PROPOSED RULE MAKING

CR-102 (July 2022)
(Implements RCW 34.05.320)
Do **NOT** use for expedited rule making

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FILED

DATE: June 04, 2025
TIME: 7:32 AM

WSR 25-12-097

Agency: Department of Ecology AO #23-07

☒ **Original Notice**
☐ **Supplemental Notice to WSR _____**
☐ **Continuance of WSR _____**

☒ **Preproposal Statement of Inquiry was filed as WSR** 24-01-020 **; or**
☐ **Expedited Rule Making--Proposed notice was filed as WSR _____; or**
☐ **Proposal is exempt under RCW 34.05.310(4) or 34.05.330(1); or**
☐ **Proposal is exempt under RCW _____.**

Title of rule and other identifying information: (describe subject) The Washington Department of Ecology (Ecology) proposes to revise Chapter 173-337 WAC: Safer Products Restrictions and Reporting to adopt restrictions and reporting requirements related to the intentional use of per- and polyfluoroalkyl substances (PFAS) in the following product categories.

- The proposed rule restricts the intentional use of PFAS in:
  - Apparel and accessories.
  - Automotive washes.
  - Cleaning products.
- The proposed rule requires manufacturers to report the intentional use of PFAS in:
  - Apparel for extreme and extended use.
  - Footwear.
  - Gear for recreation and travel.
  - Automotive waxes.
  - Cookware and kitchen supplies.
  - Firefighting personal protective equipment.
  - Floor waxes and polishes.
  - Hard surface sealers.
  - Ski waxes.

For more information on this rulemaking, visit: https://ecology.wa.gov/regulations-permits/laws-rules-rulemaking/rulemaking/wac-173-337-nov2023

Hearing location(s):

Date:	**Time:**	**Location:** (be specific)	**Comment:**
Wednesday July 9, 2025	5:30 PM PT	Register for the online hearing: https://waecy-wa-gov.zoom.us/meeting/register/spC8aqibRwmKvHKpQtcUWg You can also join by calling 1-253-215-8782 and enter meeting ID 835 4388 9123. Or to receive a free call back, provide your phone number when you join the event.	Ecology is hosting this event online and will provide a presentation about the proposed rule, a question-and-answer session, and the formal hearing. You can attend this event from any device with internet access.
Thursday July 10, 2025	10:00 AM PT	Register for the online hearing: https://waecy-wa-gov.zoom.us/meeting/register/eKhUmxPHTcanHNIneCPnnA	Ecology is hosting this event online and will provide a presentation about the proposed rule, a question-and-answer session, and the formal hearing.

		You can also join by calling 1-253-215-8782 and enter meeting ID 875 0074 5177. Or to receive a free call back, provide your phone number when you join the event.	You can attend this event from any device with internet access.

Date of intended adoption: October 15, 2025 (Note: This is **NOT** the **effective** date)

Submit written comments to:	**Assistance for persons with disabilities:**
Name: Stacey Callaway Address: Send US mail to: Department of Ecology Hazardous Waste and Toxics Reduction Program PO Box 47600, Olympia, WA 98504-7600 (US mail) Email: SaferProductsWA@ecy.wa.gov Fax: N/A Other: Online: https://hwtr.ecology.commentinput.com?id=UkVY4maCdt By (date) July 20, 2025	Contact Ecology ADA Coordinator Phone: 360-407-6831 Fax: N/A TTY: For Washington Relay Service or TTY call 711 or 877-833-6341 Email: ecyADAcoordinator@ecy.wa.gov Other: Visit https://ecology.wa.gov/accessibility By (date) July 20, 2025

Purpose of the proposal and its anticipated effects, including any changes in existing rules:

The proposed rule implements Chapter 70A.350 RCW: Toxic Pollution and aims to:

- Protect Washington residents, particularly people with higher toxic exposures.
- Make consumer products safer and reduce consumers' and workers' exposure to PFAS.
- Increase transparency so consumers can make more informed decisions about the products they use every day.

The proposed rule:

- Restricts the intentional use of PFAS in most apparel, automotive washes, and cleaning products.
- Requires manufacturers to report the intentional use of PFAS in nine other product categories: apparel for extreme and extended use, footwear, gear for recreation and travel, automotive waxes, cookware and kitchen supplies, firefighting personal protective equipment, floor waxes and polishes, hard surface sealers, and ski waxes.

The restrictions and reporting requirements in the proposed rule:

- Affect manufacturers, distributors, and retailers of the 12 product categories that operate in Washington State.
- Apply to covered consumer products sold online and in brick-and-mortar stores.

If adopted, the reporting requirements will take effect on January 1, 2026, with restrictions taking effect on January 1, 2027, and the first report due January 31, 2027.

Reasons supporting proposal: PFAS, known as "forever chemicals," don't break down in the environment. Some build up in species higher up in the food chain, such as humans and orcas. Many PFAS are linked to cancer, harm reproduction and development, and are toxic to fish. Nearly everyone in the United States has PFAS in their blood. Regulating PFAS in consumer products will reduce exposure to these toxic forever chemicals.

Statutory authority for adoption: Chapter 70A.350 RCW—Toxic Pollution

Statute being implemented: Chapter 70A.350 RCW—Toxic Pollution

Is rule necessary because of a:

Federal Law?	☐ Yes	☒ No
Federal Court Decision?	☐ Yes	☒ No
State Court Decision?	☐ Yes	☒ No

If yes, CITATION:

Agency comments or recommendations, if any, as to statutory language, implementation, enforcement, and fiscal matters: Ecology will extend an offer for government-to-government consultation with Tribal governments during each phase of the rulemaking. Ecology will also complete an Environmental Justice Assessment in compliance with RCW.70A.02.06 as part of this rulemaking.

