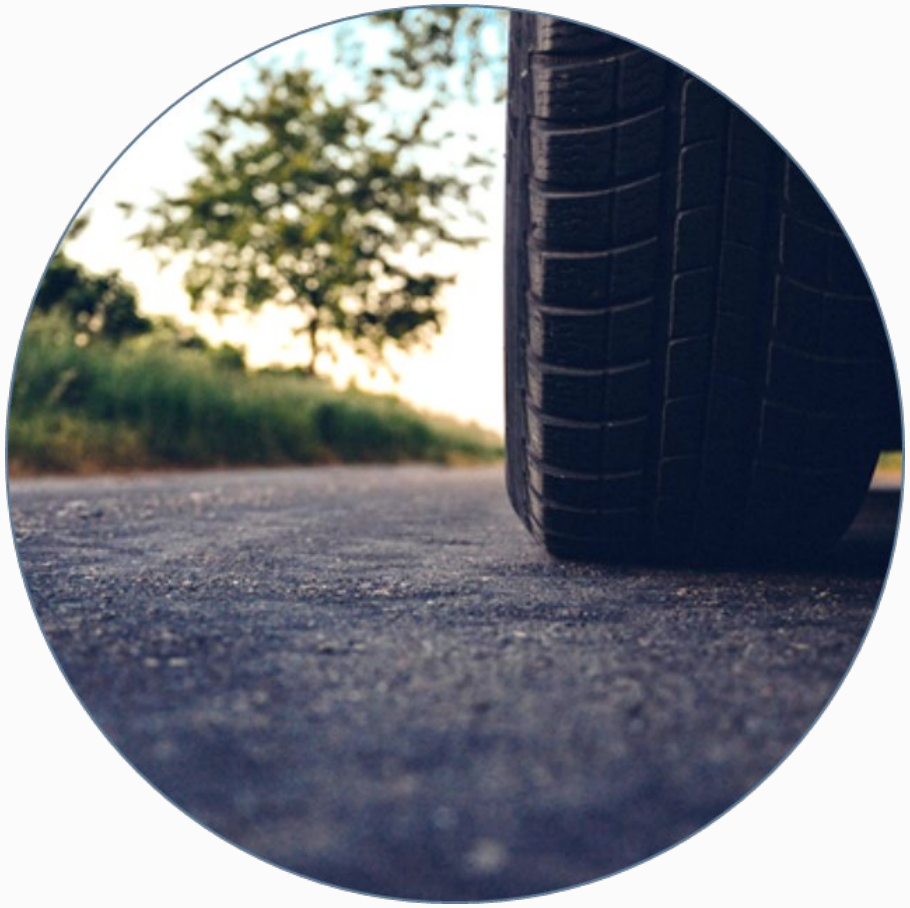
*Documented in Scholz et al. 2011

Photo: Wade Smith,
Washington Department of Fish and Wildlife

6PPD-quinone Impacts

- Tribal Treaty Rights
  - Fishing rights
- Traditional foods
- Cultural and economic
- Hatcheries
- Sublethal impacts
- Cumulative impacts

What do we know about 6PPD?

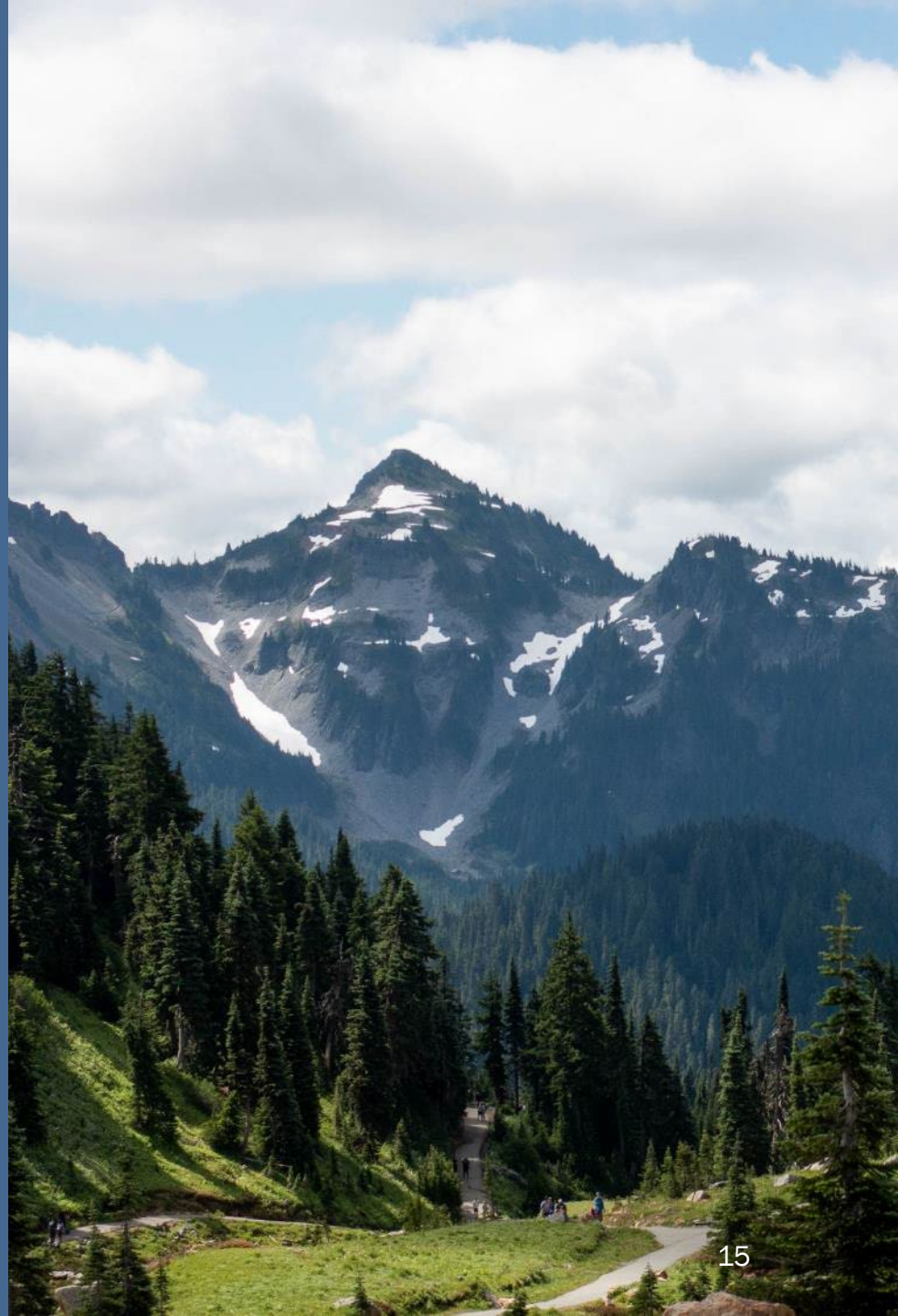


- Tire surfaces continuously expose 6PPD and produce 6PPD-quinone after reacting with ozone in the environment.
  - When tires rub/roll across the road, pieces of tire that contain 6PPD and 6PPD-quinone come off and end up in roadway dust and as particles in the environment.

