The webinar will begin shortly.

Safer Products for Washington:
Leather and textile furnishings (9:30 a.m.)
Laundry detergents (12 p.m.)

Implementing RCW 70A.350: The Pollution Prevention for Healthy People and Puget Sound Act

MAY 18, 2021
Audio connection logistics

• For audio connection, we recommend using your computer speaker.
• If you are unable to join using computer audio, use “Call In” to access dial-in information.
• To open the audio options, select the three dots icon in the menu at the bottom of your screen.
Webinar logistics

• All lines are muted.
• Questions and input go in the Q & A box.
  • Ask anytime, we will address at the end.
• Technical difficulty issues go in the chat box.
• To open the chat box, select the chat button at the lower right hand side of your screen.
• In the event of major technical difficulties, we will reschedule the webinar.
• NOTE: Any reference in this presentation to persons, organizations, services, or activities does not constitute or imply endorsement, recommendation, or preference by the Washington State Department of Ecology.
Safer Products for Washington: 
Leather and textile furnishings

From Ecology: Cheryl Niemi, Marissa Smith, Saskia van Bergen, Craig Manahan, Sascha Stump, Rae Eaton, Kimberly Goetz, Lauren Tamboer, and Amber Sergent.

From Health: Holly Davies, Elinor Fanning, and Emily Horton.
Today’s schedule

1. 9:30—Recap: Safer Products for Washington background
2. 9:40—Leather and textile furnishings
3. 10:20—Questions and discussion on leather and textile furnishings
4. 11:30—Break
5. 12:00—Recap: Safer Products for Washington background
6. 12:10—Laundry detergent
7. 12:50—Questions and discussion on laundry detergent
8. 2:00—Overview of all product categories
Section 1. Safer Products for WA background
Safer Products for WA background

- Pollution Prevention for Healthy People and Puget Sound Sound Act, signed into law May 2019.
- Act aims to reduce exposures to priority chemicals resulting from the use of consumer products.
- Act sets requirements for Ecology to:
  - Report to Legislature.
  - Consider and use information in specific ways.
  - Enact rulemaking (if needed).
- Safer Products for Washington is the implementation program for RCW 70A.350.
Safer Products for WA Implementation Process

**Phase 1**
Priority chemical classes
The first five priority chemical classes are PFAS, PCBs, phthalates, phenols, and flame retardants.

**Phase 2**
Priority consumer products
Identify products that are significant sources of exposure to people and the environment.

**Phase 3**
Regulatory actions
Determine whether to require notice, restrict/prohibit, or take no action.

**Phase 4**
Rulemaking
Restrict chemicals in products or require reporting. Restrictions take effect one year after rule adoption.

May 8, 2019 → June 1, 2020 → June 1, 2022 → June 1, 2023 → Back to Phase 1

**WHAT CLASSES OF CHEMICALS ARE WE MOST CONCERNED ABOUT?**

**WHAT CONSUMER PRODUCTS CONTAIN THESE CHEMICALS?**

**DO WE NEED TO REGULATE WHEN THESE CHEMICALS ARE USED?**

**WHAT RULES DO WE NEED TO KEEP PEOPLE AND THE ENVIRONMENT SAFE?**

See an accessible version of this graphic.
## A reminder: Phase 2 priority products

<table>
<thead>
<tr>
<th>Priority chemical or chemical class</th>
<th>Priority product in the report</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flame retardants</td>
<td>Electric and electronic equipment</td>
</tr>
<tr>
<td>Flame retardants</td>
<td>Recreational polyurethane foam</td>
</tr>
<tr>
<td>PCBs</td>
<td>Paints and printing inks</td>
</tr>
<tr>
<td>PFAS</td>
<td>Carpet and rugs</td>
</tr>
<tr>
<td>PFAS</td>
<td>Aftermarket stain and water resistance treatments</td>
</tr>
<tr>
<td>PFAS</td>
<td>Leather and textile furnishings</td>
</tr>
<tr>
<td>Phenolic compounds (alkylphenol ethoxylates)</td>
<td>Laundry detergent</td>
</tr>
<tr>
<td>Phenolic compounds (bisphenols)</td>
<td>Thermal paper</td>
</tr>
<tr>
<td>Phenolic compounds (bisphenols)</td>
<td>Food and drink cans</td>
</tr>
<tr>
<td>Phthalates</td>
<td>Flooring</td>
</tr>
<tr>
<td>Phthalates</td>
<td>Personal care products</td>
</tr>
</tbody>
</table>

Regulatory determinations

• In order to restrict the use of a priority chemical, safer alternatives must be feasible and available.

• The restriction must:
  • Reduce a significant source or use of priority chemical(s).
  OR
  • Be necessary to protect sensitive species or sensitive populations.
Safer in the law

• Safer is defined in the law as “less hazardous to humans or the environment than the existing chemical or process.”

• A safer alternative to a particular chemical may include:
  • A chemical substitute.
  • A change in materials or design that eliminates the need for a chemical alternative.
Criteria for safer is a spectrum
Process for identifying safer alternatives

1. Does the priority chemical class meet the minimum criteria for safer?
   - **YES**
   - **NO**

2. **NO**
   - Does the alternative meet the minimum criteria for safer?
     - **YES**
     - **NO**

3. **NO**
   - Does the alternative meet the additional criteria for safer?
     - **YES**
     - **NO**

4. **YES**

   EVALUATE SPECIAL CONSIDERATIONS

   SAFER ALTERNATIVE
How can we assess classes of chemicals?