For more information on this rulemaking, visit: https://ecology.wa.gov/regulations-permits/laws-rules-rulemaking/rulemaking/wac-173-337-nov2023

For more information on Ecology's efforts to implement the Safer Products for Washington Program, visit the Safer Products for Washington:

- Program page: https://ecology.wa.gov/waste-toxics/reducing-toxic-chemicals/washingtons-toxics-in-products-laws/safer-products
- Stakeholder page: https://www.ezview.wa.gov/site/alias__1962/37555/safer_products_for_washington.aspx

Type of proponent: ☐ Private ☐ Public ☒ Governmental
Name of proponent: (person or organization) Department of Ecology

Name of agency personnel responsible for:

	Name	Office Location	Phone
Drafting:	Stacey Callaway	Lacey, WA	360-407-6700
Implementation:	Camille Bennett	Lacey, WA	360-407-6700
Enforcement:	Kimberly Grieves	Lacey, WA	360-522-2492

Is a school district fiscal impact statement required under RCW 28A.305.135? ☐ Yes ☒ No
If yes, insert statement here:

The public may obtain a copy of the school district fiscal impact statement by contacting:
Name:
Address:
Phone:
Fax:
TTY:
Email:
Other:

Is a cost-benefit analysis required under RCW 34.05.328?

☒ Yes: A preliminary cost-benefit analysis may be obtained by contacting:
Name: Stacey Callaway
Address: Department of Ecology
Hazardous Waste and Toxics Reduction Program
PO Box 47600, Olympia, WA 98504-7600 (US mail)
Phone: 360-407-6700
Fax: N/A
TTY: For Washington Relay Service or TTY call 711 or 877-833-6341
Email: SaferProductsWA@ecy.wa.gov
Other:

☐ No: Please explain:

Regulatory Fairness Act and Small Business Economic Impact Statement
Note: The Governor's Office for Regulatory Innovation and Assistance (ORIA) provides support in completing this part.

(1) Identification of exemptions:
This rule proposal, or portions of the proposal, **may be exempt** from requirements of the Regulatory Fairness Act (see chapter 19.85 RCW). For additional information on exemptions, consult the exemption guide published by ORIA. Please check the box for any applicable exemption(s):

☐ This rule proposal, or portions of the proposal, is exempt under RCW 19.85.061 because this rule making is being adopted solely to conform and/or comply with federal statute or regulations. Please cite the specific federal statute or regulation this rule is being adopted to conform or comply with, and describe the consequences to the state if the rule is not adopted.
Citation and description:

☐ This rule proposal, or portions of the proposal, is exempt because the agency has completed the pilot rule process defined by RCW 34.05.313 before filing the notice of this proposed rule.

☐ This rule proposal, or portions of the proposal, is exempt under the provisions of RCW 15.65.570(2) because it was adopted by a referendum.

☒ This rule proposal, or portions of the proposal, is exempt under RCW 19.85.025(3). Check all that apply:

- ☐ RCW 34.05.310 (4)(b) (Internal government operations)
- ☐ RCW 34.05.310 (4)(c) (Incorporation by reference)
- ☐ RCW 34.05.310 (4)(d) (Correct or clarify language)
- ☒ RCW 34.05.310 (4)(e) (Dictated by statute)
- ☐ RCW 34.05.310 (4)(f) (Set or adjust fees)
- ☐ RCW 34.05.310 (4)(g) ((i) Relating to agency hearings; or (ii) process requirements for applying to an agency for a license or permit)

☐ This rule proposal, or portions of the proposal, is exempt under RCW 19.85.025(4) (does not affect small businesses).

☐ This rule proposal, or portions of the proposal, is exempt under RCW _____.

Explanation of how the above exemption(s) applies to the proposed rule:

(2) Scope of exemptions: *Check one.*

☐ The rule proposal is fully exempt *(skip section 3)*. Exemptions identified above apply to all portions of the rule proposal.

☒ The rule proposal is partially exempt *(complete section 3)*. The exemptions identified above apply to portions of the rule proposal, but less than the entire rule proposal. Provide details here (consider using this template from ORIA): Ecology baselines are typically complex, consisting of multiple requirements fully or partially specified by existing rules, statutes, or federal laws. Where the proposed rule differs from this baseline of existing requirements, it is typically subject to (i.e., not exempt from) analysis required under the Regulatory Fairness Act (RFA; Chapter 19.85 RCW) based on meeting criteria referenced in RCW 19.85.025(3) as defined by the Administrative Procedure Act in RCW 34.05.310. The Small Business Economic Impact Statement (SBEIS) below includes a summary of the baseline for this rulemaking, and whether or how the proposed rule differs from the baseline.

☐ The rule proposal is not exempt *(complete section 3)*. No exemptions were identified above.

(3) Small business economic impact statement: *Complete this section if any portion is not exempt.*

If any portion of the proposed rule is **not exempt**, does it impose more-than-minor costs (as defined by RCW 19.85.020(2)) on businesses?

