

Product Replacement Program: 2021–2023

Did you know that many of the products we use every day contain harmful chemicals?

When released into the environment, these chemicals can have severe consequences for our air and water, wildlife, human health, and the health of future generations.

In 2019, we created the Product Replacement Program (PRP) to tackle some of the worst chemicals found in consumer products. These chemicals include:



Perchloroethylene (PERC).



Per- and polyfluorinated substances (PFAS).



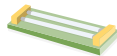
Degreasers.



Bisphenols.



Flame retardants.



Polychlorinated biphenyls (PCBs).

In the past two years,¹ we've made the following positive impacts:

- Replaced old PERC dry cleaning machines with safer alternatives at 26 dry cleaning locations.
- Installed special equipment at five commercial airports, enabling them to test fire suppression systems without spraying toxic firefighting foam on the ground.
- Switched highly toxic degreasers to safer alternatives at 97 auto repair shops, car dealerships, and technical colleges.
- Made significant progress on a draft environmental assessment regarding the safe disposal of firefighting foam containing PFAS.
- Replaced dangerous PCB fluorescent light ballasts at a public high school in eastern Washington with safer LED lights.
- Launched a program to replace bisphenol-containing thermal receipt paper with nontoxic alternatives at retail businesses.





PERC Replacement

Dry cleaners commonly use PERC to clean fine clothes, but it's highly toxic. PERC must be handled and disposed of properly. If not, the chemical can create unhealthy working conditions, contaminate the environment, and pose a threat to public health.² Unfortunately, many PERC cleanups and spills are reported throughout Washington state.³

This is why our PERC replacement program so important. The program aims to improve working conditions, reduce or eliminate ongoing hazardous waste generation, and ensure that the equipment is decommissioned and properly scrapped.

Since January of 2021, 26 more dry cleaners have either switched to safer technologies or safely decommissioned their old PERC machines. This brings the total number of businesses that have participated in Ecology's PERC replacement program to 74, leaving just over 2 dozen businesses still using PERC today.

The PERC Replacement Program invested more than \$1.5 million to convert or decommission PERC dry cleaning machines. By investing taxpayer dollars in this program, we are protecting public health and the environment.



Visit our [PERC replacement webpage](#)⁴ for more information.

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PFAS

Federal law requires Washington's 11 commercial airports to test their firefighting foam suppression systems at least once per year.⁵ In the past, airports sprayed foam directly on the tarmac, which can lead to significant contamination of soil, groundwater, and drinking water. To address this issue, the Federal Aviation Administration (FAA) authorized airports to use input-based test box equipment for foam testing.⁶ This equipment allows fire departments to simulate foam application without releasing any foam onto the ground.

We launched an input-based test box program in 2021 to support participating airports, reimbursing up to 90 percent of the costs associated with purchasing the equipment. So far, five airports (Bellingham, King County, SeaTac, Walla Walla, and Yakima) received reimbursement. Three airports (Paine, Spokane, and Moses Lake) used federal funds to purchase their equipment. The remaining airports (Pullman, Tri-Cities, and Wenatchee) await delivery of their test boxes. We plan to reimburse them soon. This program helps protect our environment and supports local fire departments in meeting federal regulations.

 Visit our [PFAS webpage](#)⁷ for more information.



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Firefighting Foam Environmental Impact Statement

We also hired a contractor in spring 2021 to review the environmental and public health impacts of a PFAS firefighting foam collection, transport, and disposal program. This review involves:

- Identifying subject matter experts.
- Analyzing scoping comments.
- Drafting an environmental impact statement (EIS).
- Addressing concerns from Tribes and environmental justice groups.
- Exploring disposal alternatives.

The review team considers resources that could be affected by firefighting foam disposal, like air and water quality, public health, public safety, climate change, wildlife (including endangered species and salmon), tribal concerns, and historic or cultural sites. The five disposal options being evaluated are:

- Approved Leave in Place
- Incineration
- Solidification and Landfilling
- Deep-well Injection
- Take No Action

Each option has pros and cons. We're conducting targeted outreach, including webinar briefings for Washington's federally recognized Tribes and consultations with other states to address potential environmental justice impacts of out-of-state disposal options. We also consulted the U.S. Environmental Protection Agency (EPA), U.S. Department of Defense, FAA, and U.S. Department of Transportation. We shared progress updates at conferences, including the Airport Rescue and Fire Fighting Annual Summit, the Business and the Environment Conference, and the Air and Waste Management Conference.

