State of Oregon Department of Environmental Quality

Draft Fiscal and Racial Equity Impact Statements

PFAS 2025 Rulemaking

Introduction

The Oregon Hazardous Substance Remedial Action Rules establish the standards and procedures for DEQ to investigate and cleanup releases of hazardous substances to the environment. DEQ is undertaking this rulemaking to update the definition of hazardous substances in OAR 340-122-0115 (30). This rule defines the compounds for which DEQ can require parties to address releases to the environment to protect human health and the environment. These investigations and cleanup actions are overseen by DEQ's Cleanup Program. Investigations typically include sampling to determine: if contamination is present; the magnitude and extent of any releases; and assess risk to people or wildlife. Remedial action and cleanup are only needed when it is determined there is an unacceptable risk to people or the environment.

The initial draft rule concept DEQ presented included updating Oregon's hazardous substance definition to include two per- and polyfluoroalkyl substances (PFAS), perfluorooctanoic acid (PFOA) and perfluorooctane sulfonic acid (PFOS), by incorporating the U.S. Environmental Protection Agency's (EPA) most recent list of hazardous substances (April 2024). These hazardous substances are designated under the federal Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), commonly known as Superfund. The updates to EPA's hazardous substance list include adding PFOS and PFOA, their salts and structural isomers, and 1-bromopropane and removing five RCRA hazardous wastes associated with metals production and smelting. This DEQ rulemaking would include all these updates to Oregon's rule. Of these, only the addition of PFAS compounds is expected to have discernable financial impacts. As such, this document focuses on these compounds. During the initial discussion of the proposed rule with the rulemaking advisory committee (RAC), committee members discussed the scope of the proposed rule, including whether additional PFAS compounds should be included. DEQ plans to revisit this topic with the RAC and also welcomes public feedback around this topic during the public comment period. If additional PFAS compounds were to be added to this rule, such as four chemicals in addition to PFOS and PFOA for which drinking water standards have been issued by the EPA (PFNA, PFHxS, HFPO-DA, and PFBS), no substantive changes are expected for the Fiscal Impact Statement. This is because any PFAS that can be monitored are included in the same analytical method as PFOS and

PFOA.[1] Similarly, many of the treatment technologies that remove PFOS and PFOA will also remove additional PFAS, though may need to be configured differently.

Some data in Oregon are available from drinking water testing of public water systems, parties completing investigation with the Cleanup Program on a voluntary basis, and sampling conducted as part of research projects. These initial efforts have indicated PFAS releases have occurred in Oregon and resulted in impacts to the environmental (e.g., groundwater, drinking water, fish) exceeding health-based screening levels. However, the majority of potential PFAS sources to the environment do not have data available to confirm whether or not a release has occurred or what risk that release may pose. More data is needed to answer these questions. However, without this rulemaking, DEQ is unable to require parties to collect data and investigate possible releases. As such, DEQ anticipates that completing this rulemaking would facilitate additional data collection to provide a better understanding of the specific parties and industries that may be most impacted by the proposed rule. Further, DEQ notes that completing this rulemaking would better protect human health and the environment, which may result in an economic (but sometimes non-monetizable) benefit for the people of Oregon, including groups that fish for subsistence, cultural, recreational, or commercial benefits.

The proposed rules are informed by discussions with, and input provided by, DEQ's PFAS 2025 Rulemaking Advisory Committee. The advisory committee includes members representing regulated community, business and industry, government, academia and research, environmental consulting, military, tribal, water provider, wastewater facility, landfill, and environmental advocacy and non-profit interests. Additional information received from interested parties and the public was also considered.

Fee analysis

This rulemaking does not involve fees.

Statement of fiscal and economic impact

The sections below describe the potential fiscal and economic impacts to parties that may have released PFAS to the environment and are directed by DEQ Cleanup to investigate and clean up potential releases. The parties expected to be most directly impacted by this rulemaking are those who used, stored, or manufactured products containing PFAS that have resulted in releases or possible releases to the environment. The statement of cost compliance section below discusses additional parties that may be financially impacted by this rulemaking.

[1] U.S. EPA Method 1633. https://www.epa.gov/cwa-methods/cwa-analytical-methods-and-polyfluorinated-alkyl-substances-pfas

For all sections below, DEQ is unable to fully quantify financial impacts at this time because of limited data availability to fully understand the presence and magnitude of PFAS in Oregon; the communities, wildlife, and habitat exposed and impacted; and the degree to which cleanup actions may be necessary. However, for the purposes of the Fiscal Impact Statement, some example costs for investigation and cleanup efforts are provided in sections below. Because the Cleanup Program, and this rulemaking, only focuses on releases or potential releases to the environment, there is no anticipated economic impact to parties for simply using, storing, or transporting products containing PFAS. Costs for cleanup would only occur if environmental releases are found which pose unacceptable risk to people or the environment.

Fiscal and economic impact

Releases from Facilities using PFAS

Parties that have used, stored, or manufactured products containing PFAS that have resulted in releases or possible releases to the environment may be impacted by this rulemaking. The economic impact to parties for simply using, storing, or transporting products containing PFAS is expected to be none or minimal providing parties can demonstrate, if requested by DEQ, that environmental releases have not occurred. This is also the case for facilities that have used any of the approximately 800 other hazardous substances DEQ already regulates. PFAS use, and the potential for environmental release, is expected to be highly variable within the range of sites that could come to the attention of the Cleanup Program. Certain industries/properties (e.g., commercial airports, fire training facilities, plating facilities, and bulk fuel facilities) either have known or highly likely PFAS use and potential for release and are considered a high concern. Conversely, for many or most sites in the Cleanup Program, PFAS are unlikely to be of concern. In between are a range of sites with varying PFAS use and potential environmental impact. For sites entering the Cleanup Program, either on a voluntary basis or otherwise, the need for environmental investigation and cleanup will be assessed on a site-by-site basis.