What do we know about 6PPD? (cont.)

- Found in post-consumer sources:
  - Crumb rubber on turf fields
  - Recycled rubber floor mats
- Stormwater best management practices prevent tire wear particles (contain 6PPD) from entering receiving waters.

State Actions



Ecology

- What are we doing to address 6PPD?
  1. Understanding the extent of the problem.
  2. Reducing sources of 6PPD.
  3. Reducing stormwater pollution.
  4. Considerations for waste disposal.
- Safer Products for Washington Program
  - 6PPD added as draft priority chemical.
  - SB 5931
- Tribal Partnerships

Agency Partners

Department	Point of Contact	Email Address
Governor's Salmon Recovery Office	Katie Pruit	katie.pruit@gsro.wa.gov
Health	Elinor Fanning Mallory Little	elinor.fanning@doh.wa.gov; mallory.little@doh.wa.gov
Puget Sound Partnership	Don Gourlie Jillian Reitz	don.gourlie@psp.wa.gov; jillian.reitz@psp.wa.gov
Fish and Wildlife	Andrea Carey	andrea.carey@dfw.wa.gov
Transportation	Tony Bush	BushT@wsdot.wa.gov

6PPD and transformation products at Health

- Evaluating research on human health hazards.
- Characterizing pathways and sources that have led to widespread human exposure.
- Responding to public concerns about drinking water and fish consumption.

Supporting efforts to address toxic pollution from tires in Puget Sound

Chart the course.

PUGETSOUND PARTNERSHIP

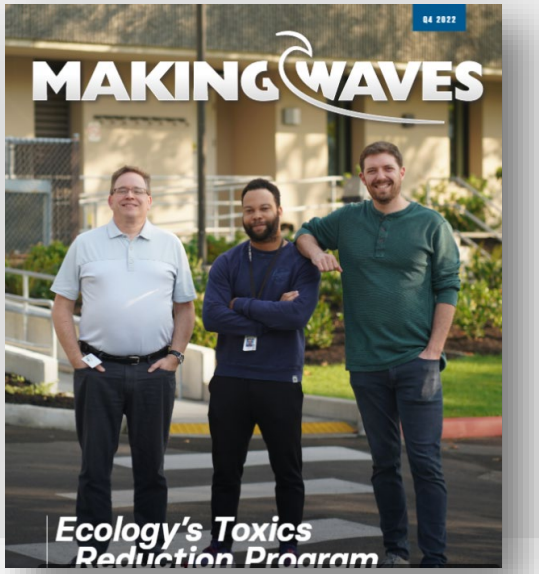
Shared science and monitoring.

PSEMP

PUGET SOUND ECOSYSTEM MONITORING PROGRAM

Support action.

Educate decision makers.



Fish and Wildlife (WDFW)

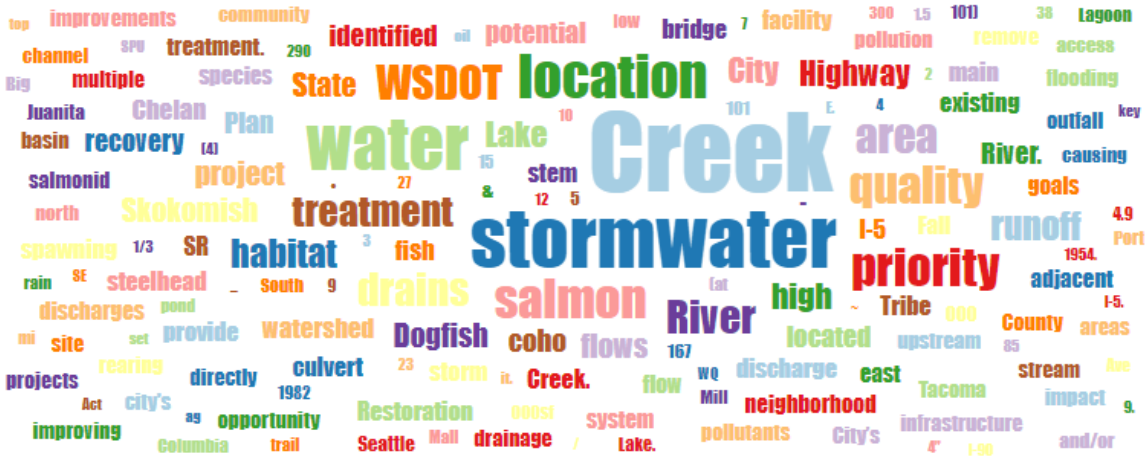
- Washington Department of Fish and Wildlife, Toxics Biological Observation System (TBiOS)
  - Conducts long-term contaminant monitoring of marine and anadromous species in Puget Sound.
  - Collaborates with NOAA NWFSC chemists to develop methods for measuring tire-related compounds (including 6PPD-q) in tissues of aquatic biota.
  - Monitors for the presence of 6PPD-q and other tire-related compounds in a subset of the samples collected.

WSDOT and 6PPD

Partnership, Research, Retrofit Prioritization & Outreach

Tony Bush, Stormwater Branch Manager
January 24, 2024

Roger Millar, Secretary of Transportation
Amy Scarton, Deputy Secretary of Transportation



WSDOT

MAY 2023

WSDOT Stormwater Retrofit

PROTECTING SPECIES, HABITAT AND HUMAN HEALTH FROM STORMWATER IMPACTS BY IMPROVING WATER QUALITY AND REDUCING EFFECTS OF STORMWATER RUNOFF INCLUDING 6PPD-QUINONE