1. If there are all data rich chemicals → Assess the class based on data rich chemicals.

2. If there are all data poor chemicals → Unlikely to be a priority chemical class.

3. If there are data rich and data poor chemicals → Assess the class based on data rich chemicals.

4. If there is variable or discordant hazard data → Three options.
Maximum criteria for safer

• Chemicals used to function like priority chemicals cannot have:
  • High concerns for carcinogenicity, mutagenicity, reproductive or developmental toxicity, or endocrine disruption.
  • High toxicity in other ways and very persistent and/or very bioaccumulative.
  • Very high persistence and very high bioaccumulation.
  • For a full description—see the working draft criteria.
Certifications and assessments that meet our minimum criteria for safer

Examples of chemicals that meet this criteria:
- GreenScreen® Benchmark 2, 3, and 4.
- EPA Safer Chemical Ingredients List evaluated against the master criteria.

Examples of products that may meet this criteria:
- GreenScreen Certified™ Gold, Gold+, and Platinum Products*
  - *Certification levels depend on product type.
- EPA Safer Choice Products
- Cradle to Cradle Certified™ Gold and Platinum Material Health Certificate products
  - More documentation of persistence and bioaccumulation may be necessary.
Feasible and available

• RCW 70A.350 requires that Ecology determine that safer alternatives are “feasible and available” before restricting the use of a priority chemical.

• Not defined in the statute.

• IC2 created a guide for Alternatives Assessment (2017).
  • Modules to assess potential alternatives.
  • Performance module—technical feasibility.
  • Cost and availability module—price competitive and available in sufficient quantity.
Process for identifying feasible and available alternatives

STEP 1: Identify the performance requirements of the priority product at the chemical, material, product, and process level.

STEP 2: Is the priority chemical necessary for the performance of the product?

YES

STEP 3: Is the alternative already used or marketed for the application of interest or a similar application?

NO

NOT FEASIBLE

NO

YES

STEP 4: Have others identified it as a feasible alternative for this or similar applications?

NO

NOT FEASIBLE

YES

FEASIBLE

STEP 5: Is the alternative currently used for the application of interest?

NO

STEP 5: Is the alternative currently offered for sale for the application of interest? Is the price of the alternative close to the current?

NO

NOT AVAILABLE

YES

AVAILABLE

See an accessible version of this graphic.
Section 2. Leather and textile furnishings
Scope of the priority chemical class

- RCW 70A.350.010 defines "perfluoroalkyl and polyfluoroalkyl substances" or "PFAS chemicals" as **a class of fluorinated organic chemicals containing at least one fully fluorinated carbon atom**.

- Carbon-fluorine bond defines the class—hard to break, causing PFAS to be very highly persistent.

- Accumulate overtime, increasing exposure to sensitive populations and species.

- Voluntary agreements to phase out PFAS and restrictions on the use of some PFAS have led to regrettable substitutions.

Perfluororalkyl acid (PFAA) example structure (Blake and Fenton, 2020).
The priority product category

- Indoor and outdoor leather and textile furnishings used in residential and commercial settings include:
  - Table linens.
  - Bedding.
  - Upholstered furniture.
  - Cushions and pillows.
  - Curtains, drapes, and awnings.
  - Towels.
PFAS in furnishings

• Applied to leather and textile furnishings during the manufacturing process.
• Used for stain, oil, and water resistance.
• Side-chain fluorinated polymers are the most common PFAS used in leather and textile furnishings.
• Can degrade under normal wear and tear.
• Release fluorinated side-chains which degrade to PFAAs.
Furnishings are a significant source of PFAS

• Furnishings have the **potential to expose** people to PFAS.
• Furnishings contribute to the **volume** of PFAS in our homes and environment.
• A restriction on PFAS in leather and textile furnishings would reduce a significant source of PFAS to our homes and the environment.
• Full rationale in 2020 priority products report to the Legislature.
Hazards of PFAS

• All PFAS are persistent or break down to persistent PFAS.

• Many are also bioaccumulative.

• Many have reproductive and developmental toxicity and/or systemic toxicity (including immunotoxicity, neurotoxicity, and thyroid).

• Some are also toxic to aquatic organisms.
PFAS regulation in WA

• As a class, in some **food packaging** applications (RCW 70A.222) and **firefighting foam** (RCW 70A.400).

• WAC 171-333-310 lists PFOS and its salts as **persistent, bioaccumulative, toxic** chemicals.

• WAC 173-334-130 identifies PFOS and PFOA as **chemicals of high concern to children**.
Identifying data rich chemicals

• We identified data rich chemicals by looking for existing hazard assessments
  • GreenScreen® and Authoritative Listings
    • GreenScreens—conducted by a licensed profiler, publicly available.
    • Authoritative Listings—review of supporting documents.

• Other hazard assessment methods are possible, but would need to be:
  • Compatible with our criteria for safer and scoring methodology.
  • Publicly available or third-party reviewed.

• Identified 15 data rich PFAS present on authoritative lists or with GreenScreen® assessments.
Criteria for safer is a spectrum