The initial focus of this rulemaking will be on data collection at sites with highly suspected releases to evaluate if and where PFAS may have been released. In these cases, direct economic impact of this rulemaking to facilities using PFAS will likely be: 1) time spent to assemble information on PFAS storage, use, and potential releases and 2) collection of soil and groundwater samples for testing if releases are known or suspected. If compiled information or the results of sampling indicate no release has occurred, additional work will not be required nor financial impact incurred. Cleanup work would only be required if it is determined contamination exists and that there are unacceptable exposure risks to people and/or wildlife. All potential exposure scenarios are considered, such as people potentially drinking contaminated water, eating contaminated fish, and ingesting contaminated soil. DEQ does not require parties to investigate all hazardous substances, but rather only those associated with current or historical activities that may have led to a release.

The costs to address PFAS releases could range from the low thousands of dollars (for sites requiring limited sampling) to millions of dollars (for highly contaminated, complex sites requiring cleanup). In some cases, site owners and operators that have purchased comprehensive insurance for their business, particularly in the form of commercial general liability policies before 1986, have been successful at identifying insurance policies as a source of funding to perform investigation and cleanup. Costs to investigate and cleanup contamination at a given site is highly variable, depending on the following factors:

- Site location and use
- Local geology and depth to groundwater
- Type of PFAS use and likelihood of release
- The magnitude and extent of PFAS release, if one has occurred
- Whether ecology or people are impacted by releases, and to what extent
- Treatment options

Provided below are examples illustrating the range of PFAS contaminant conditions that are expected to be encountered; the level of effort that may be necessary to identify the extent of contamination, define risk, and complete cleanup if necessary; and broad estimate of financial/economic costs. It is important to note that the cost estimates presented below generally assume new investigation activities (except the existing investigation scenario). In most cases, costs for PFAS investigations are anticipated to be similar to other types of contaminants.

Table 1. Scenarios necessitating possible PFAS investigation or cleanup action and costs

Scenario 1: Existing investigation for releases of other hazardous substances	
Description	Sites with ongoing or active investigations that may have current or historical practices associated with PFAS use and potential release.
Examples	Sites with investigations for other contaminants.
Priority	The priority for including PFAS in an active investigation depends on the likelihood of release.
Likely required actions	Review of historical chemicals used and released on site. If likely released, inclusion of PFAS to the suite of compounds being analyzed in samples.
Costs	PFAS analytical testing is approximately $400 per sample; for a relatively small site already investigating soil and groundwater for other contamination, the addition of PFAS to the analytical suite is expected to cost in the low thousands of dollars and would be a fraction of the total investigation cost.
Possible additional actions	If PFAS are not detected, further required action is unlikely. If PFAS are detected, additional investigation may be needed to determine the extent of contamination and risk to people or wildlife.
Scenario 2: No Known or Suspected PFAS Use	
Description	No historical or current PFAS use is known or suspected.
Examples	Residential and most commercial and agricultural properties.

Priority	Low priority.
Likely required actions	In most cases, no actions will be required. In rare cases, for example if a site is near a PFAS-contaminated drinking water aquifer, DEQ may request documentation to rule out a PFAS release from the site.
Costs	In most cases, there will be no cost for sites with no known historical or current PFAS use.
Possible additional actions	If initial assessments do indicate a likely PFAS release, the site would transition into Scenario 3 below.
Scenario 3: Some PFAS Use, Low Release Concern	
Description	Sites where limited PFAS use is documented or suspected, but the overall likelihood of release is low.
Examples	Commercial businesses and manufacturing where PFAS-containing material may be used, but not stored, applied, or potentially released in volume.
Priority	Low to medium priority.
Likely required actions	For most sites, no actions will be required. For sites voluntarily entering the DEQ Cleanup Program for a No Further Action determination, PFAS would be investigated along with any other hazardous substances that may have been used on site. For certain sites, such as those near known PFAS-contamination or important groundwater or surface water resources, DEQ may require an evaluation of whether a PFAS release may have occurred. This could include a description of historical site uses, a review of records and databases, and interviews with current or past owners or operators, similar to a Phase 1 Environmental Site Assessment (ESA).[2] If initial evaluations indicate a PFAS release may have occurred, environmental sampling may be required, similar to a Phase II ESA. Completing sampling activities usually entails completing a work plan, mobilizing field equipment, conducting field work, collecting and analyzing samples, and reporting of findings. Environmental consulting companies are usually hired to complete this work, including sending samples to an accredited analytical laboratory. At most sites, initial sampling work begins with fewer than 10 soil and groundwater samples.
Costs	The estimated cost for information collection or a Phase 1 ESA is less than $10,000. If no PFAS releases are suspected, there would be no further cost. The estimated cost for a simple environmental investigation (e.g., limited number of soil and groundwater samples), ranges from approximately $10,000 to $50,000, depending on site conditions, such