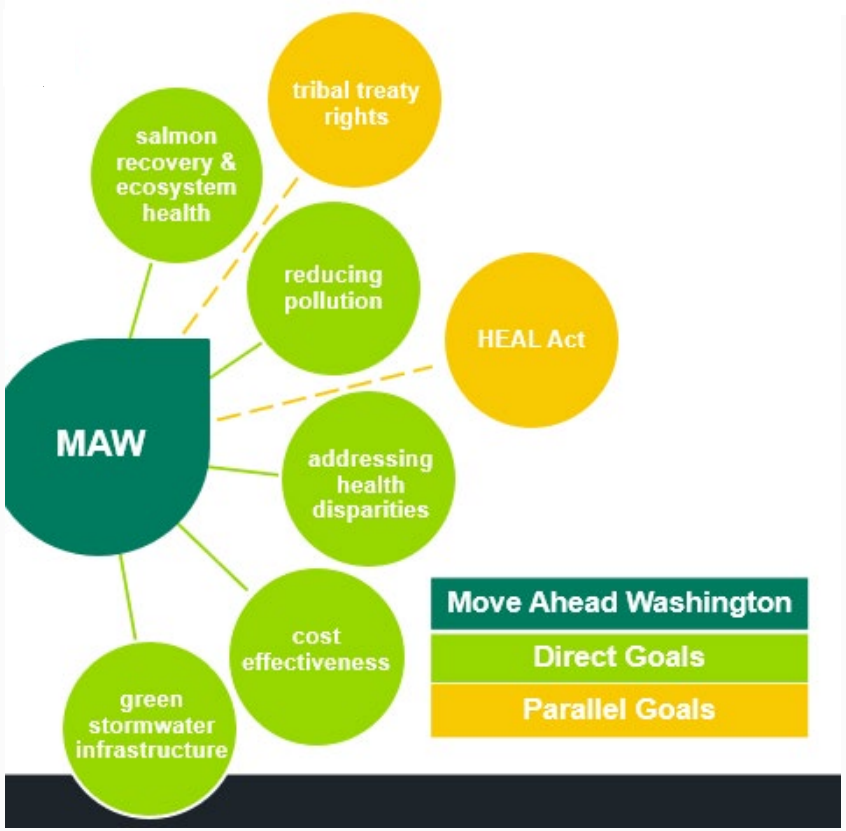
What is stormwater and 6PPD-quinone?

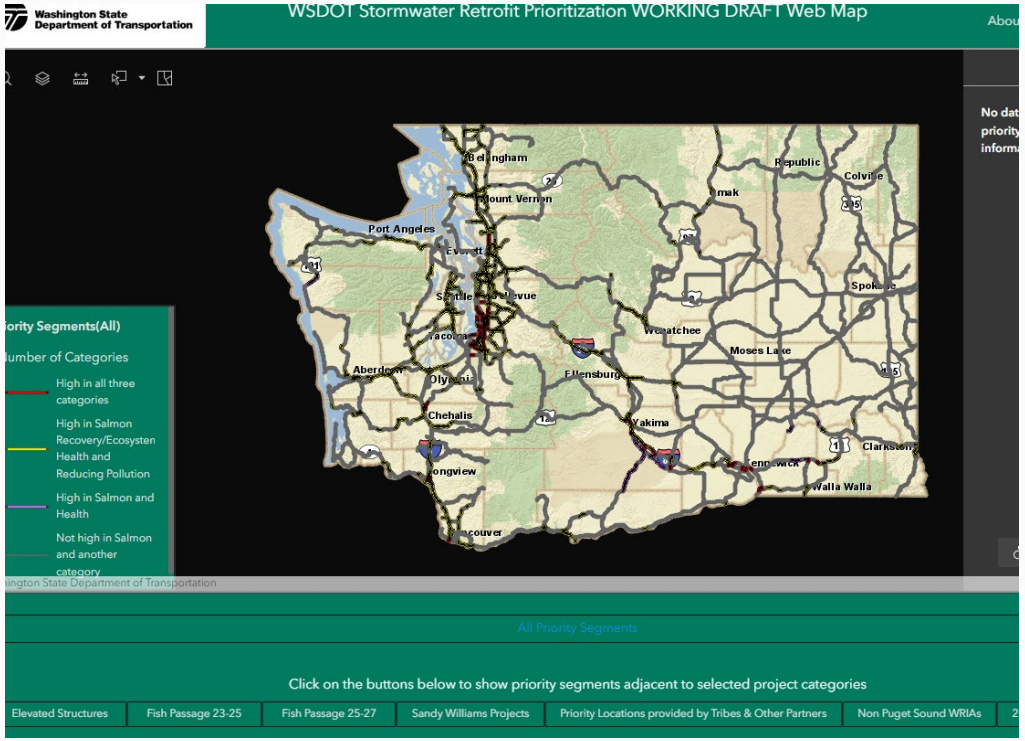
Stormwater is precipitation and snowmelt runoff from pervious and impervious surfaces, often carrying a complex mixture of pollutants from the built environment and atmosphere. WSDOT is committed to mitigating harmful effects of stormwater, including a new pollutant identified in December 2020 as 6PPD-quinone (6PPD-q)[1], a byproduct of the tire additive 6PPD. 6PPD is a chemical that prevents tire rubber from cracking, improving safety and longevity. As 6PPD interacts with oxygen, ozone and temperature fluctuations, it transforms into 6PPD-q, a recently identified cause of urban runoff mortality syndrome resulting in harm or death of fish, particularly in their early life stages. Early studies show that 6PPD-q is most deadly to coho salmon, and emerging science indicates harmful effects to other species including rainbow trout and brook trout. There are many unknowns regarding 6PPD-q and its effects on fish, wildlife, plants, habitat and human health and more research is needed to better understand the issue.

UNDERSTANDING PERVIOUS AND IMPERVIOUS SURFACES: Pervious surfaces are porous, allowing water to pass though and seep into the ground. Impervious surfaces are hardened surfaces that repel water, blocking it from soaking into soils and becoming groundwater. Impervious surfaces are mainly from the built environment, like paved areas and buildings. Compacted soils can also deflect water. Impervious surfaces act like a rain coat for soil.

This illustrates the harm caused by 6PPD-quinone for coho and other fish species in some locations.