To ensure transparency and gather input, we created an [email list](#)⁸ for fire departments, government entities, nonprofits, research labs, and the general public. These stakeholders provide feedback on the scope of the analysis, the resource impact analysis, potential alternatives, and mitigation measures to minimize the program's impact on the environment and public health.

We plan to release the EIS for public comment by the end of 2023. After reviewing feedback, we will select a preferred disposal option. This process ensures that decisions are made with public input and incorporate the best practices for human health and the environment.

 Visit our [AFFF disposal webpage](#)⁹ for more information.



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Degreasers

Thousands of automotive repair shops in Washington use petroleum-based solvents to clean dirt, oil, and grease from parts. Solvents are effective degreasers, but some can pose serious health hazards. The worst solvents can cause cancer or central nervous system damage, while others are ignitable or acutely toxic to humans and wildlife.¹⁰

While solvents are common, some auto shops are successfully using water-based alternatives. Water-based cleaning products and equipment have been available for a while and avoid many of the hazards from traditional petroleum-based solvents. This opportunity—a widespread industry with existing alternatives but a low adoption rate—is what we targeted with PRP’s automotive degreaser reimbursement program. We’re reimbursing auto shops to replace brake cleaners, degreasers, or parts washers from up to \$1,000 to \$10,000, depending on the chemical hazards of the new product. Our tiered system encourages the safest products but allows shops to choose what works best for them.

We started accepting applications in August 2021. So far, 97 auto shops were reimbursed \$516,303, more than 200 shops are in the reimbursement process, and applications continue to arrive at Ecology.

- Nearly half of the shops switched to EPA Safer Choice certified products, our preferred option. The certification requires an independent review of every ingredient.
- All but one of the other shops switched to a non-certified but water-based product free of carcinogens and other chemicals of concern.
- Only one shop continued using solvents, receiving the smallest reimbursement to switch from xylene, an EPA-listed hazardous air pollutant, to a highly distilled petroleum product with fewer health hazards.

We’ve reimbursed auto repair shops from the Olympic Peninsula to the Okanogan, including small businesses, fire stations, public schools, farms, and food processors. Other states have asked for advice on running similar programs, and our tiered reimbursement amounts have encouraged manufacturers to pursue third-party certifications.

 Visit our [automotive degreaser webpage](#)¹¹ for more information.



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Bisphenols

Bisphenols are color developers used in printing thermal receipt paper. When heat is applied, bisphenols in the paper react with a dye and become visible on the paper.¹²

Approximately 80 percent of thermal paper receipts contain bisphenols.¹³ Common forms are Bisphenol A (BPA) and Bisphenol S (BPS). BPS might be substituted by some manufacturers to make their paper “BPA-free,” but all bisphenols are harmful. Thus, we specify replacement with bisphenol-free thermal paper rather than just BPA-free.

Widespread use of bisphenol-containing receipts increases human exposure. Bisphenols in thermal receipt paper can be absorbed through the skin. Cashiers handling thermal receipts with BPA have double the concentration of BPA in biological samples after a work shift than they do when handling receipts with gloved hands.¹⁴ Moreover, oils, water, and alcohols enhance dermal absorption, demonstrating that attempting to remove bisphenols from the skin by washing or sanitizing is not an effective method to reduce exposure.

Bisphenols are associated with many health problems, including:

- Reproductive issues.
- Hormonal imbalances.
- Cardiovascular problems.
- Developmental abnormalities.¹⁵
- Insulin resistance.¹⁶

The most effective way to avoid exposure to bisphenols in thermal receipt paper is to prevent contact. For example, wear gloves or refuse receipts.

In May 2023, we adopted Washington Administrative Code (WAC) 173-337.¹⁷ This new regulation outlaws the manufacture, sale, and distribution of thermal paper containing intentionally added bisphenols after January 1, 2026.

Before that cut-off date, we will reimburse businesses that stop using bisphenol-containing thermal receipts up to \$1,000. The goal is to reduce the exposure for those disproportionately affected by bisphenol-containing thermal receipts, and to assist businesses in overburdened communities with the cost of replacing thermal receipts, printers, and Point of Sale devices.

 Visit our [thermal receipts webpage](#)¹⁸ for more information.