[2] PM Environmental, 2023. Phase 1 vs. Phase 2 Environmental Site Assessments. https://www.pmenv.com/articles/phase-1-vs-phase-2-environmental-site-assessments/

	as geology and depth to groundwater. Typically, sampling investigations begin with a limited scope and may expand if contamination is found.
Possible additional actions	Detection of contaminants that may pose a risk to people or wildlife would likely require additional investigation; the site would transition into Scenario 4 below.
Scenario 4: Significant PFAS Use, Releases Documented or Likely	
Description	Sites where significant PFAS use is known, and environmental impacts are considered highly likely or have been observed.
Examples	Facilities manufacturing PFAS or PFAS products, commercial airports, municipal fire training, paper manufacturing, semi-conductor manufacturing, electroplating, and bulk fuel storage.
Priority	Medium to high priority, with highest priority to sites where PFAS releases are documented and in proximity to people, wildlife, or environmental resources.
Likely required actions	In most cases, a thorough environmental investigation and risk screening will be required to determine the extent of PFAS contamination and determine whether there is a risk to people or wildlife.
Costs	Completion of a thorough environmental investigation and risk screening could start at $100,000 and range significantly higher, depending on site size and complexity, number of sources, and depth to groundwater.
Possible additional actions	If excess risk to people or wildlife is confirmed, the site would transition into Scenario 5 below.
Scenario 5. Cleanup Required	
Description	Sites with confirmed PFAS releases that pose, or could in the future pose, risks to people or wildlife.
Examples	In most cases, these sites will be those with a history of significant PFAS use, such as the examples in Scenario 4 above.
Priority	High priority.
Likely required actions	Following a thorough environmental investigation and risk screening, cleanup actions to address contamination and risks will be required. The appropriate actions are highly site-dependent and may include implementation of best management practices, infrastructure upgrades, removal actions (e.g., excavation), installation of treatment or containment systems, restrictions on site use, source control, and operations and maintenance.
Costs	In some cases, simple or limited-scope actions may be sufficient to address contamination at a site, such as limited excavation, implementation of best management practices for material handling and disposal, and simple infrastructure upgrades. In these cases, cleanup costs may range from approximately $100,000 to $150,000.

	In some cases, more involved actions may be needed to address contamination, such as installation of treatment or containment systems, large infrastructure upgrades, and long-term operations and maintenance activities. In these cases, costs may range from approximately $250,000 to millions of dollars (for highly contaminated complex sites). As described above, costs to investigate and cleanup contamination at a given site is highly variable and dependent on many site-specific factors (e.g., site location and use, geology and depth to groundwater, magnitude and extent of release, impacted people or wildlife, and available treatment options). Further, remediation technologies for PFAS are rapidly evolving.
Possible additional actions	Additional actions are not expected and will only be required if the cleanup implemented did not adequately address contamination and risks to people and ecosystems.

Releases from permitted facilities

Facilities that have a DEQ permit, for example wastewater treatment plants or landfills, are not expected to be directly impacted by this rulemaking. The Cleanup Program defers to the DEQ program issuing the permit for addressing releases to the environment from these facilities. Any testing or treatment requirements for PFAS would be made by the permitting programs and would be done independent of this rulemaking. The Cleanup Program may become involved at unpermitted passive receiver sites, or in limited cases when the permitting programs request Cleanup Program involvement.

Facilities such as landfills and wastewater treatment plants are considered passive receivers because they receive wastes or materials containing PFAS but never used or manufactured products containing the compounds themselves. This rulemaking may have some financial benefits for some PFAS passive receivers, as well as public water systems, particularly those that have found PFAS in the materials they are receiving. First, this rulemaking would support identifying the source and responsible party of those PFAS by giving DEQ the authority to require potential sources to investigate releases. Second, this rulemaking may result in reduced PFAS impacts by allowing DEQ to require cleanup of those upstream sources. Because the Cleanup Program follows a polluter-pays model, the cost of identifying and cleaning up the PFAS would then remain with the polluter, as opposed to, for example, a water supply system that may need to test and treat to provide clean water.

As stated above, DEQ generally does not expect permitted facilities to be directly impacted by this rulemaking. However, unpermitted facilities, such as historic solid waste landfills not subject to DEQ's permitting programs, may be impacted by this rulemaking. Overall, DEQ anticipates that these facilities will be less financially impacted by this rulemaking than facilities using PFAS with a release to the environment.

Statement of cost of compliance

State agencies

DEQ

DEQ Cleanup Program

Implementing the proposed rule updates could require additional resources for the Cleanup Program to develop new processes and update existing systems for identifying and prioritizing potential PFAS release sites; tracking sites and data; and completing outreach and engagement with outside parties, including regulated entities and impacted communities. The Cleanup Program also manages and oversees investigations, risk assessments, and cleanup actions; adding additional compounds as Oregon hazardous substances is likely to increase the number of sites and workload for the Cleanup Program. In many cases, responsible parties or grant funding cover these costs; however, these funding sources are not always available. Further, without additional staffing resources the program would not have the capacity needed to address all sites in a timely manner, which may impact parties undertaking actions requiring Cleanup Program involvement (e.g., some real estate transactions) and pose risks to the people and wildlife who may be impacted by contamination.

DEQ Emergency Response Program

The Emergency Response Program may respond to emergencies which may have resulted in potential PFAS release (e.g., firefighting foam used to extinguish a fire). If this rulemaking is implemented, in these cases, evaluations will be needed to determine whether sampling and cleanup action are needed. Additional resources may be needed for the Emergency Response Program to include these compounds as additional considerations for emergency events.