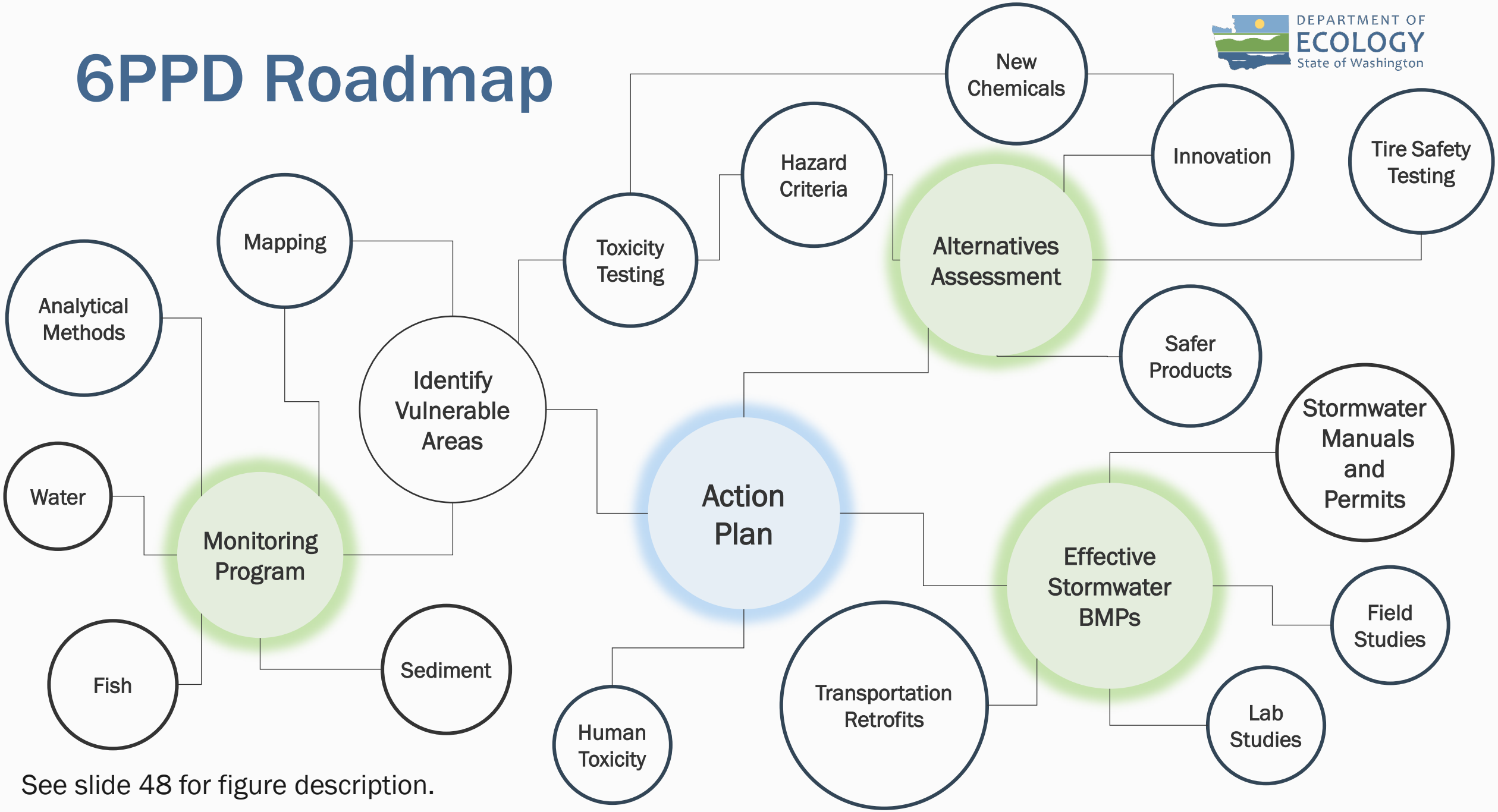
[1] Tian et al., Science 371, 185–189. 2021. A ubiquitous tire rubber–derived chemical induces acute mortality in coho salmon.





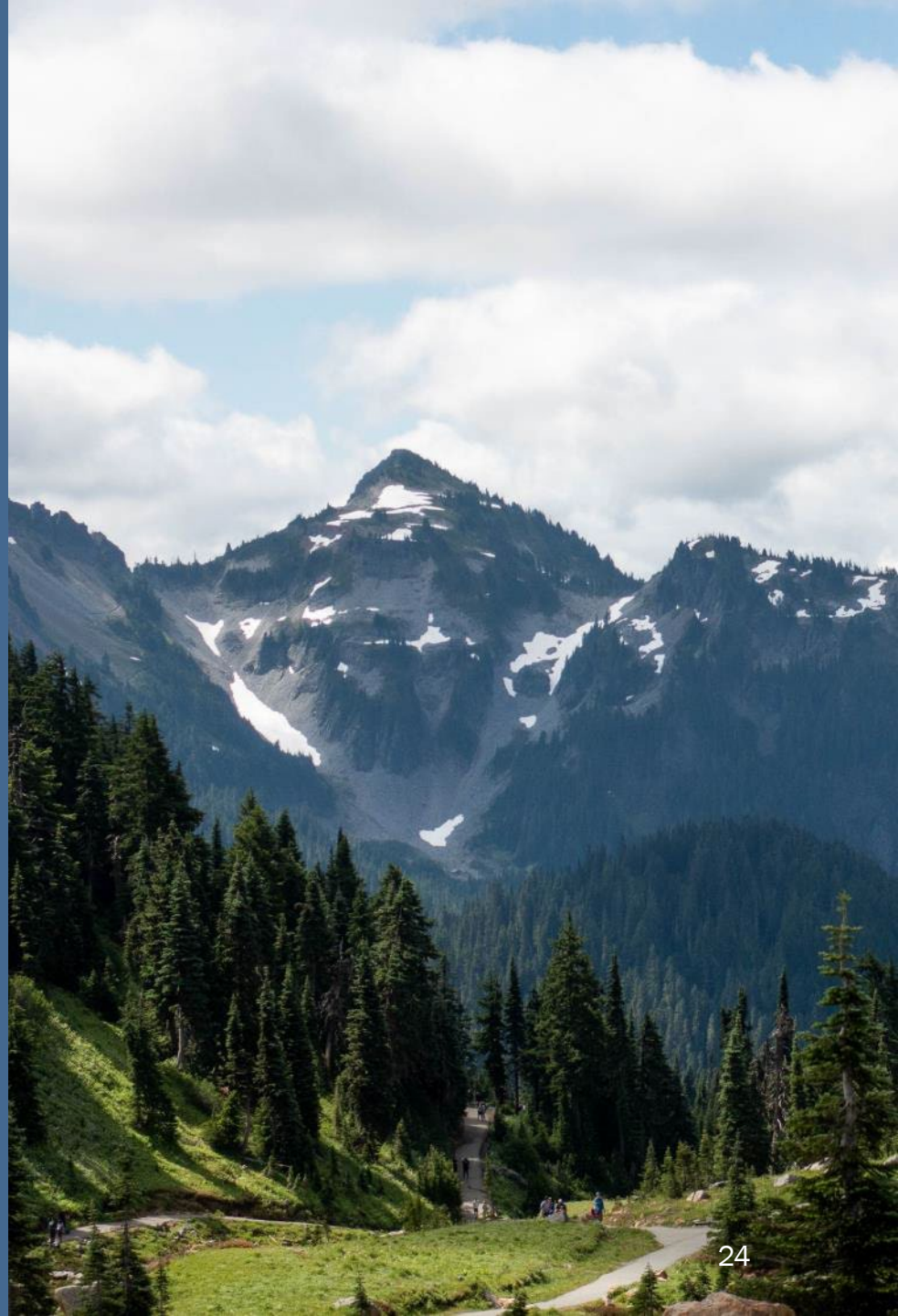
See slide 49 for figure description.