☐ No Briefly summarize the agency's minor cost analysis and how the agency determined the proposed rule did not impose more-than-minor costs. _____

☒ Yes Calculations show the rule proposal likely imposes more-than-minor cost to businesses and a small business economic impact statement is required. Insert the required small business economic impact statement here:

This Small Business Economic Impact Statement (SBEIS) presents the:

- Compliance requirements of the proposed rule.
- Results of the analysis of relative compliance cost burden.
- Consideration of lost sales or revenue.
- Cost-mitigating action taken by Ecology, if required.
- Small business and local government consultation.
- Industries likely impacted by the proposed rule.
- Expected net impact on jobs statewide.

A small business is defined by the Regulatory Fairness Act (chapter 19.85 RCW) as having 50 or fewer employees. Estimated costs are determined as compared to the existing regulatory environment—the regulations in the absence of the rule. The SBEIS only considers costs to "businesses in an industry" in Washington State. This means that impacts, for this document, are not evaluated for government agencies.

The existing regulatory environment is called the "baseline" in this document. It includes only existing laws and rules at federal and state levels.

This information is excerpted from Ecology's complete set of regulatory analyses for this rulemaking. For complete discussion of the likely costs, benefits, minimum compliance burden, and relative burden on small businesses, see the associated Regulatory Analyses document (**Ecology publication no. 25-04-027, June 2025**)

COMPLIANCE REQUIREMENTS OF THE PROPOSED RULE, INCLUDING PROFESSIONAL SERVICES

The baseline for our analyses generally consists of existing laws and rules. This is what allows us to make a consistent comparison between the state of the world with and without the proposed rule amendments.

For this rulemaking, the baseline includes:

- The existing Safer Products Restriction and Reporting Rule, Chapter 173-337 WAC.
- The authorizing statute, Chapter 70A.350 RCW.
- Federal Reporting and Recordkeeping Requirements for Certain Per- and Polyfluoroalkyl Substances, 40 CFR 705.
- Current and anticipated manufacturing practices due to recent economic and regulatory changes

The proposed rule amendments would:

- Restrict intentionally added PFAS in the following priority product categories

- Require reporting of intentionally added PFAS in the following priority product categories

1. Restrict intentionally added PFAS in priority products

Baseline

While other states have restricted, or have scheduled restrictions, on the use of PFAS in apparel and cleaning products and the definition of PFAS is largely the same across states, the definition of "intentionally added" differs somewhat. We assume for the purposes of this analysis that rules in other states will not necessarily be binding on businesses operating in Washington. A federal rule is scheduled to require importers of PFAS, including PFAS within articles, to report the use of PFAS. While the definition of PFAS in federal rule includes many of the same chemicals defined as PFAS by Chapter 70A.350 RCW and statutes in other states, it is a narrower definition and some chemicals considered PFAS by states will not be covered under the federal reporting requirement.

Proposed

No person may manufacture, sell, or distribute the following priority consumer products that contain intentionally added PFAS starting January 1, 2027, in the following consumer product categories.

- Apparel and accessories made from leather, natural textiles, synthetic textiles, or technical textiles.
- Automotive washes, including products that clean the exterior of automobiles.
- Cleaning products intended for household or institutional uses.

Ecology presumes the detection of total fluorine indicates the intentional addition of PFAS. Manufacturers may rebut this presumption by submitting a statement to Ecology that PFAS were not intentionally added along with credible evidence supporting that statement.

Expected impact

PFAS restrictions are in place or are scheduled to be in place in the next few years in several U.S. states, representing large segments of the market for consumer products. We cannot be certain whether the response of any manufacturer, whether operating within the state of Washington or elsewhere, to remove PFAS would be due to the PFAS restrictions in the proposed rule or due to restrictions or planned restrictions elsewhere.

Public comments received as part of the regulatory determination report suggest that most manufacturers will change their manufacturing process to exclude PFAS if large portions of the market have restricted PFAS in the product. It is likely that any change in the use of PFAS in the market as a whole is not necessarily due to regulation in any one particular state but as a cumulative impact of the regulatory environment. For the purposes of analyzing the rule impact, we assume the impacts of the rule are scaled to the state of Washington within the broader U.S. market.

There are some differences in how "intentionally added PFAS" is defined across states, potentially causing differences in which PFAS would be restricted across states. However, all definitions of intentionally added include PFAS chemicals that have an intended effect or function in the product. Because we expect that the overwhelming majority of PFAS in these product categories is intentionally added to produce some desired effect in the product, differences in the definition of "intentionally added" across states may have a relatively minimal impact on manufacturer responses.

We expect the rule amendments would result in public and environmental health benefits as well as additional costs for manufacturers and distributors.

PFAS are highly resistant to degradation, with many persisting in the environment effectively indefinitely. Many PFAS chemicals are persistent in the bodies of animals, including humans. PFAS has been linked to numerous adverse human health outcomes that we believe may be partially mitigated by the proposed rule, including, among others:

- Cancer, including kidney, lung, and testicular cancers
- Immune toxicity, including decreased vaccination response
- Developmental effects, including low birth weight
- Cardiovascular disease
- Endocrine effects, including thyroid disease
- Liver effects
- Diabetes

In addition to human health, PFAS has been found in the bodies of certain animals. Animal studies suggest non-human animals may also be vulnerable to some adverse health impacts from PFAS. The rule amendments would also serve to mitigate negative ecosystem effects of PFAS.