DEQ permitting programs

Feedback from permitting programs (such as Solid Waste, Hazardous Waste, and Water Quality Programs) has indicated that any permitting requirements for testing or treatment of permitted facilities will be made independent of this rulemaking, except for the following. Oregon's underground injection rules (OAR 340-044-0018) include certain requirements for evaluations, sampling, plans, and approvals for injections of hazardous substances and facilities that have used, handled, or stored hazardous substances. Updating this rule may require additional work for the Underground Injection Control Program to consider these additional hazardous substances in program operations.

DEQ Drinking Water Protection Program

Public water systems test and monitor for contaminants to ensure drinking water does not exceed legally enforceable drinking water standards, called maximum contaminant levels (MCLs). In 2024, the EPA designated MCLs for six PFAS compounds. When public water systems identify contaminant levels greater than MCLs, the DEQ Drinking Water Protection (DWP) Program, in conjunction with the

Oregon Health Authority (OHA), evaluates potential sources of contamination in a source water assessment. When assessments identify sites that are in or could be in the Cleanup Program, the DWP Program coordinates with the Cleanup Program to evaluate next steps for potential investigations. However, without this rulemaking, DEQ is unable to require that parties that may be contaminating drinking water investigate possible releases and perform cleanup actions if warranted. No financial impact to the Drinking Water Protection Program is anticipated; however, efforts by the DWP Program could be impeded if there is not adequate Cleanup Program staffing to investigate potentials sources in a timely manner.

Other DEQ programs
Other programs may be indirectly impacted by the rulemaking due to the data collection the rulemaking would support. Additionally, investigation and cleanup actions resulting from this rulemaking may lead to materials being removed from sites for disposal at landfills (e.g., from excavations). Listing PFAS as hazardous substances does not list them as hazardous waste or hazardous constituents for regulation by DEQ's Hazardous Waste Program; as such, PFAS-contaminated wastes will not be required to be disposed of at hazardous waste-specific landfills. While not required, if waste generators choose to dispose of materials at hazardous waste landfills, the Hazardous Waste Program and Cleanup Program may positively fiscally benefit, as they receive a portion of the tipping fees. Similarly, for materials disposed of at solid waste landfills, DEQ's Materials Management Program receives a portion of the tipping fees, from which a large portion of that program is funded. There is a potential increase to the tipping fee revenue if waste generators choose to dispose of materials as solid or hazardous waste; however, determining the fiscal impact is challenging because waste volumes are influenced by economic trends, technological advancements, and disposal options.

Oregon Health Authority
OHA provides technical assistance and administers and manages grants and loans (e.g., Drinking Water State Revolving Fund grants and loans and Emerging Contaminants Bipartisan Infrastructure Law funding) to public water systems to address PFAS in drinking water. Without this rulemaking, DEQ is unable to require responsible parties to address potential sources of PFAS to drinking water, resulting in additional costs to OHA to provide staffing and technical assistance and administer funding for treatment system design and installation. In addition, OHA supports DEQ in evaluating and communicating the risk to communities at cleanup sites in Oregon, and this proposed rulemaking may require additional resources to perform this work if PFAS investigations identify current exposures. OHA may also be impacted by this rulemaking indirectly by the additional data collection the proposed rule would contribute to, as described in the Other DEQ programs section above.

Other Oregon agencies
Other state agencies (e.g., the Departments of Transportation, State Lands, Fish and Wildlife, and Agriculture) may complete construction or improvement projects or otherwise encounter contamination that requires handling media that may be

contaminated with hazardous substances, such as soil, groundwater, and sediment. Implementation of this rule may result in additional sampling, and if present at unacceptable levels, disposal requirements.

Local governments

Implementation of this rulemaking may financially benefit or burden local governments, directly or indirectly. In some cases, local governments may financially benefit from this rulemaking when they own facilities or systems, such as public water systems, publicly owned treatment works, and municipal solid waste landfills, where PFAS management may be needed but contamination is caused by upstream sources. Implementation of this rulemaking would help identify these sources and responsible parties and enable DEQ to require investigation and cleanup. Cleanup of upstream sources by responsible parties would reduce contamination load to local government facilities and systems and result in having the polluter pay for investigation and cleanup. Because the EPA has set legally enforceable drinking water standards, not completing this rulemaking would result in local governments and publicly owned water systems paying for required treatment of PFAS from the drinking water system. Some grant funding is available to public water systems for treatment system design and installation (see the Oregon Health Authority section above). These funding sources do not, however, cover the significant operations and maintenance or treatment material disposal costs once treatment systems are in place.

In some cases, local governments may be financially burdened by this rulemaking when they own or operate facilities that may have released PFAS contamination, such as municipal fire training facilities and some airports. Initial inventorying efforts have indicated Oregon has eight Part 139 certified airports (required to maintain PFAS-containing firefighting foams onsite) and 18 municipal fire training facilities serving the 20 most populated cities in Oregon.[3] These sites have a known or highly suspected history of use of firefighting foams that contain high levels of PFAS and may have been released to the environment during training or real fire emergencies. One of these airports has completed PFAS sampling confirming high levels of contamination to groundwater. As described in the releases from facilities using PFAS section above, the initial focus of implementing this rulemaking will be on data collection and only facilities with confirmed releases and risk to people or wildlife would require cleanup.