GreenScreen®
BM-1
Authoritative Lists

GreenScreen®
BM-2

GreenScreen®
BM-2*
BM-3

*not all BM-2 meet additional criteria
## Hazards of data rich chemicals

<table>
<thead>
<tr>
<th>CAS</th>
<th>Common name</th>
<th>Hazards</th>
<th>Example authoritative lists</th>
</tr>
</thead>
<tbody>
<tr>
<td>335-67-1</td>
<td>Perfluorooctanoic acid (C8)</td>
<td>Developmental toxicity, systemic toxicity, PBT</td>
<td>Cal EPA Prop 65, EU GHS (H360D, H362, H372), UNEP Stockholm Conv.—Persistent Organic Pollutants (Proposed PBT)</td>
</tr>
<tr>
<td>375-95-1</td>
<td>Perfluorononanoic acid (C9)</td>
<td>Reproductive and Developmental toxicity, PBT</td>
<td>EU GHS (H362, H360f), EU Annex VI CMRs (Category 1B), EU SVHC Authorisation List PBT Candidate</td>
</tr>
<tr>
<td>1763-23-1</td>
<td>Perfluorooctanesulfonic acid (C8)</td>
<td>Reproductive and developmental toxicity, PBT</td>
<td>Cal EPA Prop 65, EU Annex VI CMR (Category 1B), UNEP Stockholm Conv.—Persistent Organic Pollutants (PBT)</td>
</tr>
<tr>
<td>3825-26-1</td>
<td>Ammonium perfluorooctanoate (C8)</td>
<td>Reproductive and developmental toxicity</td>
<td>EU GHS (H360D, H362), EU Annex VI (CMR Category 1B)</td>
</tr>
<tr>
<td>2795-39-3</td>
<td>Potassium perfluorooctanesulfonate</td>
<td>Reproductive and developmental toxicity, PBT</td>
<td>EU GHS (H360D, H362), EU Annex VI CMR (Category 1B), OSPAR PBT</td>
</tr>
<tr>
<td>29081-56-9</td>
<td>Ammonium perfluorooctanesulfonate (C8)</td>
<td>Reproductive and developmental toxicity, PBT</td>
<td>EU GHS (H360D), EU Annex VI CMR (Category 1B), OSPAR PBT</td>
</tr>
<tr>
<td>116-14-3</td>
<td>Tetrafluoroethylene</td>
<td>Carcinogenicity</td>
<td>Cal EPA Prop 65, IARC Group 2A, MAK Group 2, NIH (report on carcinogens—reasonably anticipated to be carcinogenic)</td>
</tr>
</tbody>
</table>
## Hazards of data rich chemicals

<table>
<thead>
<tr>
<th>Associated CAS#(s)</th>
<th>Common name</th>
<th>GreenScreen® score</th>
<th>Endpoints of concern (H or vH)</th>
</tr>
</thead>
<tbody>
<tr>
<td>116-15-4</td>
<td>Hexafluoropropylene</td>
<td>BM-1</td>
<td><strong>Carcinogenicity</strong>, neurotoxicity (single), systemic toxicity (single and repeat), skin and eye irritation, and persistence</td>
</tr>
<tr>
<td>86508-42-1</td>
<td>Perfluorocarbon compounds</td>
<td>BM-1</td>
<td><strong>Persistence</strong> and <strong>bioaccumulation</strong></td>
</tr>
<tr>
<td>297730-93-9</td>
<td>3-Ethoxyperfluoro(2-methylhexane)</td>
<td>BM-1</td>
<td><strong>Persistence</strong>, <strong>bioaccumulation</strong>, and chronic aquatic toxicity</td>
</tr>
<tr>
<td>29420-49-3</td>
<td>Perfluorobutanesulfonate, potassium salt</td>
<td>BM-1</td>
<td><strong>Persistence</strong>, eye irritation</td>
</tr>
<tr>
<td>27905-45-9</td>
<td>1,1,2,2-Tetrahydroperfluorodecyl acrylate</td>
<td>BM-1</td>
<td><strong>Persistence</strong>, <strong>bioaccumulation</strong>, neurotoxicity (repeat), and <strong>systemic toxicity</strong> (repeat)</td>
</tr>
<tr>
<td>9002-84-0</td>
<td>Polytetf</td>
<td>BM-1</td>
<td><strong>Persistence</strong>, <strong>systemic toxicity</strong></td>
</tr>
<tr>
<td>307-24-4</td>
<td>Perfluorohexanoic acid</td>
<td>BM-1</td>
<td><strong>Persistence</strong>, skin and eye irritation, and <strong>systemic toxicity</strong> (single)</td>
</tr>
<tr>
<td>647-42-7</td>
<td>2- Perfluorohexylethanol</td>
<td>BM-1</td>
<td>Acute toxicity, <strong>systemic toxicity</strong> (single and repeat), aquatic toxicity (acute and chronic), and <strong>persistence</strong></td>
</tr>
</tbody>
</table>

Leather and textile furnishings
Criteria for safer is a spectrum.

- Hazardous chemicals: PFAS as a class
- Minimum criteria
- Additional criteria
- Optimal chemicals: Safer alternatives
How can we assess classes of chemicals?

1. If there are all data rich chemicals → Assess the class based on data rich chemicals.
2. If there are all data poor chemicals → Unlikely to be a priority chemical class.
3. If there are data rich and data poor chemicals → Assess the class based on data rich chemicals.
4. If there is variable or discordant hazard data → Three options.
Conclusion on the hazards of PFAS

• PFAS as a class do not meet our minimum criteria for safer.
• None of the data rich PFAS identified meet our minimum criteria for safer.
  • PFAS with assessments were Benchmark 1 chemicals.
  • Other PFAS were found on authoritative lists that do not meet our minimum criteria for safer.
Considering alternatives at multiple supply chain levels

<table>
<thead>
<tr>
<th>Level</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Components</td>
<td>• Anti-soil or anti-stain chemical treatments</td>
</tr>
<tr>
<td></td>
<td>• Stain or soil resistant fibers</td>
</tr>
<tr>
<td>Intermediate good</td>
<td>• Finished textiles</td>
</tr>
<tr>
<td></td>
<td>• Finished leather</td>
</tr>
<tr>
<td>Finished product</td>
<td>• Upholstered furniture</td>
</tr>
<tr>
<td></td>
<td>• Textile or leather furnishings</td>
</tr>
<tr>
<td>Retailer</td>
<td>• Home goods stores</td>
</tr>
<tr>
<td></td>
<td>• Commercial furniture and furnishings retailers</td>
</tr>
</tbody>
</table>
Ease of identification of safer, feasible, and available

<table>
<thead>
<tr>
<th>Level</th>
<th>Safer</th>
<th>Feasible</th>
<th>Available</th>
</tr>
</thead>
<tbody>
<tr>
<td>Components</td>
<td>Easier</td>
<td>Less difficult</td>
<td>Difficult</td>
</tr>
<tr>
<td>Intermediate products</td>
<td>Easier</td>
<td>Easier</td>
<td>Less difficult</td>
</tr>
<tr>
<td>Finished products</td>
<td>Easier</td>
<td>Easier</td>
<td>Easier</td>
</tr>
<tr>
<td>Retailers</td>
<td>Difficult</td>
<td>Easier</td>
<td>Easier</td>
</tr>
</tbody>
</table>
Safer—what are we looking for?