The proposed rule amendments would place additional restrictions on manufacturers and distributors, generating higher costs. In the case of automotive washes, cleaning products, and some apparel we expect these to be one-time costs associated with reformulating a product to exclude intentionally added PFAS.

In automotive washes and cleaning products, PFAS can function as a surfactant. In these cases, manufacturers would be required to undertake the time and expense of altering their chemical formulation to replace PFAS while maintaining product performance standards. While we expect there will be a cost to this reformulation process, Ecology has identified many alternative surfactants. We do not expect any alternative PFAS-free formulation will have different performance or higher production costs in these product categories.

In the case of apparel that does not require oil- or water-repellence, intentionally added PFAS does not provide an essential function. We expect the restricted chemicals will be removed from the production process without any additional cost to manufacturers or distributors apart from the expense in contracting with suppliers to specify particular textile standards. The federal PFAS reporting requirements in the baseline may serve to reduce the costs of complying with the proposed rule because manufacturers and distributors would already be required to know and document the ways in which they have imported PFAS into the United States in apparel items. Nearly all apparel sold in the United States is imported, so we expect that the vast majority of the apparel manufacturers and distributors will be aware of how and where they utilize PFAS in their products.

PFAS has a function in some apparel, such as rain or ski jackets sold by outdoor apparel brands where PFAS provides water-repellence. PFAS may also impart oil-resistance to work clothing. We expect outdoor apparel brands and others will be able to comply with the restrictions proposed in the rule amendment, though there may be some additional unit cost to production. Some manufacturers have developed alternative durable water repellant treatments and fabrics that can be used in the production of water- and oil-resistant apparel without the need for PFAS. However, an Ecology analysis in 2023 found that these products were priced higher, possibly reflecting higher production cost. In that case, manufacturer and distributor costs would be ongoing over time.

The rule relies on a rebuttable presumption of intentional use based on the presence of total fluorine, which we expect to help minimize compliance costs for regulated entities. The rule gives manufacturers significant flexibility in how they rebut our presumptions. In some cases, it could be a certified letter from their suppliers; in other cases, it could be product testing. Product testing is not necessary if manufacturers have sufficient transparency across their supply chains, or if they undertake actions to improve supply chain transparency.

2. Require reporting of intentionally added PFAS in priority product categories

Baseline

The EPA will require all businesses who have manufactured or imported PFAS, including PFAS contained in other articles, to report information on the PFAS supply chain, including identifying information for the business that manufactured or imported PFAS, the specific PFAS chemical, and how that chemical is used. This will create a more transparent supply chain for PFAS and allow the intentional addition of PFAS within the supply chain to be identified more easily than it currently is.

PFAS is restricted, or is scheduled to be restricted, in certain product categories in other states, including ski waxes, cookware, automotive waxes, floor waxes and polishes, and textiles. To the extent that this restriction requires manufacturers to examine their products and supply chain for PFAS, or to remove PFAS from their production process, this will reduce the burden of the reporting requirement on regulated entities.

The baseline includes an Ecology process for reporting the presence of priority chemicals in priority products that has been used for products and chemicals requiring reporting under cycle 1 of the Safer Products Restrictions and Reporting rule.

Proposed

A manufacturer must provide a notice to Ecology by January 31, 2027, and annually thereafter, for any of the following consumer product categories that contain intentionally added PFAS manufactured on or after January 1, 2026.

- Apparel intended for extreme and extended use made from leather, natural textiles, synthetic textiles, or technical textiles.
- Gear for recreation and travel made from leather, natural textiles, synthetic textiles, or technical textiles.
- Automotive waxes used to protect and enhance the exterior of automobiles
- Cookware and kitchen supplies, defined as durable houseware items used to prepare, dispense, or store food, foodstuffs, or beverages.
- Firefighting personal protective equipment (PPE), is defined in accordance with Chapter 70A.400.005 RCW.
- Floor waxes and polishes intended to polish, protect, or enhance floor surfaces
- Ski waxes, including but not limited to hot wax, spray wax, rub-on wax, and related tuning products for snow runners like skis and snowboards.

Ecology presumes the detection of total fluorine indicates the intentional addition of PFAS. Manufacturers may rebut this presumption by submitting a statement to Ecology that PFAS were not intentionally added and includes credible evidence supporting that statement. The notice to Ecology is the same for other consumer products with reporting requirements in the existing Chapter 173-337 WAC. The existing rule defines a hierarchy to determine who is responsible for ensuring that Ecology is notified of any intentionally added PFAS in the priority product categories for which reporting is required.

Expected impact

Reporting parties must notify Ecology when they use PFAS in a specific priority consumer product. The reporting parties would need to create an account in the Interstate Chemical Clearinghouse (IC2) High Priority Chemicals Data System (HPCDS), create their inventory, and then create their annual report.

We expect that reporting parties will generally be aware of whether and where PFAS is intentionally added to their products due to the federal reporting requirement as well as the regulations in other states. Despite the differences in the definition of PFAS between state and federal rules, we expect that most uses of PFAS that would require Ecology to be notified under the proposed rule amendments would also need to be reported under the upcoming federal requirements. Even so, they may need to gather information along the supply chain to help identify some of the reporting requirements of the proposed rule amendment, which will result in some labor costs.

We believe the rule will result in an informational benefit, both to consumers and government entities. The reporting requirement may help make consumers more aware of the chemicals included in their products, either directly or through advocacy organizations publicizing information from the HPCDS. This may help empower consumers when making market decisions. It may also help Ecology programs or other local or state governments when establishing programs, setting rules, or approving permits to identify potential sources of PFAS contamination and the potential exposure from those sources.