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Flame Retardants In Gymnastic Foam Pits

Flame retardants are a group of chemicals made up of several classes of other chemicals that are intended to slow the spread of a fire and allow for additional escape time. These compounds include polybrominated diphenyl ethers (PBDEs), PentaPBDE, and many others. Manufacturers add them to materials such as foam, plastics, and textiles to meet flammability standards, however these standards have changed and added flame retardants are no longer needed. Some flame retardants also pose human health risks and can impact the environment.¹⁹

Studies show PDBEs and other flame retardants release from products like foam during use and accumulate in human bodies and the environment. The accumulation and exposure to these chemicals has potential effects including:

- Cancer.
- Endocrine and reproductive disorders.
- Neurological and developmental disorders.

Consumer products of highest concern are those that children are exposed to, such as uncovered recreational foam like those found in gymnastics fall pits.

In 2020, we sent letters with a voluntary survey to Washington state facilities where recreational foam pits are used. The survey responses provided insight into the barriers that can prevent gym owners and managers from taking protective action or switching to safer foam alternatives. With this information and funding from the Legislature, we developed a pilot project and study. We'll work with up to three gymnastics facilities to replace their old foam cubes with foam that doesn't contain added flame retardants.

The project covers the costs of new foam, intensive pit area cleaning, sample testing, and disposal of old foam for participating gyms that meet eligibility criteria, in exchange for collecting foam and dust samples for the accompanying study. This study is designed to evaluate and determine the effectiveness of product replacement activities to decrease the risk of exposure to flame retardants at each participating facility. Both the pilot project and the study will provide guidance for creating a reimbursement program and resources for gymnastics facilities with recreational foam pits to reduce exposure to flame retardants.

 Visit our [recreational foam webpage](#)²⁰ for more information.



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PCB/FLBs

Polychlorinated biphenyls, or PCBs, are a group of chemicals known to bioaccumulate and persist in the environment for many years. They were widely used in multiple industries as long-lasting plasticizers, conductors, insulators, and lubricants. Peak usage of PCBs occurred from the 1930s to the 1970s. The manufacture of PCBs was federally banned in 1979. However, PCBs are still present in aging buildings and old products including caulking, pigments and paints, and fluorescent light ballasts (FLBs).²¹

Because PCBs were used prevalently for decades and remain in some facilities, they are still contaminating the environment. Elevated levels of PCBs in some fish populations have led to fish consumption advisories. Exposure to PCBs can cause immune, reproductive, and nervous system problems in humans and animals.²² Recently, several class-action lawsuits across the country highlighted the dangers of PCB exposure in schools.

Using the funds provided by the Legislature, we established a PCB-FLB replacement program for schools aimed at removing light ballasts that may contain PCBs. The program was originally open to public K–12 schools and focused on smaller projects with a reimbursement cap of \$10,000. Since the launch in 2021, one school successfully removed and replaced thirty ballasts. Despite ongoing outreach efforts, increasing reimbursement to \$50,000 for tribal schools, and opening the program to private schools and daycare centers, the program struggles to find applicants. Schools may hesitate to participate due to lack of resources and staff to complete the work. They may also be prioritizing other projects like post COVID-19 recovery and transition. To help reduce these barriers, we plan to find a contractor to perform project work for the schools.

 Visit our [PCB light replacement webpage](#)²³ for more information.



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PPA Update

Several of our projects require help from Pollution Prevention Assistance (PPA) partnership specialists. The PPA partnership is made up of 27 local municipalities and Ecology. PPA helps businesses get into compliance with free on-site technical assistance visits. These visits are non-regulatory in nature, and cover both dangerous waste regulations and stormwater best management practices. They can do the groundwork and field visits for the Product Replacement Program.

PPA specialists have been instrumental to the PERC dry cleaner program and automotive degreaser replacement program. From July 1, 2021, to June 30, 2023, our PPA partner specialists made approximately 240 visits to businesses to discuss or begin implementation of a voucher program (PERC or degreasers).

We recently started the bisphenols thermal receipt voucher program, which is being carried out by PPA specialists during their visits to businesses in [areas with higher environmental health disparities](#).²⁴

Without the work of the PPA Specialists, we would not have been able to help all these businesses and schools switch to safer products.

Endnotes

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- 20 ecology.wa.gov/RecFoam
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To request an ADA accommodation, contact Ecology by phone at 360-407-6700, by email at hwtrpubs@ecy.wa.gov, or visit ecology.wa.gov/accessibility. For Relay Service or TTY call 711 or 877-833-6341.