Chemical treatments or fibers that serve the function of PFAS and meet our minimum criteria for safer

Where can we start?
- GreenScreen® Benchmark 2, 3, or 4 chemicals.
- Cradle to Cradle Certified™ Products with material health certificates:
  - Silver (possibly)
  - Gold (likely)
  - Platinum (likely)
- EPA Safer Choice Products (likely).
- EPA Safer Chemical Ingredients List (likely).
- Exploring Scivera and ChemForward.

Leather and textile furnishings
Components that may be safer

• Several PFAS-free chemical treatments are available
  • Siloxane-based, wax-based or fatty acid derived treatments identified—exact formulations unknown.
  • Nanomaterial treatments identified but likely not safer.
• Safer status of chemical treatments unknown, need access to confidential information to assess.
Intermediate products that may be safer

• C2CC™ Products with gold or platinum material health certificates
  • Carnegie Xorel polyethylene—company does not apply additional anti-soil or anti-stain treatments.
  • Quantum group high-performance polymer textiles—use of treatments unknown.

• C2CC™ Products with silver material health certificates
  • Gaja Wool upholstery fabric—company recommends not using anti-soil or anti-stain treatments.

• Additional PFAS-free textiles identified—safer status is unknown.

This does not constitute or imply endorsement, recommendation, or preference by the Washington State Department of Ecology.
Finished products that may be safer

• C2CC™ Products with silver material health certificates
  • Steelcase: office furniture—use of treatments unknown.
  • Herman Miller: office furniture (not upholstered).
  • Loll Design: outdoor furniture (not upholstered).

• Additional PFAS-free furniture and furnishings identified—safer status is unknown.

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Summary of safer

<table>
<thead>
<tr>
<th>Supply chain level</th>
<th>Are there safer options?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Components</td>
<td>More info needed</td>
</tr>
<tr>
<td>Intermediate goods</td>
<td>C2CC™ certifications – limited products</td>
</tr>
<tr>
<td>Finished products (furniture and furnishings)</td>
<td>C2CC™ certifications – limited products</td>
</tr>
<tr>
<td>Retailers</td>
<td>More info needed</td>
</tr>
</tbody>
</table>

- Identified intermediate and finished products that are CTCC™ Silver or higher.
  - Many do not use any anti-soil or anti-stain treatments.
- Identified several components and intermediate and finished products that are likely PFAS-free, but safer status is unknown.
- No treated leather currently identified.
Reminder-process for identifying feasible and available alternatives

STEP 1: Identify the performance requirements of the priority product at the chemical, material, product, and process level.

STEP 2: Is the priority chemical necessary for the performance of the product?
- YES
- NO

STEP 3: Is the alternative already used or marketed for the application of interest or a similar application?
- NO
- YES

STEP 4: Have others identified it as a feasible alternative for this or similar applications?
- NO
- YES

STEP 5: Is the alternative currently used for the application of interest?
- NO
- YES

STEP 5: Is the alternative currently offered for sale for the application of interest? Is the price of the alternative close to the current?
- NO
- YES

Feasible

Available

Not feasible

Not available

See an accessible version of this graphic.
Feasible and available—which are we looking for?

Products that are used by consumers and can replace furniture and furnishings that were treated with PFAS

Where can we start?

- Products that are safer and/or PFAS-free:
  - Finished furniture.
  - Textile and leather furnishings.
  - Fabrics and leathers used in interior design.
- Products sold by retailers with PFAS-free commitments.
- Product lists generated through certain initiatives.

Leather and textile furnishings
Safer products that are likely available

• C2CC™ finished products with silver material health certificates
  • Steelcase: office furniture
  • Herman Miller: office furniture
  • Loll Design: outdoor furniture (not upholstered)
  • Need to confirm feasibility—are they sold in the same applications as products that are treated with PFAS?

• C2CC™ intermediate products with silver, gold, or platinum material health certificates
  • May be feasible and available—need to confirm use in finished products.

This does not constitute or imply endorsement, recommendation, or preference by the Washington State Department of Ecology.
Retailers selling finished products

• Several retailers have committed to phasing out PFAS in their private brands:
  • Ikea
    • Many products since 2016: furniture (fabric and leather), home textiles.
  • Target
    • Focused on private brand furniture, 2022 goal
  • Office Depot
    • Office furniture only.
  • Staples
    • Office furniture only.

• Safer status of these products is unknown.

This does not constitute or imply endorsement, recommendation, or preference by the Washington State Department of Ecology.
Retailers selling finished products

• Several retailers sell products made with PFAS-free textiles:
  • Crate & Barrel
  • Pottery Barn
  • Bassett
  • Room & Board

• Safer status of these products is unknown.

This does not constitute or imply endorsement, recommendation, or preference by the Washington State Department of Ecology.
## Conclusion—what we know so far

<table>
<thead>
<tr>
<th>Level</th>
<th>Are there safer options?</th>
<th>Are there feasible options?</th>
<th>Are there available options?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Components</td>
<td>More info needed</td>
<td>More info needed</td>
<td>More info needed</td>
</tr>
<tr>
<td>Intermediate products</td>
<td>C2CC™ certifications – a few products</td>
<td>More info needed</td>
<td>More info needed</td>
</tr>
<tr>
<td>Finished products (furniture and furnishings)</td>
<td>C2CC™ certifications – a few products</td>
<td>More info needed</td>
<td>C2CC™ certifications – a few products</td>
</tr>
<tr>
<td>Retailers</td>
<td>More info needed</td>
<td>Yes – a few products</td>
<td>Yes – a few products</td>
</tr>
</tbody>
</table>
Conclusion—Safer, feasible, and available

What we know:

- Identified available and possibly safer office chairs and outdoor furniture.
- Some upholstery fabric and fabric upholstered products are C2CC™ certified (likely safer) and others are PFAS-free.
- Several companies sell PFAS-free furniture and furnishings.