COSTS OF COMPLIANCE: EQUIPMENT and SUPPLIES

To the extent that compliance with the proposed rule would require additional equipment or supply costs compared to the baseline, we address those under COSTS OF COMPLIANCE: OTHER. Other than some labor costs, we do not apportion the expected compliance costs into specific categories.

COSTS OF COMPLIANCE: LABOR and ADMINISTRATIVE COSTS

For any apparel that is not water- or stain-resistant, we assume that PFAS can be removed from the supply chain as part of the contracting process between manufacturers or distributors and their suppliers. We assume this will take between 10 and 40 hours of labor for each manufacturer and wholesaler. Based on the nature of the work, we assume a cost of $52.38 per hour for the business, which includes the median hourly wage rate for buyers and purchasing agents in Washington adjusted for inflation with an additional 30% expense for overhead.

We identified 8,888 apparel manufacturers and 12,774 apparel wholesalers located in the United States using Dun and Bradstreet market data. Scaling this value to Washington, we estimate the total one-time cost of the proposed rule amendments associated with PFAS restriction in apparel that is not marketed as water-resistant is between $265 thousand and $1,061 thousand.

To comply with the PFAS reporting requirement, the reporting party would need to create an account in the Interstate Chemicals Clearinghouse High Priority Chemicals Data System, create their inventory, and create and submit the annual report. We assume that reporting costs are roughly equivalent to the costs estimated in the previous regulatory analysis for Chapter 173-337 WAC, although we have reduced the estimated total labor time required for reporting by 25%. The federal PFAS reporting requirements and regulatory actions in other states concerning PFAS should reduce the amount of labor necessary to comply with reporting requirements compared to the previous rulemaking. We assume the reporting requirement would take up to 2 hours of labor for an administrative manager (with a median hourly wage of $65.92) and up to an hour of a chemist working in manufacturing (with a median hourly wage of $45.71) to submit the report to Ecology. The wage assumptions are consistent with the regulatory analyses for the first cycle of the Safer Products for Washington rulemaking but may be somewhat conservative. Ecology's previous experience with existing reporting requirements in other products and chemicals suggests the notification may be completed by a non-managerial employee at a lower hourly wage rate. We adjust both wage rate estimates to account for overhead expenses, which we assume represents 30% of the wage.

The hierarchy in the existing rule suggests that either a manufacturer, marketer, or distributor (or a trade organization representing these businesses) may be the party responsible for notifying Ecology if a product made or sold in Washington contains intentionally-added PFAS. We assume that the maximum possible number of reporting parties is the total number of manufacturers and wholesalers in the United States operating within each industry affected by the notification requirement. We also make the simplifying assumption that all reporting parties will face roughly the same total cost associated with the notification.

We note that the actual number of reporting parties is likely far less than the maximum possible number. The existing rule specifies that only a single party is responsible for notifying Ecology. This means that if a U.S. company manufactures a covered product that contains intentionally-added PFAS and a wholesaler sells that product in Washington, then the manufacturer alone would be responsible for notifying Ecology. Furthermore, not every manufacturer and wholesaler in the U.S. operates in Washington. Among those that do, a considerable number may notify Ecology through a trade organization as permitted by the rule, which we expect would reduce the cost considerably as it is likely that average per unit reporting costs decrease as the number of reported products increases. For that reason, we consider our estimate to be a maximum estimated total cost.

In all, we identified a maximum of 28,515 businesses that operate in the United States among the covered industries and therefore may have to report to Ecology. Multiplying this count by the expected costs for each business, $229.18 from the three hours of work across two employees and an additional 30% overhead, and adjusting the cost to account for discounting, results in a total reporting cost of up to $6.2 million. Although the actual cost will likely be far lower for the reasons discussed previously.

COSTS OF COMPLIANCE: OTHER

A 2023 Ecology market analysis of water-resistant apparel estimated that PFAS-free items were priced nearly 50% higher than similar products. We assume this is the current additional cost associated with manufacturing PFAS-free rain and snow apparel compared to manufacturing processes that use PFAS. Given the lack of specific cost data, we believe this represents a reasonable starting place for cost analysis. While we use this as our initial cost estimate, attributing the entire PFAS-free premium to higher cost is likely pessimistic. The price increase could be a method of price differentiation, increasing producer revenue by raising the price for consumers who are responsive to PFAS-free positioning claims.

The rainwear and snow apparel markets represented an estimated $4.0 billion in 2023 and $4.8 billion in 2022, respectively, annually in the United States. Translating this number to 2025 dollars and scaling the number to the Washington population results in a total estimated market of $204.5 million per year for which water-resistance is an integral feature for the apparel.

We expect production costs of PFAS-free water-resistant apparel and gear to decrease over time relative to the alternatives with PFAS that would be restricted by the rule. A standard feature of many production innovations is that manufacturers are able to integrate a novel technology into their production process and reduce production cost as it becomes more widely adopted and used.

We expect that all manufacturers will be able to contract with suppliers to switch to PFAS-free alternative fabrics or to develop their own PFAS-free waterproofing process by the time the restriction goes into effect. Without any specific information about the costs of product switching or PFAS-free water-resistant material production, we assume the cost is 50% higher as of January 2025 when PFAS restrictions in textiles went into effect in some states. As noted above, this is a very conservative assumption. In the absence of information on cost dynamics of PFAS-free water-resistant apparel technology, we assume this 50% higher cost will decrease linearly over time, until the manufacturing cost is on par with alternatives that contain PFAS in 10 years with a potential range of 5 to 20 years.

