

**From:** [Larry Dunn](#)  
**To:** [Makarow, Irina \(ECY\)](#)  
**Subject:** Re: Phthalate Action Plan 3-3-2022 Presentation Slides  
**Date:** Thursday, March 17, 2022 8:39:37 AM

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For today's meeting here is something that I found.

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# Phthalates in the environment: characteristics, fate and transport, and advanced wastewater treatment technologies

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## Abstract

Phthalates are well-known emerging contaminants that harm human health and the environment. Therefore, this review aims to discuss about the occurrence, fate, and phthalates concentration in the various environmental matrices (e.g., aquatic, sediment, soil, and sewage sludge). Hence, it is necessary to treat sources containing phthalates before discharging them to aqueous environment. Various advanced wastewater treatments including adsorption process (e.g., biochar, activated carbon), advanced oxidation processes (e.g., photo-fenton, ozonation, photocatalysis), and biological treatment (membrane bioreactor) have been successfully to address this issue with high removal efficiencies (70-95%). Also, the degradation mechanism was discussed to provide a comprehensive understanding of the phthalate removal for the reader. Additionally, key factors that influenced the phthalates removal efficiency of these technologies were identified and summarized with a view towards pilot-scale and industrial applications.

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**From:** Makarow, Irina (ECY) <Imak461@ECY.WA.GOV>  
**Sent:** Thursday, March 3, 2022 4:44 PM  
**To:** Larry Dunn <larrydunn360@hotmail.com>  
**Subject:** RE: Phthalate Action Plan 3-3-2022 Presentation Slides

Hello Larry –

Thank you for this additional information. The comments were also posted on the online form for the project.

Irina

**Irina Makarow** (she/her)  
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**From:** Larry Dunn <larrydunn360@hotmail.com>  
**Sent:** Thursday, March 3, 2022 11:01 AM  
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### **Crosslinked Polyethylene (PEX)**

Like HDPE and PP, there are few health hazards in the main content of the pipes themselves, but there is concern that chemicals can leach from the pipes or break down into other chemicals that leach from the pipes.[19] Water supplied from PEX pipes is also sometimes known to have taste and odor problems.[20] Some studies indicate that more chemicals can leach from PEX than from the plastics ranked higher in this Hazard Spectrum.[21] These pipes are installed using a variety of polymer and metal fittings. PEX is the only type of pipe on the Hazard Spectrum that cannot be recycled into new pipes, so its end-of-life options are limited.

[Water Pipes Hazard Spectrum | HomeFree from HBN \(healthybuilding.net\)](#)

[Water Pipes Hazard Spectrum | HomeFree from HBN](#)

Under typical conditions, copper pipes contain the fewest health hazards among the pipes included in this Hazard Spectrum. Solders and fluxes can contain lead, a persistent and bioaccumulative toxicant, and other

homefree.healthybuilding.net

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**From:** ECY RE CHEM ACTION PLANS (HWTR) <ChemActionPlans@ECY.WA.GOV>

**Sent:** Thursday, March 3, 2022 8:12 AM

**Cc:** Tamboer, Lauren (ECY) <Ltam461@ECY.WA.GOV>; Fanning, Elinor W (DOH) <elinor.fanning@doh.wa.gov>; Niemi, Cheryl (ECY) <cnie461@ECY.WA.GOV>; Makarow, Irina (ECY) <Imak461@ECY.WA.GOV>

**Subject:** Phthalate Action Plan 3-3-2022 Presentation Slides

Hello Advisory Committee members –

Please find attached the agenda and slides for today’s presentation starting at 9 AM PT.

These documents are also posted on the project web page:

[https://www.ezview.wa.gov/site/alias\\_\\_1962/37711/phthalates\\_action\\_plan.aspx](https://www.ezview.wa.gov/site/alias__1962/37711/phthalates_action_plan.aspx)

We look forward to our discussion later this morning.

Join Zoom Meeting

<https://waecy-wa-gov.zoom.us/j/81693540072?pwd=M0RjYVdUYlJxODdYaW5aZXlsMS9zZz09>

Meeting ID: 816 9354 0072

Passcode: Phthalates

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Meeting ID: 816 9354 0072

Passcode: 4743225855

Find your local number: <https://waecy-wa-gov.zoom.us/j/kzPz6CLPI>

Don't hesitate to contact our team if you have any questions.

E-mail: [ChemActionPlans@ecy.wa.gov](mailto:ChemActionPlans@ecy.wa.gov)

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