Public

The public is expected to be indirectly financially impacted by the implementation of this rulemaking. Many PFAS are known or suspected to have adverse health effects, such as, developmental effects, liver effects, immune effects, and cancer.[4,5]

[3] Note that other types of airports and municipal fire training facilities were not included in these numbers. Additionally, these numbers are approximate and have not been verified.
[4] ATSDR, 2024. How PFAS Impacts Your Health. https://www.atsdr.cdc.gov/pfas/about/health-effects.html
[5] Zahm et al., 2024. Carcinogenicity of perfluorooctanoic acid and perfluorooctanesulfonic acid. The Lance Oncology. Volume 25, Issue 1. https://doi.org/10.1016/S1470-2045(23)00622-8.

People or wildlife may be harmed if they are exposed to PFAS by drinking, eating or touching contaminated water, fish, groundwater, soil, or sediment. DEQ relies on the Oregon Hazardous Substance Remedial Action Rules to require parties who may be responsible for releases to investigate and, if needed, complete cleanup to protect human health and the environment. An indirect economic benefit is expected for the people of Oregon, as this rulemaking would contribute to a cleaner and healthier environment. Reduced PFAS in the environment, and reduced exposure to PFAS, would reduce potential adverse health effects resulting from PFAS. Adverse health conditions negatively impact individual and family finances as well as the overall economy, due to increased health care costs, increased use of leave time, decreased pay if leave time is not available or is depleted, and increased missed work time and reduced productivity. Further, adverse health conditions impact quality of life. Communities and populations disproportionately impacted by environmental contamination, such as minority groups or Tribal Nations, may be particularly impacted by this rulemaking, as discussed in the Racial Equity Statement and Environmental Justice Considerations sections below.

As described above, DEQ does not anticipate significant impacts to permitted facilities (e.g., landfills, wastewater treatment plants) resulting from this rulemaking because DEQ's Cleanup Program generally defers to the permitting program for addressing releases from these facilities. However, if these facilities test and treat for PFAS, the costs may be passed onto rate payers. This rulemaking may therefore indirectly financially benefit rate payers because it would help identify and cleanup upgradient sources, paid for by the polluter or responsible party. This would alleviate financial burdens to the public water system and rate payers.

Following implementation of this rulemaking, parties planning construction or ground-disturbing activities in areas with known or highly suspected PFAS contamination may be required to complete sampling or implement special handling and disposal practices.

Large businesses - businesses with more than 50 employees

The DEQ Cleanup Program has begun inventorying sites with known or suspected use of PFAS and associated risk of release to the environment. Sites with the highest likelihood of large quantities of releases and exposures to people or the environment will be prioritized for investigation and cleanup, when needed. Any business with a history of PFAS use and known or suspected PFAS release would be subject to this rulemaking, such as bulk fuel, metal plating, electronics manufacturing, and paper products manufacturing facilities. Initial inventorying efforts have indicated Oregon has 22 bulk fuel facilities with a capacity of 1 million gallons or more and 93 chrome plating facilities.[6] Although many of these are expected to be large businesses, the sizes of these businesses are unknown and more data and information about the presence and sources of PFAS in Oregon are needed to fully evaluate the number of large and small businesses that may be impacted by implementation of this rulemaking. As described in the releases from facilities using PFAS section above, the initial focus of implementing

[6] Please note these numbers are approximate and have not been verified.

this rulemaking will be on data collection and cleanup efforts would only be required at facilities with confirmed releases and exposures to people or wildlife.

Small businesses – businesses with 50 or fewer employees

Some small businesses that have used and possibly released PFAS compounds to the environment may be impacted by this rulemaking. The Cleanup Program considers costs and ability to pay for parties that may be responsible for environmental releases. In some cases, financial burdens may be alleviated by grant funding. For example, with this rulemaking completed, some limited funding may be available through Oregon Orphan Funding when there is no party available to pay. However, this funding source is limited and could only support a small number of sites with possible PFAS releases. The EPA also has other limited funding sources that may be available, such as through the Brownfields Program, which is available independent of this rulemaking.

ORS 183.336 Cost of Compliance Effect on Small Businesses

a. Estimated number of small businesses and types of businesses and industries with small businesses subject to proposed rule.

As described in the large businesses section above, DEQ has begun inventorying potential PFAS use and release sites in Oregon, some of which may be small businesses. However, the complete number and type of businesses and industries that may be potential release sites is still being assessed. DEQ will use available database information to evaluate how many of the initial inventoried potential PFAS release sites in Oregon are small businesses.

b. Projected reporting, recordkeeping and other administrative activities, including costs of professional services, required for small businesses to comply with the proposed rule.

Reporting, recordkeeping, and administrative activities would only be needed for parties who are required or who voluntarily undertake investigation and remedial actions related to PFAS releases, such as maintaining sampling and field logs and reporting findings and recommended next steps. In most cases, environmental consultants are hired to manage and oversee these activities. The extent of these costs is related to the magnitude, extent, and complexity of PFAS contamination at a site, if present.

c. Projected equipment, supplies, labor and increased administration required for small businesses to comply with the proposed rule.

Equipment, supplies, labor, and increased administration costs would only be needed for parties who are required or who voluntarily undertake investigation and remedial actions related to PFAS, such as costs related to field equipment and personnel, laboratory analytical testing, and evaluations and reporting by environmental professionals. In most cases, environmental consultants are hired to manage and oversee these activities. The extent of these costs is related to the magnitude, extent, and complexity of PFAS contamination at a site, if present.

d. Describe how DEQ involved small businesses in developing this proposed rule.
The advisory committee for this rulemaking includes a representative for Oregon Business and Industry, with 83% of their 1,600+ members comprised of small businesses. DEQ also expects that public comments will include input from small and large businesses.

