Stormwater Workgroup 6PPD Subgroup

Meeting Summary

Friday October 4, 2024, from 10:00 a.m. to 12:00 p.m.

Meeting Overview

The Stormwater Work Group (SWG) held it's first in-person and hybrid meeting. Thank you to the **City of Bellingham Public Works Department** for hosting the event and organizing site tours of the Little Squalicum Estuary Restoration project and Padden Creek Water Quality Capital Facility. About 45 people attended the meeting in-person, and over 60 people attended virtually.

Meeting Topics included:

- Opening Remarks and Welcome (Renee LaCroix, Assistant Director of Bellingham Public Works)
- Background on history of 6PPDQ and SWG 6PPDQ Subgroup formation (Eli Mackiewicz, Co-Chair)
- Recently completed and published research (Shelby Giltner/Madison Bristol, WA Ecology)
- Update on 6PPD Action Plan (Tanya Williams, WA Ecology)
- Protocol for field sampling, hot off the presses (Herrera Environmental Consultants: Dylan Ahearn, PhD, Principal Scientist and Timothy (Clark) Clark, Senior Scientist)
- Laboratory method for testing for 6PPDQ in water (Sarina Kiesser, Mass Spectrometry Research Associate Western Washington University SciTech Lab)

If you attended the meeting, please take the time to complete this short survey:

- **Provide Feedback** to help us improve the quality of the SWG 6PPD Subgroup.

Thank you as always to all attendees, presenters, and partner organizations for your commitment of to the SWG 6PPD Subgroup.

Eli Mackiewicz - SWG 6PPD Subgroup Chair

Abby Barnes – SWG 6PPD Subgroup Chair

Full Meeting Summary and Q&A

Session #1: 6PPDQ Background and Updates

- 6PPDQ Background and SWG 6PPD Subgroup History (Eli Mackiewicz, Co-Chair)
    - Presentation Slides
    - Welcome and thank you for attending the meeting.
    - History on the discovery of Urban Runoff Syndrome (URMS) and 6PPD.
    - Brief description on the goals and objectives of the SWG 6PPD Subgroup.
- Research Updates (Shelby Giltner & Madison Bristol, WA Ecology)
    - Presentation Slides
    - Ecology's 6PPD team has developed a new research website that provides information on and deliverable publicizations for all Stormwater BMP Effectiveness research being conducted by Ecology's Water Quality program.
        - 6PPD Stormwater BMP Practice Research
    - Three new contracts were initiated this past summer to study 6PPD BMP Effectiveness (see Presentation Slides for additional information)
        - EA Engineering, Science and Technology, Inc. is the lead on an unamended soil column study
        - NV5 is the lead for 3-part study researching BMP effectiveness, leaching of 6PPDQ from crumb rubber turf fields, and characterization of stormwater in different land uses, traffic density and street sweeping frequency.
        - City of Tacoma Environmental Services Laboratory is the lead for developing a 6PPDQ sediment method SOP to support two City of Tacoma CEC studies starting this fall that will include 6PPDQ sediment sampling.
    - Three Ecology funded studies have concluded providing final results (see Presentation Slides for additional information)
        - King County HPBSM/BSM column study determined HPBSM and BSM were effective at reduce toxicity of 6PPQ in stormwater. See linked presentation slides for results.
        - Herrera Environmental concluded a stormwater characterization study, property TAPE device investigation, and developed field sample protocol. See linked presentation slides for results and findings.

        - UW-Tacoma completed an evaluation of 6PPDQ sorption in treatment media and engineered soil mixtures study. See linked presentation slides for results.
    - Presentation Q and A
        - **Q:** Storm filter cartridge filters are listed as a "high" effectiveness 6PPDQ treatment in Appendix 4-1 of the "Stormwater Treatment of Tire Contaminants Best Management Practices Effectiveness" Report, dated June 2022. Have they ever really been tested?

          A: No, The Stormwater Treatment of Tire Contaminants Best Management Practices Effectiveness Report is a literature review and no BMPs were tested for effectiveness. BMPs were prioritized in that study for potential effectiveness based on the known properties of 6PPDQ. Ecology is currently testing BMPs that were determined to have “high” or “medium” potential effectiveness.

          Dylan Ahearn answered that the storm filter studied by Herrera filters 10x more water than bioretention.

        - **Q:** Is this sorption study from UW-T published or is there a report out yet?

          A: Not yet published.

- 6PPD Action Plan Updates (Tanya Williams, WA Ecology)
    - Data Gaps, Research Needs, and Recommendations to inform 6PPD Action Plan work
    - Federal Action timeline. EPA will release a draft rulemaking by end of the year.
    - 6PPD has been added as a priority chemical in WA. Working with tire manufacturers to find alternatives for installing in tires. Once a safer product is identified, new rulemaking will come into effect. Expected date is around 2028.
    - Artificial turf runoff study, as recycled tires are used for artificial turf. Looking for participants in Eastern WA.
    - Ecology’s6PPD Project timeline. If no alternative is identified, Ecology’s Dec 2026 report will state that.
    - Phase 1 Action Plan overview. WA traditionally develops chemical action plans (CAPs). Identified need for alternative action plan. This process was different than a CAP. However, like a CAP, the Action Plan included an advisory committee composed of 52 members 37 recommendations were developed based on feedback from the advisory committee, ~20 moved forward for funding request of $8.9 M, with a progress report to the Legislature in December 2024.
    - Have been asked by the legislature to expand monitoring of 6PPD in the field. Field sampling Standard Operating Procedure (SOP) almost done.