What we don't know:

- How many of the identified PFAS-free alternatives are safer.
- Whether the likely safer alternatives provide stain/soil resistance (feasibility).
- How many likely safer alternatives are used in priority products (availability).
- Information about safer, feasible, and available alternatives in all leather furniture and furnishings.
Help us connect the dots!

• Information about the chemicals used to replace PFAS in PFAS-free products on the market.
  • GreenScreen® assessments on chemicals used to function like PFAS.
  • C2CC™ certified products.
  • Other hazard assessments are possible—reach out to discuss!

• PFAS-free products that provide soil or stain resistance.
  • Treated leather products.
  • Residential products.
Future steps

- A restriction on the use of PFAS in furniture and furnishings would reduce a significant source of PFAS.

- Not yet able to demonstrate that safer alternatives are both feasible and available.

- Research continues, hopefully with your help!

- If we find safer, feasible, available alternatives, we could recommend a restriction.

- If we don’t find safer, feasible, available alternatives, we could recommend a reporting requirement.

- Opportunities to discuss the scope.
Section 3. Leather and textile furnishings discussion
Questions? Input to share?

Type in the Q & A box or raise your hand to unmute.

• Direct your question to everyone using the drop down arrow.
• If you need more than 512 characters, ask your question or give your input verbally.
• Raise your hand and we will unmute you to give your input.
  • If you’re dialing in via phone, dial *3 to raise your hand.
# Leather and textile furnishings

<table>
<thead>
<tr>
<th>Feedback category</th>
<th>Feedback from stakeholders during the May 18 discussion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other alternatives to consider</td>
<td>• Maharam makes a moisture-resistant polyester textile (source from Building Green).</td>
</tr>
<tr>
<td></td>
<td>• Non-animal leather as a potential alternative.</td>
</tr>
<tr>
<td>Performance of alternatives</td>
<td>• Ecology should challenge where this function is necessary for these products. Avoidance should be an alternative.</td>
</tr>
<tr>
<td></td>
<td>• Agency is not mandated to determine if performance is valid.</td>
</tr>
<tr>
<td></td>
<td>• Chemical manufacturers respond to customer’s performance demands.*</td>
</tr>
<tr>
<td></td>
<td>• Relationship between customer and manufacturer is complex—public education or marketing rules can be used to help</td>
</tr>
<tr>
<td></td>
<td>consumers understand risk associated with performance expectations.</td>
</tr>
<tr>
<td></td>
<td>• PFAS-free alternatives are okay on “water repellency” not “stain repellency.”</td>
</tr>
<tr>
<td></td>
<td>• Stain resistance reduces cleaning cost and lengthens service life of articles.</td>
</tr>
<tr>
<td>Availability of alternatives</td>
<td>• Bed, Bath, Beyond has made a PFAS-free commitment.</td>
</tr>
<tr>
<td>Other feedback</td>
<td>• Many fabrics used for upholstered office furniture are not finished with stain/soil repellant treatments (so Cradle to</td>
</tr>
<tr>
<td></td>
<td>Cradle Certified™ does not necessarily mean it uses a PFAS-free anti-stain treatment)—should distinguish between the two.</td>
</tr>
<tr>
<td></td>
<td>• Issues with conflict resolution in GreenScreen® process—easier to rely on authoritative sources.</td>
</tr>
<tr>
<td></td>
<td>• Manufacturers should start reformulation now with presumption PFAS should be banned; need to reverse trend of PFAS release</td>
</tr>
<tr>
<td></td>
<td>(example, PFAS used in furniture found in breastmilk: <a href="https://toxicfreefuture.org/100-of-breast-milk-samples-tested-positive-for-toxic-forever-chemicals/">https://toxicfreefuture.org/100-of-breast-milk-samples-tested-positive-for-toxic-forever-chemicals/</a>).</td>
</tr>
<tr>
<td></td>
<td>• Ecology should work with other states that have PFAS bans to increase consistency.</td>
</tr>
</tbody>
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*Multiple stakeholders shared the same feedback.
Get involved with our Phase 3 process

- Share your input on the working draft criteria for safer, feasible, and available.
- Don’t miss product-specific webinars this summer.
- Invite us to present to your group.
- Reach out to us to set up a meeting with our team.
Stakeholder involvement next steps

- Make sure you are on our email list!
- Product-specific webinars continuing this summer.
- Formal public comment period on draft regulatory actions report (Fall 2021 – Winter 2022).
### Where are we at on the other products?

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<th>Webinar target</th>
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<tr>
<td>Laundry detergent</td>
<td>APEs</td>
<td>Update at 12pm PST</td>
<td>May 18</td>
</tr>
<tr>
<td>Paints</td>
<td>PCBs</td>
<td>Identified paints with lower PCB concentrations, evaluating feasible and available</td>
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Webinar resumes at 12 p.m.

1. 9:30—Recap: Safer Products for Washington background
2. 9:40—Leather and textile furnishings
3. 10:20—Questions and discussion on leather and textile furnishings
   11:30—Break
1. 12:00—Recap: Safer Products for Washington background
2. 12:10—Laundry detergent
3. 12:50—Questions and discussion on laundry detergent
4. 2:00—Overview of all product categories
Safer Products for Washington:

Laundry detergents

From Ecology: Cheryl Niemi, Marissa Smith, Saskia van Bergen, Craig Manahan, Sascha Stump, Rae Eaton, Kimberly Goetz, Lauren Tamboer, and Amber Sergent.