Documents relied on for fiscal and economic impact

Document title	Document location
U.S. EPA Method 1633	https://www.epa.gov/cwa-methods/cwa-analytical-methods-and-polyfluorinated-alkyl-substances-pfas
PM Environmental, 2023. Phase 1 vs. Phase 2 Environmental Site Assessments.	https://www.pmenv.com/articles/phase-1-vs-phase-2-environmental-site-assessments/
ATSDR, 2024. How PFAS Impacts Your Health.	https://www.atsdr.cdc.gov/pfas/about/health-effects.html
Zahm et al., 2024. Carcinogenicity of perfluorooctanoic acid and perfluorooctanesulfonic acid. The Lance Oncology. Volume 25, Issue 1.	https://doi.org/10.1016/S1470-2045(23)00622-8
ATSDR, 2024. How PFAS Impacts Your Health.	https://www.atsdr.cdc.gov/pfas/about/health-effects.html
Commission for Racial Justice, 1987. Toxic Waste and Race in the United States.	https://www.nrc.gov/docs/ml1310/ml13109a339.pdf
U.S. EPA EJScreen: Environmental justice screening and mapping tool.	https://www.epa.gov/ejscreen
Oregon Health Authority. Per- and polyfluoroalkyl substances (PFAS).	https://www.oregon.gov/oha/ph/healthyenvironments/drinkingwater/operations/pages/pfas.aspx
Christensen et al., 2017. Perfluoroalkyl substances and fish consumption. Environmental Research. Volume 154.	https://www.sciencedirect.com/science/article/pii/S0013935116310726
George et al., 2023. Nonlethal detection of PFAS bioaccumulation and biomagnification within fishes in an urban- and wastewater-dominant Great Lakes watershed. Environmental Pollution, doi: 10.1016/j.envpol.2023.121123.	https://www.sciencedirect.com/science/article/pii/S0269749123001252

Barbo et al., 2023. Locally caught freshwater fish across the United States are likely a significant source of exposure to PFOS and other perfluorinated compounds. Environmental Research, Volume 220.	https://www.sciencedirect.com/science/article/pii/S0013935122024926?via%3Dihub
George et al., 2023. Nonlethal detection of PFAS bioaccumulation and biomagnification within fishes in an urban- and wastewater-dominant Great Lakes watershed. Environmental Pollution, doi: 10.1016/j.envpol.2023.121123.	https://www.sciencedirect.com/science/article/pii/S0269749123001252
Barbo et al., 2023. Locally caught freshwater fish across the United States are likely a significant source of exposure to PFOS and other perfluorinated compounds. Environmental Research, Volume 220.	https://www.sciencedirect.com/science/article/pii/S0013935122024926?via%3Dihub
Hoover et al., 2012. Indigenous peoples of North America: Environmental exposures and reproductive justice. Environmental Health Perspectives, Volume 120.	https://pubmed.ncbi.nlm.nih.gov/22899635/
U.S. EPA National Rivers and Streams Assessment.	https://www.epa.gov/national-aquatic-resource-surveys/nrsa
Nilsen et al., 2024. Target and suspect per- and polyfluoroalkyl substances in fish from an AFFF-impacted waterway. Science of the Total Environment. Volume 906.	https://www.sciencedirect.com/science/article/pii/S0048969723064252
Hamade, 2024. Fish consumption benefits and PFAS risks: Epidemiology and public health recommendations. Toxicology Reports. Volume 13.	https://www.sciencedirect.com/science/article/pii/S2214750024001197
U.S. EPA About EPA's Work in the Columbia River Basin.	https://www.epa.gov/columbiariver/about-epas-work-columbia-river-basin#crbrp

Advisory committee fiscal review

DEQ appointed an advisory committee. As ORS 183.333 requires, DEQ will ask for the committee's recommendations on:

- Whether the proposed rules would have a fiscal impact,
- The extent of the impact, and
- Whether the proposed rules would have a significant adverse impact on small businesses; if so, then how DEQ can comply with ORS 183.540 to reduce that impact.

The committee will review the draft fiscal and economic impact statement and feedback will be documented in the final statement, including whether the committee determined the proposed rules would or would not have a significant adverse impact on small business in Oregon.

As ORS 183.333 and 183.540 require, if the advisory committee determines there would be a significant adverse impact on small business, DEQ will ask the committee to consider how DEQ could reduce the rules' fiscal impact on small business by:

- Establishing differing compliance or reporting requirements or time tables for small business;
- Clarifying, consolidating or simplifying the compliance and reporting requirements under the rule for small business;
- Utilizing objective criteria for standards;
- Exempting small businesses from any or all requirements of the rule; or
- Otherwise establishing less intrusive or less costly alternatives applicable to small business.

The final fiscal and economic impact statement will reflect the committee's feedback on the above.

Housing cost

As ORS 183.534 requires, DEQ evaluated whether the proposed rules would have an effect on the development cost of a 6,000-square-foot parcel and construction of a 1,200-square-foot detached, single-family dwelling on that parcel.

DEQ determined the proposed rules could have effect on the development costs in cases where development takes place at sites where PFAS contamination is known or suspected and appropriate investigation or mitigation measures are needed to protect the health of residents. To what extent these potential costs may be passed on to residents is unknown. DEQ is unable to quantify the financial impact to development at this time due to the limited data and information available regarding the presence and sources of PFAS in Oregon.