6PPD Roadmap

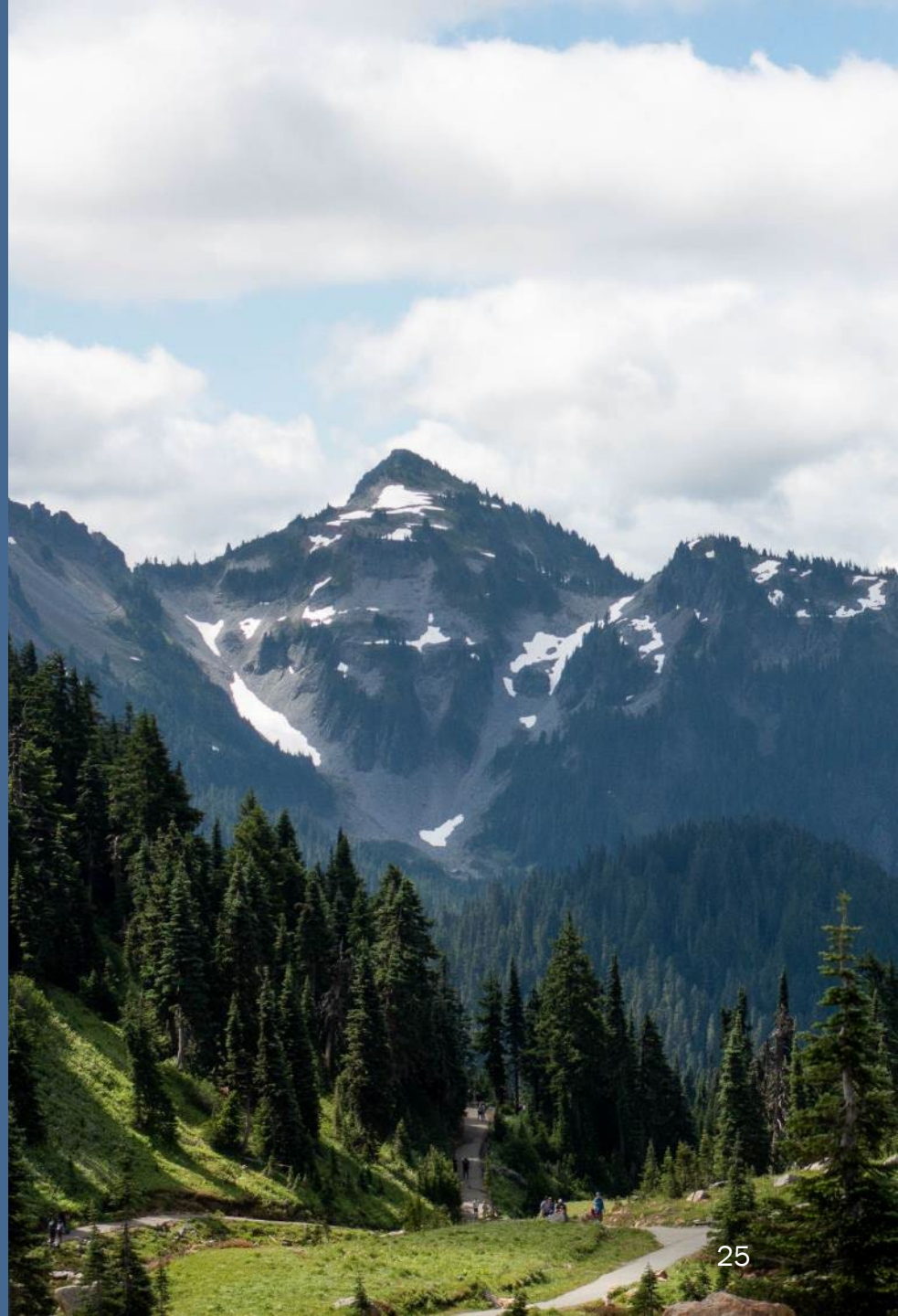


See slide 48 for figure description.

Break
Back at 11:12 am



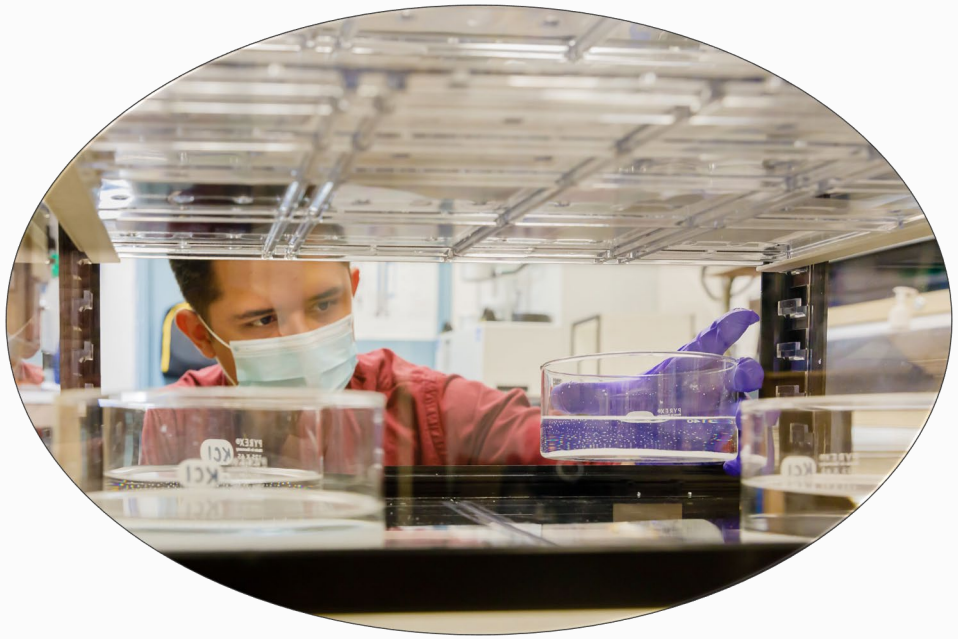
6PPD Action Plan – Phase 1



Phase 1 - Objectives

- Provide recommendations to fill data gaps and research needs.
- Work with communities (advisory committee) to identify immediate needs and areas that need further research.
- Use these recommendations to develop budget requests to the Legislature.

Objectives – Questions from Committee



"Will we discuss what chemicals are covered? We would like to see the plan cover 6PPD and related compounds because there are others in the class. How does this get coordinated with Safer Products law. The chemical is already proposed as a priority chemical. This effort should be focused on identifying the products to be banned under the law, right?"

Objectives – Questions from Committee (cont.)

"During the drafting of the Action Plan, how much on-the-ground monitoring, observations, and assessments will be taking place to better evaluate the extent of 6PPD problem areas? Do you anticipate volunteer opportunities for participating community organizations?"

Objectives – Questions from Committee (cont.).

"How much will the focus be on ecosystem/aquatic impacts vs. human health? How will California DTSC's findings be incorporated into this process?"

Advisory Committee Roles

- Bring expertise and knowledge from communities.
- Help us identify and develop recommendations around data gaps/research needs.
- Review document as it's being developed.
- We invite you to provide input often and early.

Photo: WA Department of Ecology

Phase 1 Timeline

- **December 2023 – January 2024**
  - Ecology, Health, and partner agencies scope 6PPD Action Plan Phase 1
- **January 2024 - May 2024**
  - Advisory committee meetings
- **January 2024 - March 2024**
  - Document development with advisory committee
- **March 2024 – April 17, 2024**
  - Final feedback from advisory committee

Phase 1 Timeline (cont.)