From Health: Holly Davies, Elinor Fanning, and Emily Horton.
Today’s schedule

1. 9:30—Recap: Safer Products for Washington background
2. 9:40—Leather and textile furnishings
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4. 11:30—Break
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6. 12:10—Laundry detergent
7. 12:50—Questions and discussion on laundry detergent
8. 2:00—Overview of all product categories
Section 1. Safer Products for WA background
Safer Products for WA background

• Pollution Prevention for Healthy People and Puget Sound Sound Act, signed into law May 2019.

• Act aims to reduce exposures to priority chemicals resulting from the use of consumer products.

• Act sets requirements for Ecology to:
  • Report to Legislature.
  • Consider and use information in specific ways.
  • Enact rulemaking (if needed).

• Safer Products for Washington is the implementation program for RCW 70A.350.
Safer Products for WA Implementation Process

**Phase 1**
Priority chemical classes
The first five priority chemical classes are PFAS, PCBs, phthalates, phenols, and flame retardants.

May 8, 2019

**Phase 2**
Priority consumer products
Identify products that are significant sources of exposure to people and the environment.

June 1, 2020

**Phase 3**
Regulatory actions
Determine whether to require notice, restrict/prohibit, or take no action.

June 1, 2022

**Phase 4**
Rulemaking
Restrict chemicals in products or require reporting. Restrictions take effect one year after rule adoption.

June 1, 2023

Back to Phase 1

WHAT CLASSES OF CHEMICALS ARE WE MOST CONCERNED ABOUT?

WHAT CONSUMER PRODUCTS CONTAIN THESE CHEMICALS?

DO WE NEED TO REGULATE WHEN THESE CHEMICALS ARE USED?

WHAT RULES DO WE NEED TO KEEP PEOPLE AND THE ENVIRONMENT SAFE?

See an accessible version of this graphic.
A reminder: Phase 2 priority products

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<th>Priority product in the report</th>
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<td>Recreational polyurethane foam</td>
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<td>PCBs</td>
<td>Paints and printing inks</td>
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<td>Laundry detergent</td>
</tr>
<tr>
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<td>Thermal paper</td>
</tr>
<tr>
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<td>Food and drink cans</td>
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<td>Phthalates</td>
<td>Flooring</td>
</tr>
<tr>
<td>Phthalates</td>
<td>Personal care products</td>
</tr>
</tbody>
</table>
Regulatory determinations

• In order to restrict the use of a priority chemical, safer alternatives must be feasible and available.

• The restriction must:
  • Reduce a significant source or use of priority chemical(s).
  OR
  • Be necessary to protect sensitive species or sensitive populations.
Safer in the law

• Safer is defined in the law as “less hazardous to humans or the environment than the existing chemical or process.”

• A safer alternative to a particular chemical may include:
  • A chemical substitute.
  • A change in materials or design that eliminates the need for a chemical alternative.
Criteria for safer is a spectrum
Process for identifying safer alternatives

Does the priority chemical class meet the minimum criteria for safer?

- **YES**
  - Does the alternative meet the additional criteria for safer?
    - **YES**
      - SAFER ALTERNATIVE
    - **NO**
      - EVALUATE SPECIAL CONSIDERATIONS
- **NO**
  - Does the alternative meet the minimum criteria for safer?
    - **NO**
      - EVALUATE SPECIAL CONSIDERATIONS
    - **YES**
      - SAFER ALTERNATIVE
How can we assess classes of chemicals?

1. If there are all data rich chemicals → Assess the class based on data rich chemicals.
2. If there are all data poor chemicals → Unlikely to be a priority chemical class.
3. If there are data rich and data poor chemicals → Assess the class based on data rich chemicals.
4. If there is variable or discordant hazard data → Three options.
• Chemicals used to function like priority chemicals cannot have:
  • High concerns for carcinogenicity, mutagenicity, reproductive or developmental toxicity, or endocrine disruption.
  • High toxicity in other ways and very persistent and/or very bioaccumulative.
  • Very high persistence and very high bioaccumulation.
  • For a full description—see the working draft criteria.
Certifications and assessments that meet our minimum criteria for safer

Examples of chemicals that meet this criteria:
- GreenScreen® Benchmark 2, 3, and 4.
- EPA Safer Chemical Ingredients List evaluated against the master criteria.

Examples of products that may meet this criteria:
- GreenScreen Certified™ Gold, Gold+, and Platinum Products*
  - *Certification levels depends on product type.
- EPA Safer Choice Products
- Cradle to Cradle Certified™ Gold and Platinum Material Health Certificate products
  - More documentation of persistence and bioaccumulation may be necessary.
Feasible and available

- RCW 70A.350 requires that Ecology determine that safer alternatives are “feasible and available” before restricting the use of a priority chemical.

- Not defined in the statute.

- IC2 created a guide for Alternatives Assessment (2017).
  - Modules to assess potential alternatives.
  - Performance module—technical feasibility.
  - Cost and availability module—price competitive and available in sufficient quantity.
Process for identifying feasible and available alternatives

STEP 1: Identify the performance requirements of the priority product at the chemical, material, product, and process level.

STEP 2: Is the priority chemical necessary for the performance of the product?
- YES
- NO

STEP 3: Is the alternative already used or marketed for the application of interest or a similar application?
- NO
- YES

STEP 4: Have others identified it as a feasible alternative for this or similar applications?
- NO
- YES

STEP 5: Is the alternative currently used for the application of interest?
- NO
- YES

STEP 5: Is the alternative currently offered for sale for the application of interest? Is the price of the alternative close to the current?
- NO
- YES

Available

NOT FEASIBLE

See an accessible version of this graphic.
Section 2. Laundry detergent
Priority chemical & priority product

- In 2019, Legislature defined alkylphenol ethoxylates (APEs) as a priority chemical class.
- Identified laundry detergents as a significant source or use of APEs.
- Listed them as a priority product our 2020 report.
- Safer alternatives to APEs are feasible, available, and can serve the same function as surfactants in laundry detergent.
- Currently moving toward a restriction on use of APEs in laundry detergent consistent with RCW 70A.350.50.
- We welcome your input!
Laundry detergent is likely the largest use of APEs in commerce.