Racial equity

ORS 183.335(2)(a)(F) requires agencies to provide a statement identifying how adoption of the rule will affect racial equity in this state.

Given limitations on data describing the presence and magnitude of PFAS in Oregon, DEQ is unable to evaluate the full extent of impacts to racial equity by this rulemaking. However, the proposed rulemaking is expected to have a positive impact on racial equity. The proposed rule expands the list of hazardous substances for which DEQ can require investigation and remediation in the event of a release or threat of a release. The rule is anticipated to improve environmental quality by supporting the identification of hazardous substances and cleanup to address unacceptable risk in environmental media such as drinking water, surface water, groundwater, and fish.

Minority communities, including racial minorities, face disproportionate burdens of environmental pollution; for example, race has been identified as a key factor for disparities in proximity to sites with hazardous materials. [7] Not completing this rulemaking would mean those communities continue to face exposure to a higher level of hazardous substances. This rulemaking is necessary to enable DEQ to collect data to evaluate the presence and sources of PFAS in Oregon as well as which communities are most impacted. In order to protect public health, safety, and welfare, and ensure all Oregonians are protected, including those with the least resources, it is essential DEQ have the ability to require investigations, and if unacceptable risk exists, remedial action. DEQ's Cleanup Program evaluates all potential exposure pathways and receptors during investigations and risk assessments. This allows DEQ to assess the communities who may be disproportionately impacted by contamination from a release and make requirements of responsible parties to address exposures.

It is expected that the following groups are most likely to have a racial equity benefit from the rulemaking: minority groups more likely to live near industrialized and urbanized areas and minority, immigrant, and Tribal communities eating fish collected from local waterways. Racial equity is one component of Environmental Justice, discussed in greater detail in the following section. Following issuance of this draft document, DEQ will continue to engage with representatives of organizations providing services to underserved communities to include input in the final document. Information in the Environmental Justice Considerations section below is also relevant to racial equity.

[7] Commission for Racial Justice, 1987. Toxic Waste and Race in the United States. https://www.nrc.gov/docs/ml1310/ml13109a339.pdf

Environmental Justice Considerations

ORS 182.545 requires natural resource agencies to consider the effects of their actions on environmental justice issues. Oregon defines environmental justice as the fair treatment and meaningful involvement of all people regardless of race, color, national origin, culture, education, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. DEQ considered these effects by evaluating how minority communities or communities disproportionately impacted by environmental contamination may be impacted by this rulemaking and by consulting with representatives of organizations providing services to underserved communities. Following issuance of this draft document, DEQ will continue engagement with these representatives to include input in the final document. Further, DEQ will consider and work with disproportionately impacted communities in Oregon when prioritizing PFAS investigations.

This rulemaking is expected to have a positive benefit to environmental justice by allowing DEQ to investigate and mitigate potential sources to reduce and prevent exposures to disadvantaged and environmental justice communities as well as collect additional data to better understand how certain communities may be disproportionately impacted by exposure to PFAS. This is important as wealthier communities may be able to afford to collect and analyze samples or complete treatment, while communities without these resources may not. Given data limitations on the sources and presence of PFAS in Oregon, DEQ is currently unable to fully evaluate environmental justice impacts of PFAS environmental contamination or this rulemaking. However, the Cleanup Program is undertaking efforts to inventory potential PFAS release sites and evaluate sites using the EPA's EJScreen tool.[8] EJScreen is an environmental justice mapping and screening tool developed by the EPA that includes considerations of environmental and socioeconomic factors.

Industrial areas

PFAS use and releases to the environment have been associated with various industries present in Oregon (e.g., fire training, chrome plating, electronics manufacturing, and paper products manufacturing), and communities more likely to live and work near industrialized areas are already overburdened by environmental pollution and tend to have a higher proportion of low-income and minority families. This rulemaking would give DEQ the authority to require likely sources to investigate potential releases and, if needed, take action to address releases resulting in exposures to people or the environment.

Drinking water

Through initiatives by the EPA and OHA, PFAS have been detected in some of Oregon's public water systems,[9] and additional data collection is planned which may identify additional systems with contamination. When a public water system detects

[8] U.S. EPA EJScreen: Environmental justice screening and mapping tool. https://www.epa.gov/ejscreen
[9] Oregon Health Authority. Per- and polyfluoroalkyl substances (PFAS). https://www.oregon.gov/oha/ph/healthyenvironments/drinkingwater/operations/pages/pfas.aspx

compounds, including PFAS, above drinking water standards, OHA and DEQ's Drinking Water Protection Program conduct source water assessments to evaluate potential sources to the drinking water source areas. In cases where sites in DEQ's Cleanup Program, or potential candidates for the program, are identified, the Drinking Water Protection Program coordinates with the Cleanup Program to initiate investigations at possible sources. However, without designating PFOS and PFOA as hazardous substances, DEQ lacks the ability to require investigation at facilities that may have released PFAS to the drinking water source area.