Combining our assumptions of cost dynamics with estimates of the Washington market for rainwear and snow apparel, we estimate the additional cost of removing PFAS from production of outdoor apparel would have been roughly $102.3 million per year as of January 1, 2025. However, we assume this additional cost declines over time and would be between $61.3 and $92.0 million per year when the restriction takes effect on January 1, 2027. The value of the estimated cost, discounting future

cost to the present value using the discount rate discussed in section 3.1 is $269 million (with a range of $82 million to $583 million).

PFAS-free options for cleaning products are widespread. The EPA Safer Choice program, which is designed to help consumers identify products that have fewer adverse consequences for the environment and human health, restricted products that contain PFAS from receiving certification as of 2022. Over 2,000 products are currently certified. Among certified cleaning products are more than 300 all-purpose cleaners, more than 100 dish cleaners, 80 bathroom cleaners, and 15 car care products.

There are few estimates of PFAS prevalence in cleaning products. PFAS in cleaners may generally not be widespread other than for ones that advertise 'stain protection', especially carpet cleaners. It is also possible that it is used in such low quantities that it is not widely reported, as little as 0.1% of the formulation. A study of Swedish cleaners purchased in 2012-2013 found detectable PFAS in 8% of tested products. By contrast, a study that tested 9 cleaning agents found that few contained PFOS or PFOA, but that 3 of them tested positive for FTOH. These are older estimates, and the market may have changed considerably since these products were tested.

Given the lack of data, we assume that anywhere between 2% and 20% of cleaning products could contain PFAS. We use 10% to represent a middle value. We find nearly 3,000 household cleaning products have been added over the past ten years to the Mintel Global New Products Database for the United States market, and we take that as the number of current cleaning product formulations on the market. This suggests that between 60 and 600 cleaning products would be reformulated if the entire product category were to remove PFAS to comply with the restriction in the proposed rule.

Without any specific data on reformulation costs for cleaning products, we use estimates from another domain for which reformulation costs are available. The FDA has developed and published a model of reformulation costs in food and cosmetic formulations. There are similar considerations across these industries for quality and consistency of chemical formulations which we believe makes for a reasonable approximation of reformulation costs in cleaning products.

According to the FDA model, the estimated average reformulation cost to replace a minor functional ingredient in a low complexity product is $254,311. While there is a range of potential reformulation costs, we take the average and allow all the uncertainty in the analysis to be in the number of products that would have to be reformulated under the proposed rule amendments. Given the relative availability of substitute ingredients for PFAS in cleaning products and the absence of many of the regulatory and safety requirements for cleaning products compared to the food and cosmetic industries for which the model was originally estimated, we revise these estimates down by 50%.

After adjusting for inflation and scaling from the U.S. market to the Washington market, the estimated one-time cost to comply with the rule for cleaning products and automotive washes is $893 thousand with an estimated range of between $178 thousand and $1,785 thousand.

COMPARISON OF COMPLIANCE COST FOR SMALL VERSUS LARGE BUSINESSES

We calculated the estimated per-business costs to comply with the proposed rule amendments, based on the costs estimated in Chapter 3 of this document. In this section, we estimate compliance costs per employee.

The overwhelming majority of the expected cost of compliance with the proposed rule amendments is by the apparel and accessories industry, so we focus on that industry in this section. Because the proposed rule amendments are part of a set of restrictions across several states, we expect that the overwhelming majority of the U.S. market will comply with the proposed rule amendments or similar restrictions. To capture Washington's impact on the compliance cost, we scale the expected impacts to just Washington's portion of the U.S. apparel and accessories market. The number of businesses we report reflect all businesses in the industry across the United States while the expected rule costs are scaled to the size of the Washington market as compared to the nationwide market.

The average affected small business likely to be covered by the proposed rule amendments employs about 5 people. The largest ten percent of affected businesses employ an average of 5,112 people. However, due to the highly concentrated nature of the apparel and accessories manufacturing and wholesale markets, the largest 10% of the industry includes businesses with as few as 21 employees. Any business with between 21 and 50 employees counted as both a small and within the largest 10% of large businesses. Based on cost estimates in Chapter 3, we estimated the following compliance costs per employee.

Table 1. Apparel and accessories compliance costs

Type of cost (or total cost)	Small Businesses	Largest 10% of Businesses
Average employment	5	5,112
Average compliance cost (low)	$274	$37,965
Average compliance cost (high)	$606	$267,413
Cost per employee (low)	$57	$7
Cost per employee (high)	$127	$52

We conclude that the proposed rule amendments are likely to have disproportionate impacts on small businesses, and therefore Ecology must include elements in the proposed rule amendments to mitigate this disproportion, as far as is legal and feasible.