Nonylphenol ethoxylates (NPEs) and octylphenol ethoxylates (OPEs) account for most APEs usage.

Approximately 39% of NPEs global use is in institutional cleaners.

NPE content ranges from 1 – 40% in these products.

Estimated 370,000 pounds of NPEs are discharged yearly by on-premises laundries.
• Branched or linear alkyl chain is usually 9- carbon nonylphenol ethoxylates (NPEs) or 8- carbon octylphenol ethoxylates (OPEs).

• Number of ethoxylate (EO) units can vary

• APEs with other alkyl chain lengths and different numbers of EO units are also included in the scope of the priority chemical class.
Identifying data rich chemicals

• We identified data rich chemicals by looking for existing hazard assessments
  • GreenScreen® and Authoritative Lists
    • GreenScreens—conducted by a licensed profiler, publicly available.
    • Authoritative Lists—review of supporting documents.
  • Other hazard assessment methods are possible, but would need to be:
    • Compatible with our criteria for safer and scoring methodology.
    • Publicly available or third party reviewed.

• Identified a GreenScreen® assessment for nonylphenol ethoxylates (linear and branched, 1 – 20 EO).

• Utilized List Translator scores and identified authoritative listings for NPEs, OPEs, and their breakdown products.
Criteria for safer is a spectrum
Hazards of alkylphenol ethoxylates

- Endocrine disruption
  - Estrogenic, anti-androgenic.
- Acute and chronic aquatic toxicity
  - Growth, reproduction and development.
- Persistence
  - Slow breakdown in anaerobic environments.
  - Present in wastewater treatment effluent.
- Breakdown products
Nonylphenol ethoxylates (NPEs)

- Scored as BM-$1_{TP}$ in a GreenScreen® assessment.
- Present on authoritative and screening lists for endocrine activity.
- Available data suggests very high acute and chronic aquatic toxicity and high persistence in the environment.
- Do not meet our minimum criteria.

<table>
<thead>
<tr>
<th>Associated CASRN</th>
<th>Common name</th>
<th>Meets minimum criteria?</th>
<th>GreenScreen® Score</th>
<th>Presence in authoritative lists</th>
<th>Presence in screening lists</th>
</tr>
</thead>
<tbody>
<tr>
<td>9016-45-9</td>
<td>Nonylphenol, ethoxylated</td>
<td>NO</td>
<td>BM-$1_{TP}$ LT-1</td>
<td>Endocrine Activity: EU SVHC – Candidate List EU SVHC – Authorisation List</td>
<td>Endocrine Activity: OSPAR TEDX SIN</td>
</tr>
</tbody>
</table>
Octylphenol ethoxylates (OPEs)

- Score as LT-1 chemicals using GreenScreen® List Translator.
- Present on authoritative and screening lists for endocrine activity.
- Available data suggests very high aquatic toxicity and persistence.
- Do not meet our minimum criteria.

<table>
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<tr>
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<th>Common name</th>
<th>Meets minimum criteria?</th>
<th>GreenScreen® Score</th>
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<th>Presence in screening lists</th>
</tr>
</thead>
<tbody>
<tr>
<td>9036-19-5</td>
<td>4-(1,1,3,3-tetramethylbutyl) phenol, ethoxylated</td>
<td>NO</td>
<td>LT-1</td>
<td>Endocrine Activity: EU SVHC – Candidate List, EU SVHC – Authorisation List</td>
<td>Endocrine Activity: OSPAR SIN</td>
</tr>
</tbody>
</table>
Breakdown products

- Incomplete mineralization during wastewater treatment, release into the environment.
- Loss of EO units, formation of alkylphenols.
- **Alkylphenols: nonylphenol, octylphenol.**

\[
\text{C}_m
\]
Branched or linear alkyl chain

- Alkylphenoxy acetic acids, ethoxy acetic acids.
- Alkylphenol monoethoxylates, diethoxylates.
Hazards of alkylphenols

- Endocrine disruption
  - More potent than parent APEs.
- Acute and chronic aquatic toxicity
  - Very high toxicity.
  - Fish, invertebrates, and aquatic plants.
- Persistence
  - More persistent than parent APEs.
  - Accumulation in soil, sediment, biosolids.
Nonylphenols

• Present on authoritative and screening lists for endocrine activity and acute aquatic toxicity.

• Included on WA chemicals of high concern to children reporting list.

• Do not meet our minimum criteria.

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<tbody>
<tr>
<td>25154-52-3</td>
<td>4-nonylphenol, branched and linear</td>
<td>NO</td>
<td>LT-1</td>
<td>Endocrine Activity: EU SVHC – Candidate List</td>
<td>Endocrine Activity: OSPAR TEDX SIN</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Acute Aquatic Toxicity: EU – GHS (H400)</td>
<td>Acute Aquatic Toxicity: GHS – JP (H401) GHS – NZ (9.1A (A, All))</td>
</tr>
</tbody>
</table>
Criteria for safer is a spectrum.
Conclusion: Hazards of APEs

• Alkylphenol ethoxylates as a class do not meet our minimum criteria for safer.

• Nonylphenol ethoxylates, octylphenol ethoxylates, and their breakdown products score as Benchmark-1 or LT-1 chemicals.