Generally, drinking water treatment for PFAS is extremely costly, and without the ability to require responsible parties to investigate and cleanup PFAS, the treatment cost burden falls on local municipalities and ratepayers. While grants and loans are available for public water systems, smaller public water systems may have a more difficult time shouldering the costs of protecting the health of their customers by ensuring that PFAS are not in the drinking water. Costs might be passed on to the customers, which would be a higher burden for low-income communities that already pay a higher share of their income for basic food, shelter, water, and necessities. Further, PFAS information for private domestic wells is largely unavailable in Oregon, as the previous and ongoing drinking water studies do not include these wells, making potential drinking water exposures to rural communities a notable data gap. Wealthier communities and well owners may be able to afford testing and treatment of private wells, while those with less financial resources may be unable to do so. The Cleanup Program, on the other hand, generally operates by a polluter pays model, ensuring that the public does not shoulder the cost of cleaning up the contamination that specific facilities or other parties released into the environment. By completing this rulemaking, DEQ could require that these responsible parties pay for the investigation and cleanup, alleviating the cost to the public and disproportionately impacted communities. The DEQ Cleanup Program will work with water suppliers, the Drinking Water Protection Program, and OHA to evaluate potential sources of PFAS to drinking water

Fish exposure

PFAS are bioaccumulative and have been found in fish tissue in streams and rivers across the U.S. and have been linked to exposures to people who consume fish in their diet.[10,11,12] Fish contamination has particular health risks for populations that fish in local waterways and consume fish at higher rates, such as Tribal, low-income, and subsistence fishers. Exposure via fish consumption is particularly notable for Tribal communities in Oregon as fish, especially salmon, have substantial cultural significance. Tribal communities often consume substantially more fish than non-Tribal communities, resulting in higher health risks associated with exposure to contaminants in fish.

[10] Christensen et al., 2017. Perfluoroalkyl substances and fish consumption. Environmental Research. Volume 154. https://www.sciencedirect.com/science/article/pii/S0013935116310726

[11] George et al., 2023. Nonlethal detection of PFAS bioaccumulation and biomagnification within fishes in an urban- and wastewater-dominant Great Lakes watershed. Environmental Pollution, doi: 10.1016/j.envpol.2023.121123. https://www.sciencedirect.com/science/article/pii/S0269749123001252

[12] Barbo et al., 2023. Locally caught freshwater fish across the United States are likely a significant source of exposure to PFOS and other perfluorinated compounds. Environmental Research, Volume 220. https://www.sciencedirect.com/science/article/pii/S0013935122024926?via%3Dihub

Environmental contamination may also impact other important first foods, or traditionally gathered foods, such as game, roots, and berries. Tribal populations are more likely to experience disease and chronic illness compared to other populations, and exposure to environmental contaminants can cause or compound health conditions.[13]

Initial limited data has shown that PFAS are present in fish tissue in multiple Oregon streams and rivers, with concentrations exceeding OHA's health screening level at 6 sites.[14,15] However, DEQ is unable to require likely sources of contamination to investigate or conduct cleanup to address fish contamination, because PFAS are not currently listed as a hazardous substance in Oregon. Implementation of this rulemaking will contribute to additional data collection for fish in Oregon, as all exposure pathways, including fish consumption, are considered when evaluating exposure risk from release sites. Additional data may contribute towards fish advisories in certain waterbodies, when warranted. For example, fish samples collected in the Columbia Slough in Portland resulted in OHA issuing Oregon's first PFAS-based fish consumption advisory in 2022. This waterway is known to have minority communities catch and consume fish. While fish consumption advisories are one tool available to reduce exposure to contaminants, they are limited in their usefulness; some people may continue to eat fish even with an advisory in place while those that do not may lose out on the many benefits fish provide, including an affordable or free food source, notable health benefits, and cultural significance for some groups.[16] Further, Oregon Tribes retain certain entitlements and protections for fish via treaty rights. Given these considerations, the Cleanup Program can require parties to take cleanup actions to reduce fish or other animal and plant contamination to protect people or wildlife from exposure. DEQ will work with Tribal and other disproportionately impacted communities to evaluate priorities for fish sampling and contaminant reduction.

An additional consideration includes waterbodies or watersheds shared with neighboring states who may be able to compel cleanup actions where Oregon cannot without this rulemaking. For example, the Columbia River Basin is one of the largest watersheds in North America, and given its significance, Congress amended the Clean Water Act in 2016 to establish a Columbia River Basin Restoration Program.[17] The basin covers a significant area of Oregon and over 90% of potential PFAS release sites in Oregon are located within the basin based on initial draft inventorying efforts. Approximately 300 miles of the Columbia River serves as the border between Oregon

[13] Hoover et al., 2012. Indigenous peoples of North America: Environmental exposures and reproductive justice. Environmental Health Perspectives, Volume 120. https://pubmed.ncbi.nlm.nih.gov/22899635/
[14] U.S. EPA National Rivers and Streams Assessment: https://www.epa.gov/national-aquatic-resource-surveys/nrsa
[15] Nilsen et al., 2024. Target and suspect per- and polyfluoroalkyl substances in fish from an AFFF-impacted waterway. Science of the Total Environment. Volume 906. https://www.sciencedirect.com/science/article/pii/S0048969723064252
[16] Hamade, 2024. Fish consumption benefits and PFAS risks: Epidemiology and public health recommendations. Toxicology Reports. Volume 13. https://www.sciencedirect.com/science/article/pii/S2214750024001197
[17] U.S. EPA About EPA's Work in the Columbia River Basin. https://www.epa.gov/columbiariver/about-epas-work-columbia-river-basin#crbrp

and Washington. Washington regulates all PFAS as hazardous substances and has the ability to require investigation and cleanup of PFAS contamination. Consistency in regulatory approaches with neighboring states is expected to have a variety of benefits, including reducing contamination in fish and improving environmental justice.

Non-discrimination statement

DEQ does not discriminate on the basis of race, color, national origin, disability, age or sex in administration of its programs or activities.

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