- **April 2024 - May 2024**
  - Internal (Washington State staff) technical review
- **June 2024**
  - Ecology staff finalize Phase 1 of the Action Plan
- **June 2024 - December 2024**
  - Internal management review of Phase 1
- **December 2024**
  - Phase 1 of the Action Plan is published as part of a Legislative Report (Progress Report)

Advisory Committee Meetings

- Six advisory committee meetings from Jan. 2024 through May 2024.
  - Kick-off meeting:
    - **Wednesday, January 24** from 10 a.m. – 12 p.m. PST
  - Working meetings:
    - **Tuesday, February 13** from 1 – 3 p.m. PST
    - **Tuesday, March 5** from 1 – 3 p.m. PST
    - **Tuesday, March 26** from 1 – 3 p.m. PST
  - Phase 1 wrap-up meeting:
    - **Wednesday, April 17** from 10 a.m. – 12 p.m. PST ***Final Input Due***
  - Phase 2 discussion:
    - **Tuesday, May 21** from 10 a.m. – 12 p.m. PST

Meeting Agendas

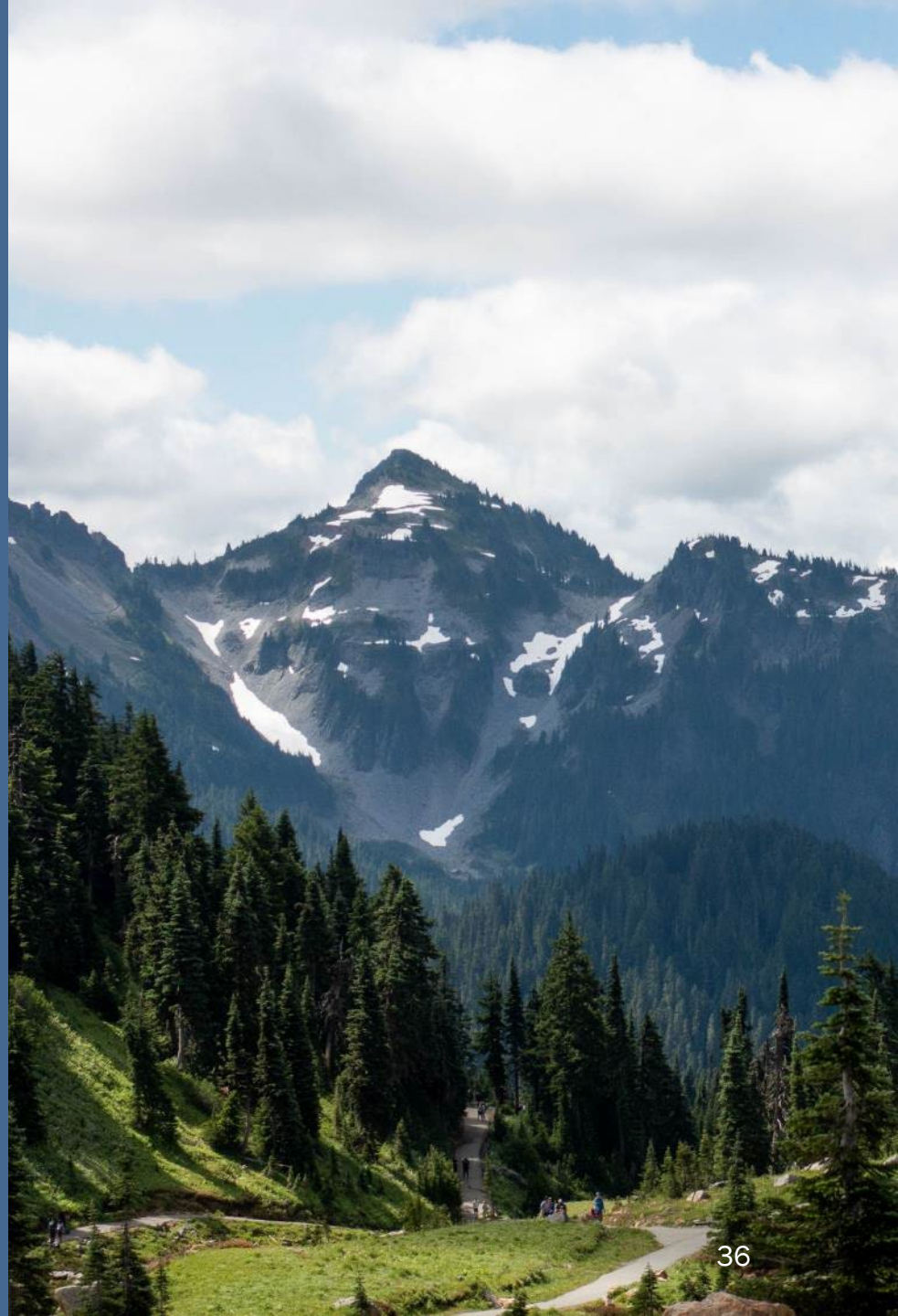
Meeting Date	Agenda
January 24 (Kick-Off Meeting)	Review draft scoping document. Break into subgroups to meet committee partners.
February 13 (Working Meeting 1) **March 5** (Working Meeting 2) **March 26** (Working Meeting 3)	Review schedule; review comments, suggested edits, and recommendations received since last meeting; review input flagged for committee discussion; identify recommendations with overlap or duplication; identify next steps and prep for next meeting; break into subgroups for work time.
April 17 (Phase 1 Wrap-Up)	Review final input, comments, and questions.
May 21 (Phase 2 Planning)	Receive input on phase 2 participation and focus. Review responses to input that was not carried forward from the technical review.