• Chemical alternatives will need to meet our minimum criteria to be identified as safer.
Surfactants in laundry detergents

- APEs function as **surfactants** in laundry detergents.
- Surfactants (surface-active agent) bind to both oily substances and water.
  - One end of a surfactant is attracted to oils/fats, and one end is attracted to water.
- Surfactants are used in cleaning products to help remove oily contamination when water alone is not sufficient.
Safer surfactants meet our minimum criteria for safer

GreenScreen® BM-2 surfactants (non-exhaustive list):

- Alcohol ethoxylates 68439-50-9
- Sodium lauryl sulfate 68585-47-7
- Decyl glucosides 68515-73-1
- Cocamidopropyl betaine 31789-40-0
- Sodium pentadecyl sulfate 68955-19-1
- Cocamidopropyldimethylamino oxide 68155-09-9

This does not constitute or imply endorsement, recommendation, or preference by the Washington State Department of Ecology.
Some detergents contain only safer surfactants

- Non-exhaustive list of brands/products identified:
  - Seventh Generation
  - Grainger
  - Presto! (Amazon Brand)
  - ECOS
  - Friendly Organic
  - Grove Collaborative

This does not constitute or imply endorsement, recommendation, or preference by the Washington State Department of Ecology.
Feasible laundry detergent performance requirements

• As outlined in our working draft criteria, if alternative surfactants are already used or marketed for the application of interest, we consider them feasible.

• Although APEs are primarily used in industrial uses (like hospitals and hotels), we did not identify any additional performance requirements for these uses.

• The same or similar laundry detergents are sold for residential and commercial use, just in larger containers for commercial use.
Safer detergents are feasible and available

- Including detergents in pak, powder, and liquid form.
- Laundry detergents using safer surfactants advertise performance/use claims:
  - “For commercial use”
  - “Professional”
  - “Fights stains”/ “Removes stains”
  - “Grease cutting”
  - Cold wash, baby, concentrated, hypoallergenic, and color safe varieties
Future steps

- A restriction on APEs in laundry detergents would reduce a significant source or use.
- Safer surfactants are feasible and available.
- At this point, the data support a restriction on the use of APEs in laundry detergents:
  - A restriction would be consistent with other countries/governments.
  - We would not require use of identified safer surfactants/products.
- Questions:
  - Timeframe
  - Intentionally added vs. inadvertent
  - ppm limit
Section 3. Laundry detergents discussion
Questions? Input to share?

Type in the Q & A box or raise your hand to unmute.

• Direct your question to everyone using the drop down arrow.
• If you need more than 512 characters, ask your question or give your input verbally.
• Raise your hand and we will unmute you to give your input.
  • If you’re dialing in via phone, dial *3 to raise your hand.
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<th>Feedback category</th>
<th>Feedback from stakeholders during the May 18 discussion</th>
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| Feedback about the potential regulation | • Consider the impact of restriction on industrial users in terms of cost (for example, on dry cleaners that have switched to wet cleaning, or small-size industrial cleaners).  
• Testing of new products takes a year—this doesn’t include manufacture, distribution, or selling off existing stock. |
| Other feedback                        | • Create list of CASRNs to enable common understanding of regulated APE class. This list would inform how long it may take to reformulate products.  
• Consider other product benefits (such as reduced plastic packaging used in some new products). |
Get involved with our Phase 3 process

- Share your input on the working draft criteria for safer, feasible, and available.
- Don’t miss product-specific webinars this summer.
- Invite us to present to your group.
- Reach out to us to set up a meeting with our team.
Stakeholder involvement next steps

• Make sure you are on our email list!
• Product-specific webinars continuing this summer.
• Formal public comment period on draft regulatory actions report (Fall 2021 – Winter 2022).
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Thank you for joining us!

SaferProductsWA@ecy.wa.gov

ecology.wa.gov/Safer-Products-WA

bit.ly/SaferProductsWA (Find links to everything here!)

Chapter 70A.350 RCW (formerly 70.365)
End of presentation.
Safer Products for WA Implementation Process

The implementation process for Safer Products for Washington involves **four major phases**.

1. **Phase 1.** May 8, 2019: What chemicals are we most concerned about?
   - The first five priority chemical classes are PFAS, PCBs, phthalates, phenols, and flame retardants.

2. **Phase 2.** June 1, 2020: What consumer products contain these chemicals?
   - This phase identifies priority consumer products that are significant sources of exposure to people and the environment.

3. **Phase 3.** June 1, 2022: Do we need to regulate when these chemicals are used?
   - This phase determines regulatory actions—whether to require notice, restrict/prohibit, or take no action.

4. **Phase 4.** June 1, 2023: What rules do we need to keep people and the environment safe?
   - This phase includes restrictions on the use of chemicals in products or reporting requirements. Restrictions take effect one year after rule adoption.

After these four phases are completed, the **5-year cycle repeats**, and we return to Phase 1 to identify a new set of priority chemical classes.
Process for identifying feasible and available alternatives

- **Step 1**: Identify the performance requirements of the priority product at the chemical, material, product, and process level.
- **Step 2**: Is the priority chemical necessary for the performance of the product?
  - If yes, move to Step 3.
  - If no, is it possible to meet the performance requirements of the product without the priority chemical?
    - If yes, the alternative is feasible, and we move to Step 5 to assess availability.
    - If no, the alternative is not feasible.
- **Step 3**: Is the alternative already used or marketed for the application of interest or a similar application?
  - If yes, the alternative is feasible, and we move to Step 5 to assess availability.
  - If no, move to Step 4.
- (Continued on next slide.)
Continued: Identifying feasible and available alternatives

- **Step 4**: Have others identified it as a favorable alternative for this or similar applications?
  - If yes, the alternative is feasible, and we move to Step 5 to assess availability.
  - If no, the alternative is not feasible.

- **Step 5**: Is the alternative currently used for the application of interest?
  - If yes, the alternative is available.
  - If no, we move to the second part of Step 5.

- **Step 5 (second part)**: Is the alternative currently offered for sale for the application of interest? Is the price of the alternative close to the current?
  - If yes to both, the alternative is available.
  - If no (to one or both), the alternative is not available.