- Over next Biennium, the state will be researching potential hazards of other PPD chemicals. Will further prioritize waste tire cleanups- currently happens on a first-come, first-served basis.
- 6PPD Action plan- not fully completed but serves as a guiding document for informing future work. Reach out to Tanya Williams with questions.
- 6PPD Science Network, developed since the dismantling of the Interstate Technology Regulatory Council. Helps identify barriers, next steps, collaboration opportunities, etc. around the world of 6PPD.
    - 6PPD & 6PPD-quinone (itrcweb.org)
- Affiliated Tribes of Northwest Indians (ATNI) - 6PPD workshop, Nov 18-19.
- Presentation Q and A
    - **Q:** Where is the information that 7PPD is favored chemical from a performance perspective by the tire manufacturing industry coming from?

      A: Directly from the tire industry. There are about 10 other alternatives being considered.

    - **Q:** What defines an effective replacement chemical for 6PPD in regard to tire durability and longevity (function)—is the assumption that it will be equivalent to 6PPD?

      A: Yes, working closely with the tire industry to find an equivalent chemical that has the same durability and function without all the negative effects of 6PPD. 7PPD is the strongest contender so far.

    - **Q:** How will the Ecology alternatives report differ from the "Preliminary Alternatives Analysis Report" being done in California? Their preliminary report took less than 6 months, yet Ecology is expecting 2 years for ours?

      A: ECY released a report in 2021; the California report is building upon that study, while staying preliminary. The next ECY report is much more in-depth.

Session #2: Monitoring and Testing for 6PPDQ, from Field to Lab

- ### 6PPDQ Stormwater Field Sampling Protocol (Dylan Ahearn, PhD, Principal Scientist and Timothy (Clark) Clark, Senior Scientist)
    - Herrera Presentation Slides
    - Herrera conducted a Field Protocol Sampling Study designed to assess the potential loss of 6PPDQ to various sampling materials used during automated sampling programs.

- Recommendations were developed to provide protocol recommendations for automated composite sampling including sampling methods, sample handling, and sections of sampling equipment.
- Results concluded that the typical auto-sampling configuration is appropriate for sampling 6PPDQ in highway runoff and other stormwater with higher concentrations.
- Presentation Q and A
    - **Q:** If 6PPDQ has a half-life of 33, then how does one deal with this short-half life and getting reliable sample analysis?

      A: That is for 6PPD, 6PPDQ has a longer half-life of around 4 weeks. EPA has a policy of 14 days to extraction, 28 days to analysis.
    - **Q:** How churn-splitters cleaned and are there any controls for the cleaning?

      A: Rinse-take blanks before and after. Carboys were acid-washed by laboratory. Detections at under 10 ng/L in the silicon tubing. Comparisons were downstream from the churn-splitters.
    - **Q:** What were the concentrations in the high-test runoff?

      A: 60s-70s in the low part of the storm event up to 1,400 nanograms/L. High variability.
    - **Q:** What is the purpose of churning?

      A: Helps homogenize stormwater sample, specifically when there is sediment
    - **Q:** Was the data from King County Lab or Manchester Environmental Lab or a mix of the two? RPDs between the two?

      A: Data is from King County. More information in the report.
    - **Q:** How do these recommendations compare with the protocols being used in the sampling programs underway elsewhere, such as on Vancouver Island?

      A: It seems like more thoroughly understanding the half-life in runoff and receiving waters is important. We had been hoping that stormwater detention might help concentrations sent to receiving waters by allowing degradation (thinking the half life was ~33 hours), but if we're talking about weeks for a half-life instead of hours/days, that may not be useful.

- Laboratory method for testing for 6PPDQ in water (Sarina Kiesser, Mass Spectrometry Research Associate Western Washington University SciTech Lab)
    - Presentation Slides
    - Mass spectrometry is the primary tool used for understanding 6PPD. LC-QTOF
    - SciTech Lab serves the whole university. Prioritizes student hands-on experience.
    - Overview of capabilities:
        - EPA Draft Method 1634 overview: Sample collection -> Solid phase extraction (SPE) -> Reverse phase chromatography (HPC) -> mass spectrometry
        - HPLC: High performance liquid chromatography. Separation of sample parts based on hydrophobic/hydrophilic components using solid phase extraction
        - Mass Spectrometry: Gives a charge to sample, accelerate into rods that analyze the mass identify 6PPDQ, goes into collision cell, then time of flight tube. Can see the mass down to isotropic ratio based on the mass of each molecule. Highly granular data. Allows for exploring additional questions such as what 6PPD degrades into.
- Research opportunities and possible collaborations with SWG
- Presentation Q and A
    - **Q:** How did you choose your SPLC column?

      A: Based on draft method 1634, using reverse-phase chromatography.
    - **Q:** Where in the process do you do sample preservation?

      A: In the step before it makes it to the lab, not much opportunity to do so once it makes it to the lab.
    - **Q:** How to contact SciTech for collaboration?

      A: Sarina Keisser's email is larivis@wwu.edu.
    - **Q:** Seeking to be accredited?

      A: Unlikely to receive accreditation at this point in time. City of Bellingham is exploring what it would take for partnerships to happen.

Future Meeting Dates

The SWG 6PPD Subgroup meets on a quarterly basis. The next SWG meeting will happen in early 2024.

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You can join any or all of our email lists on your GovDelivery Subscriber Preferences Page. Enter your email address, click to add subscriptions, and navigate to the Water Quality Program list to find: **SWG-6PPD-SUBGROUP** for meeting agendas and notes of those discussions.

View the SWG Website

We regularly update the SWG 6PPD Subgroupwith information about upcoming meetings, past meeting materials, and important SWG documents. If you have additional questions about the SWG 6PPD Subgroup, contact shelby.giltner@ecy.wa.gov.