MITIGATION OF DISPROPORTIONATE IMPACT

The RFA (RCW 19.85.030(2)) states that:

"Based upon the extent of disproportionate impact on small business identified in the statement prepared under RCW 19.85.040, the agency shall, where legal and feasible in meeting the stated objectives of the statutes upon which the rule is based, reduce the costs imposed by the rule on small businesses. The agency must consider, without limitation, each of the following methods of reducing the impact of the proposed rule on small businesses:

a) Reducing, modifying, or eliminating substantive regulatory requirements;

b) Simplifying, reducing, or eliminating recordkeeping and reporting requirements;

c) Reducing the frequency of inspections;
d) Delaying compliance timetables;
e) Reducing or modifying fine schedules for noncompliance; or
f) Any other mitigation techniques including those suggested by small businesses or small business advocates."
We considered all of the above options, and the goals and objectives of the authorizing statutes (see Chapter 6). We limited compliance cost-reduction methods to those that:

- Are legal and feasible.
- Meet the goals and objectives of the authorizing statute.

Changing reporting requirements, reducing the frequency of inspections, or delaying compliance timetables would not meet statutory objectives or are not feasible and within the scope of this rulemaking.
Finally, we included the following elements in the proposed rule amendments to reduce costs to small businesses.

- Businesses may request an exemption from substantive regulatory requirements of the rule. The exemption to these requirements may be approved if they are deemed necessary by Ecology. Exemptions are considered on a case-by-case basis and reasons for exemptions are not limited.

SMALL BUSINESS AND LOCAL GOVERNMENT CONSULTATION
We involved small businesses and local governments in development of the proposed rule amendments, using:

- Meetings with the PFAS Action Group, GreenTheme, Beyond Surface Technologies, Milliken, Bolger and O'Hearn, Safety Components, Nicca Chemical, Sciessant, HeiQ, Helly Hansen, Rudolf Chemical Group, and Toxic-Free Future.
- Email announcements to our distribution list of stakeholders
- Webinars open to the public and stakeholders
- Presentations and engagement with the public and individual groups including the Fenestration and Glazing Industry Alliance, Ecology's Pollution Prevention Assistance partners, Mother Africa, Affiliated Tribes of Northwest Indians (ATNI), Yakima Valley Community College Climate and Environment Club, People of Color Legislative Alliance of WA, Glenn Acres senior housing, La Casa Hogar, Inspire Center, Catholic Charities/PREPARES, Chuck Austin Plan, and Neustra Casa.
- Tabling and outreach at events such as the Yakima and Sunnyside Health Fairs, MOSAIC multicultural festival, Deldridge Community Farmers Market, ATNI conference, the 32nd Centennial Accord, the Latinx Youth Summit

NAICS CODES OF INDUSTRIES IMPACTED BY THE PROPOSED RULE
The proposed rule amendments likely impacts the following industries, with associated NAICS codes. NAICS definitions and industry hierarchies are discussed at https://www.census.gov/naics/.

- 315250 – Cut and Sew Apparel Manufacturing (except Contractors)
- 315990 – Apparel Accessories and Other Apparel Manufacturing
- 316210 – Footwear Manufacturing
- 316990 – Other Leather and Allied Product Manufacturing
- 325510 – Paint and Coating Manufacturing
- 325611 – Soap and Other Detergent Manufacturing
- 325612 – Polish and Other Sanitation Good Manufacturing
- 326199 – All Other Plastics Product Manufacturing
- 332215 – Metal Kitchen Cookware, utensil, Cutlery, and Flatware (except Precious) Manufacturing
- 335210 – Small Electrical Appliance Manufacturing
- 339113 – Surgical Appliance and Supplies Manufacturing
- 339920 – Sporting and Athletic Goods Manufacturing
- 423220 – Home Furnishing Merchant Wholesalers
- 423620 – Household Appliances, Electric Housewares, and Consumer Electronics merchant Wholesalers
- 423850 – Service Establishment Equipment and Supplies Merchant Wholesalers
- 423910 – Sporting and Recreational Goods and Supplies Merchant Wholesalers
- 424340 – Footwear Merchant Wholesalers
- 424350 – Clothing and Clothing Accessories
- 424690 – Other Chemical and Allied Products Merchant Wholesalers

CONSIDERATION OF LOST SALES OR REVENUE, IMPACT ON JOBS
Businesses that would incur costs could experience reduced sales or revenues if the proposed rule amendments significantly affect the prices of the goods they sell. The degree to which this could happen is strongly related to each business's production and pricing model (whether additional lump-sum costs would significantly affect marginal costs), as well as the specific attributes of the markets in which they sell goods, including the degree of influence each firm has on market prices, as well as the relative responsiveness of market demand to price changes. Finally, overall shifts in economic activity in the state, including competition within markets and attributes of the labor market simultaneously adjust in response to changes in compliance costs.
Similarly, employment within directly impacted industries, other industries in Washington, the labor market within and outside of the state, and in the state as a whole will also adjust in response to a change in costs.
We used the REMI E3+ model for Washington State to estimate the impact of the proposed rule amendments on directly affected markets, accounting for dynamic adjustments throughout the economy. The model accounts for variables including but

not limited to: inter-industry impacts; price, wage, interstate and international trade, and population or labor market changes; and dynamic adjustment of all economic variables over time.

In chapter 3 we limit our analysis to the U.S. market, where we assume costs will be experienced most directly by both manufacturers and wholesalers. Because the REMI model includes international trade, for the purposes of the model we assign the costs of PFAS restrictions in the apparel and accessories industry to their most direct source: an increase in the costs of imports as well as domestic manufacturing, rather than for wholesalers. Although we expect an increase in costs for manufacturers will result in additional costs throughout the supply chain, the REMI model incorporates these economic linkages with more accurate detail than the simplified assumption that any cost applied to manufacturers would be passed on entirely to wholesalers.