DEPARTMENT OF ECOLOGY
State of Washington

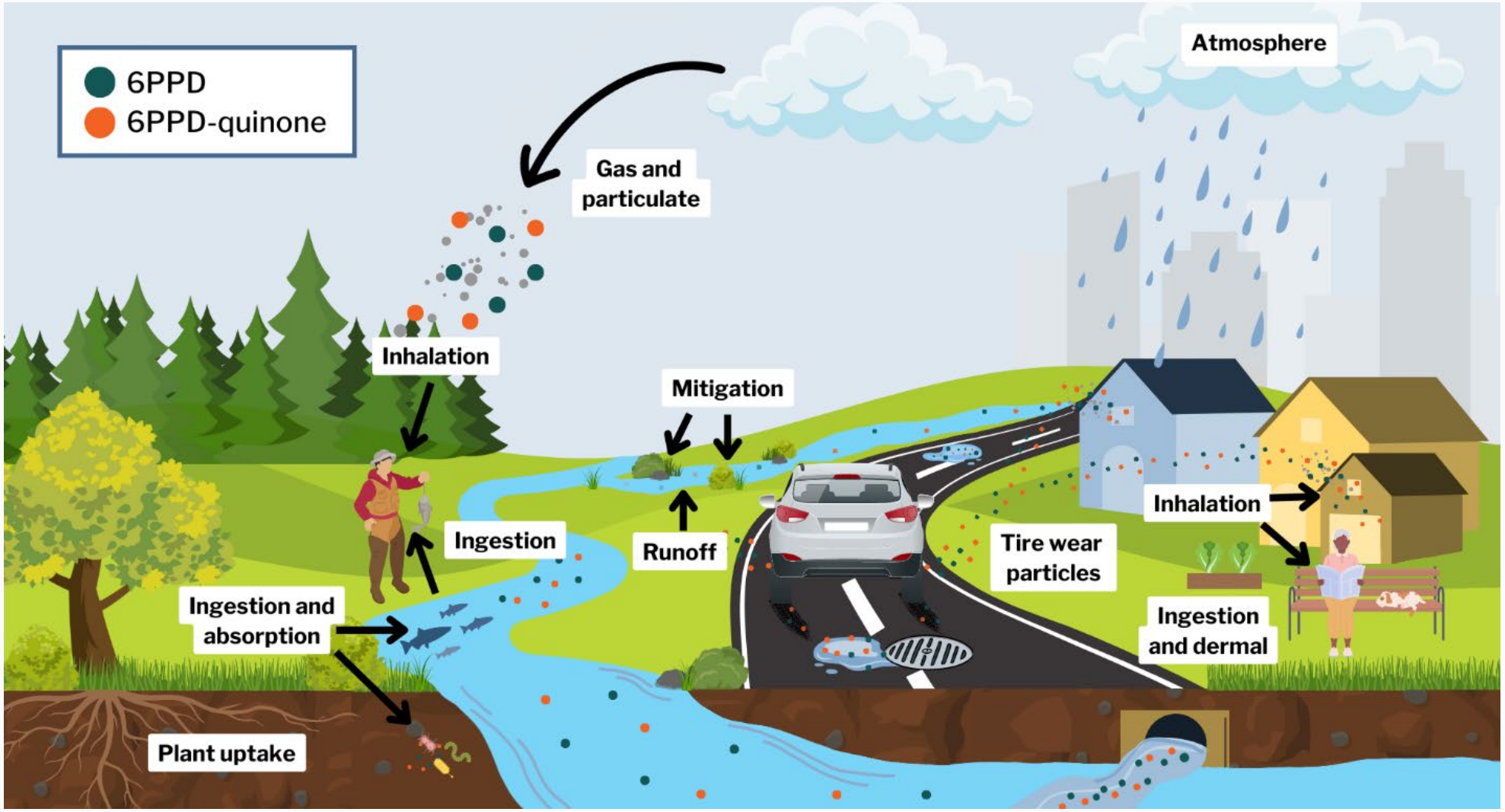
Our commitment to you

- Agencies will actively communicate with committee to discuss input.
- Project team will collaborate with agency management to determine final recommendations to Legislature.
  - We will document why decisions were made and communicate with the committee.

Developing Recommendations



Conceptual Exposure Model



See slide 50 for figure description.

Figure: WA State Dept. of Ecology

Scoping Document

- Divided by subject
  - Human toxicology and exposure potential
  - Ecotoxicology
  - Stormwater best management practices
  - Safer alternatives
  - Solid waste/tire recycling
  - Fate and transport
  - Monitoring and sampling
  - Analytical methods

Example Recommendation

Recommendation: Complete a fish bioassay study to determine designation under WAC 173-303-100(5)(c).

Broad testing of 6PPD and 6PPD-quinone in waste generated from secondary tire lifecycle markets (e.g. tire recycling facilities) and waste generated by stormwater mitigation technologies (e.g. street sweeping) using biological testing methods adopted under WAC 173-303-110(3) (e.g. fish bioassay). Results will be used to determine if the waste meets toxicity criteria under WAC 173-303-100.

Lead agency: Ecology; Proposed partners for implementation: WDFW

Justification: Ecology's Solid Waste Program is directed to perform a lifecycle analysis of secondary ownership of tires (repurposed, reused, and recycled) to determine where tire waste is generated and how it is disposed. Waste generated at these facilities should be analyzed to provide data for dangerous waste designation. That designation will help determine disposal requirements which do not negatively impact salmonids in Washington State.

Collaborate on Microsoft SharePoint/Teams

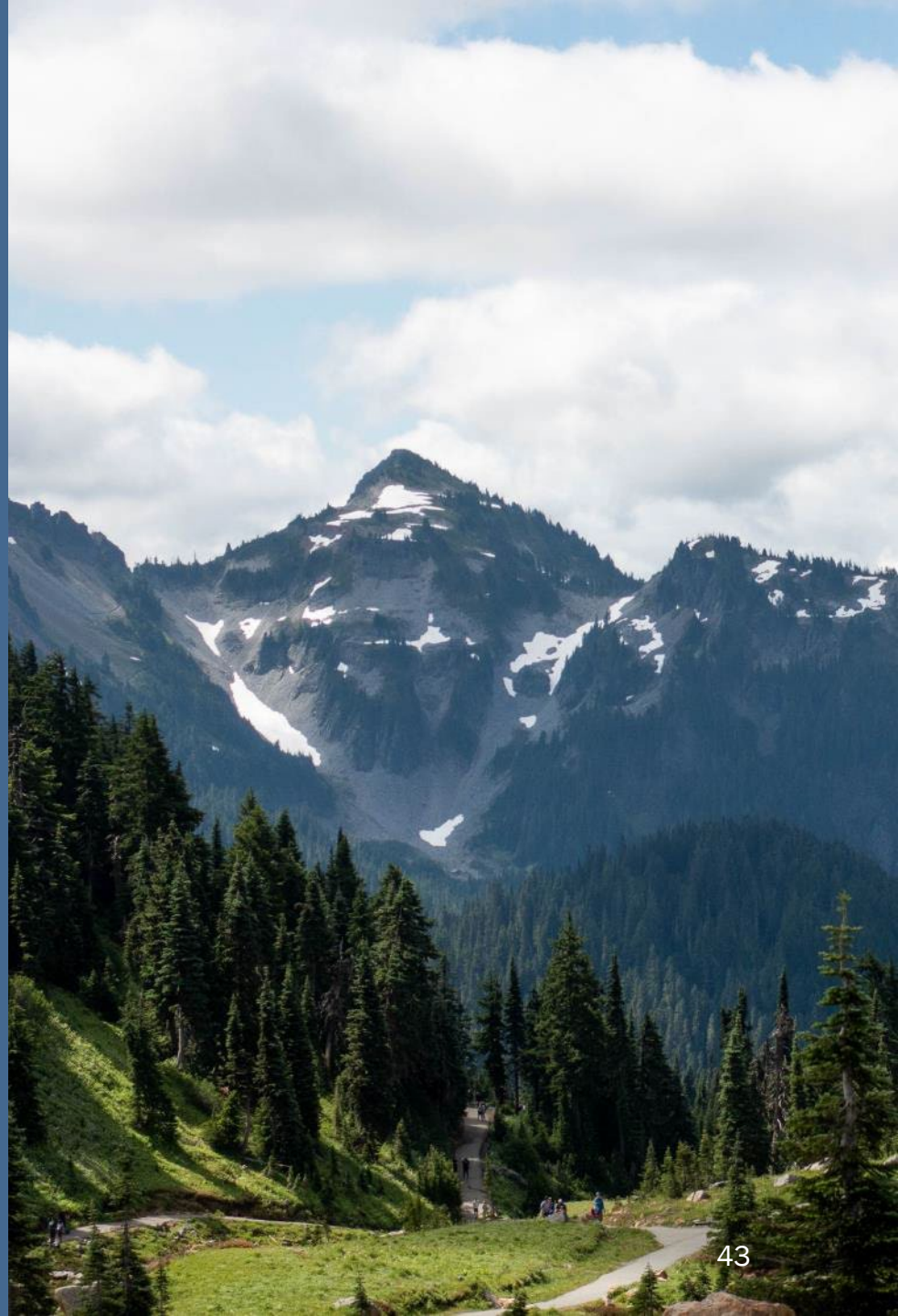
- All members were added to the Washington State Executive Branch Agencies active directory as a “Guest.”
- All members were added to the ECY-HWTR-6PPD AP Advisory Committee Microsoft Team.
- Team contains channels based on subject area.
- Master scoping document will be separated into subject area documents for ease of collaboration across subgroups.
- Members are encouraged to engage with any subgroup that you are interested in providing input.
- All members have access to all files in the Team.