Within the baseline structure of the REMI model, 94.8% of apparel and related industries are imported into Washington from outside the U.S. over the years 2026-2030, while 3.4% of products are made in Washington and remain in the state. We assign the costs of PFAS restriction in apparel identified in Chapter 3 in proportion to their assumed share of the Washington market in the REMI model. The remaining 1.8% of costs would fall on manufacturers within the U.S. but outside of Washington. The structure of the model does not permit an increase in costs for the industry outside of Washington, so the potential impact of this cost on the Washington economy is not accounted for in our simulation.

Direct compliance costs were inputted in the following REMI categorized industries:

- Cutlery and handtool manufacturing (high cost scenario only)
- Medical equipment and supplies manufacturing (high cost scenario only)
- Other miscellaneous manufacturing (high cost scenario only)
- Apparel, leather, and allied product manufacturing
- Apparel, leather, and allied product manufacturing foreign imports
- Paint, coating, and adhesive manufacturing (high cost scenario only)
- Soap, cleaning compound, and toilet preparation manufacturing
- Wholesale trade

To partially account for the benefits of reducing PFAS exposure under the proposed rule amendments, we included an increase in survival rate of 0.0003% across all age cohorts for both scenarios due to a decrease in cancer-related deaths in Washington. This comes from the 6,864 cancer cases associated with PFAS contamination in the U.S. drinking water supply, which is then scaled to Washington and to the expected reduction in PFAS under the proposed rule amendments. The 5-year survival rate for kidney cancer among individuals under 65 years old is assumed in setting the increase in survival rate.

The results of the REMI E3+ model show that the impact of the proposed rule will vary by industry (see table 2, below), costing the Washington economy an estimated $66 million to $108 million per year at the peak impact on economic output (total amount of goods and services produced by Washington businesses) across all sectors. In the fourth quarter of 2024, Washington state's annual GDP was estimated at $868 billion. $108 million is equivalent to 0.01 percent of the state's GDP. We expect the proposed rule to have additional economic impacts not quantified by the model. For example, the rule may decrease days of work missed due to reductions in cancer rates. Or there may be additional economic redistribution from medical expenses to other consumer spending due to a decrease in low-birth-weight incidence. These were not included in the REMI simulation even though it may be expected to increase the state economic output. This means the negative economic outputs in table 2 are likely overestimated.

Output losses are projected to be greatest in the years 2028-2030 across both scenarios, and through 2032 for the high-cost scenario. This is just after the peak cost associated with compliance costs for apparel in the proposed rule amendments, which we assume will be in 2027. REMI incorporates economic adjustment periods and the peak output loss after this year could be due to initial cost increases affecting other industries through economic linkages in the model. The high-cost scenario assumes that production costs decrease more slowly, which explains the extended period of output loss. Peak or near-peak loss occurs in 2028 at $66 million and $108 million per year in the low-cost and high-cost scenarios, respectively. Losses decline after 2028 in the low-cost model and after 2032 in the high-cost model. In both scenarios, the economic losses stabilize around 2035 and stay roughly steady until the end of the 20-year simulation period. In the low-cost scenario, there are some small gains in economic output compared to the baseline by 2045 which are likely attributable to a slight increase in total population compared to the baseline due to the positive public health impacts of the proposed rule amendment.

Apparel manufacturing and construction are impacted most among all industries. Apparel manufacturing is the industry with by far the most direct costs, so this impact is understandable. The construction industry does not incur direct compliance costs from the proposed rule amendments, but it is not unusual for the construction industry to have high projected impacts from a rule as the construction industry tends to be indirectly sensitive to any changes in the market in REMI models.

Table 2. Modeled economic impact (in $millions)

Industry	2028 (low)	2028 (high)	2045 (low)	2045 (high)
Whole State	**-66**	**-108**	**+20**	**0**
Apparel Manufacturing	**-17**	**-26**	**0**	**0**
Construction	**-13**	**-18**	**+3**	**+2**
Retail Trade	**-4**	**-7**	**+2**	**-1**
Real Estate	**-5**	**-9**	**+3**	**0**
Wholesale Trade	**-5**	**-8**	**+1**	**0**

The rule will result in transfers of money within and between industries, as compared to the baseline. The modeled impacts on employment are the result of these transfers and the way in which REMI projects these transfers to be utilized within the broader economy as well as changes to prices and other economic variables across all industries in the state. REMI results project a peak state-

wide loss of 311 full-time equivalent positions (FTEs) under the low-cost scenario, and a loss of 718 FTEs under the high-cost scenario in the year 2028. Losses decrease thereafter until, similar to economic output, the job market stabilizes around 2034 under both the low- and high-cost scenarios. Under the high-cost scenario, this is a projected state-wide job loss of just over 0.02 percent of state-wide FTEs at the peak loss in 2028. Under both the low- and high-cost scenarios, total employment stays constant or increases under the proposed rule amendments by 2045.

As with economic output, the apparel manufacturing and construction sectors are projected to be the most heavily impacted industries in terms of employment, jointly accounting for nearly 60 percent of the state-wide job loss at the peak in 2028.

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The public may obtain a copy of the small business economic impact statement or the detailed cost calculations by contacting:

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Email: SaferProductsWA@ecy.wa.gov
Other: For more information on this rulemaking, visit: https://ecology.wa.gov/regulations-permits/laws-rules-rulemaking/rulemaking/wac-173-337-nov2023

Date: June 4, 2025	**Signature:** 
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