Document Feedback Guidelines

- Do not delete or modify text that isn't your recommendation without using redline.
- Sign in to your Teams account to make sure your name is tied to each comment or redlined addition you make.
- **Don't remove or strike out any text**.
  - Use comments to recommend alterations or deletions of the text.
- Use redlines (suggested edits) to **add** text.
- During subgroup breakout sessions – review document to accept additions/deletions.

Questions & Discussion

Next Steps & Subgroup Breakout



Next Steps

- We'll:
  - Send meeting materials via email a week prior to each meeting.
  - Post presentations to our project webpage before each meeting.
  - Develop, send for review by committee, and post meeting minutes to our project webpage after each meeting.
- Contact us with any questions
  - Tanya Williams (tanya.williams@ecy.wa.gov)
  - Lindsey Bineau (lindsey.bineau@ecy.wa.gov)
  - 6PPD Team (6PPD@ecy.wa.gov)

Next Steps (cont.)

- Review scoping document and provide feedback
  - Add data gaps/research need recommendations
  - Comment on existing recommendations with ideas or suggested edits
  - Add references that support your recommendations
- Next meeting: February 13, 2024, from 1 to 3 p.m.
  - Zoom link to come.

Subgroup Breakout Sessions

Focus Area	Breakout Room #	Subgroup Lead	Email Address
Stormwater management and transportation retrofits	1	Madison Bristol Tony Bush	madison.bristol@ecy.wa.gov BushT@wsdot.wa.gov
Alternatives	2	Craig Manahan	craig.manahan@ecy.wa.gov
Sampling, monitoring, fate and transport	3	Rhea Smith	rhea.smith@ecy.wa.gov
Solid waste	4	Derek Rockett	derek.rockett@ecy.wa.gov
Ecotoxicology	5	Cassie Horton Stephanie Gill Andrea Carey	cassie.horton@ecy.wa.gov stephanie.gill@ecy.wa.gov andrea.carey@dfw.wa.gov
Human health	6	Elinor Fanning Mallory Little	elinor.fanning@doh.wa.gov mallory.little@doh.wa.gov

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ADA Accessibility

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Figure Description

Slide 23: The “6PPD Roadmap” figure shows the interconnectedness of Ecology’s 6PPD work. The Action Plan is in the middle. All the work we are doing will help build the action plan, which will define actionable recommendations to reduce and/or eliminate 6PPD and 6PPD-quinone from Washington State.

The roadmap shows other Legislatively-directed work items in addition to the action plan. These items include: 1) identifying areas vulnerable to 6PPD and establishing a program to monitor 6PPD compounds in water and sediment; 2) conducting an alternatives assessment to identify safer alternatives to 6PPD; and 3) identifying effective stormwater best management practices to treat 6PPD in stormwater runoff and incorporating guidance into stormwater management manuals and requirements for permits.

The remaining items support and inform this legislature-directed work. Hazard criteria, innovation, and tire safety testing are connected to the alternatives assessment. New chemicals are connected to innovation and toxicity testing. Toxicity testing is also connected with identifying vulnerable areas. Lab studies and field studies are connected to effective stormwater BMPs. Finally, analytical methods is connected to the monitoring program, and mapping is connected to both monitoring and identifying vulnerable areas.

Figure Description

Slide 22:

- Move ahead Washington direct goals and parallel goals. Direct goals include salmon recovery and ecosystem health; reducing pollution; addressing health disparities; cost effectiveness; and green stormwater infrastructure. Indirect goals include Tribal treaty rights and the HEAL act.
- Word cloud with prompt: “Why is this a priority location?” Words in the cloud include: Top; improvements; community; identified; oil; potential; low; bridge; facility; pollution; remove; Lagoon; channel; SPU; treatment; remove; access; big; multiple; species; State; WSDOT; location; City; Highway; main; flooding; Juanita; Chelan; Plan; water; Lake; Creek; area; river; outfall; key; basin; recovery; water; stem; creek; quality; goals; causing; salmonid; north; Skokomish; treatment; stormwater; I-5; fall; runoff; port; spawning; SR; habitat; fish; priority; 1954; adjacent; rain; steelhead; South; drains; salmon; River; high; Tribe; County; areas; discharges; pond; salmon; river; Tribe; high; county; areas; site; set; provide; watershed; Dogfish; coho; flows; located; upstream; areas; projects; rearing; directly; culvert; 1982; storm; creek; flow; WQ; mill; discharge; east; stream; Act; projects; city’s; neighborhood; Tacoma; impact; improving; opportunity; restoration; coast; system; pollutants; infrastructure; improving; Columbia; trail; Seattle; mail; drainage; lake; City’s; infrastructure; and/or.

Figure Description (cont.)

Slide 37: “6PPD-q is contained in tire wear particles that can be transported in the air and potentially inhaled by people. The particles can also be deposited on surfaces, soils, and plants, including foods, leading to potential plant uptake and human dermal exposure and ingestion. Tire wear particles can also stay near the roadway and be transported to surface waters through stormwater drains and runoff. 6PPD-q in surface waters can be ingested and absorbed by fishes. Exposed organisms can be ingested by humans and other species. 6PPD-q can potentially be mitigated by green stormwater infrastructure.”

Figure and description sourced from “What We Know: 6PPD and 6PPD-quinone”.