Product Replacement Program: *2019–2020*

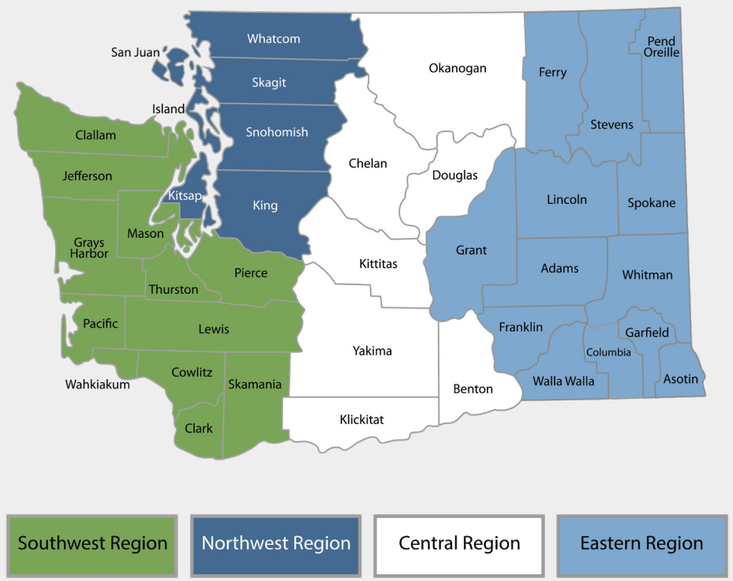
Publication 20-04-037

DEPARTMENT OF ECOLOGY
State of Washington

Pollution Prevention Assistance

Contents

Department of Ecology Regional Offices



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Accommodation requests

To request ADA accommodation including materials in a format for the visually impaired, call Ecology at 360-407-6700 or visit https://ecology.wa.gov/accessibility. People with impaired hearing may call Washington Relay Service at 711. People with speech disabilities may call TTY at 877-833-6341.

Revised May 2021

Executive summary

What is the Product Replacement Program?

Washington state's Product Replacement Program[1] is an innovative, results-based approach that reduces toxic chemicals and heavy metals in the environment.

The Product Replacement Program works with our Pollution Prevention Assistance[2] partners to help businesses reduce their use of toxic chemicals like:

- Per- and polyflouroalkyl substances (PFAS)
- Perchloroethylene (PERC)
- Flame retardants
- Polychlorinated biphenyls (PCBs)
- Mercury

Our work

The Product Replacement Program has spearheaded groundbreaking work to remove the very worst chemicals from consumer products and commerce.

Historically, regulatory efforts to control pollution focused on issues "downstream." The main focus was on how to manage waste, tailpipes, sewer pipes, or smokestacks. State agencies targeted their efforts at reducing emissions or cleaning up spills. However, the Product Replacement Program recognizes that the smartest, healthiest, and most cost-effective approach to decreasing pollution is to move "upstream" and prevent the use of toxic chemicals in the first place.

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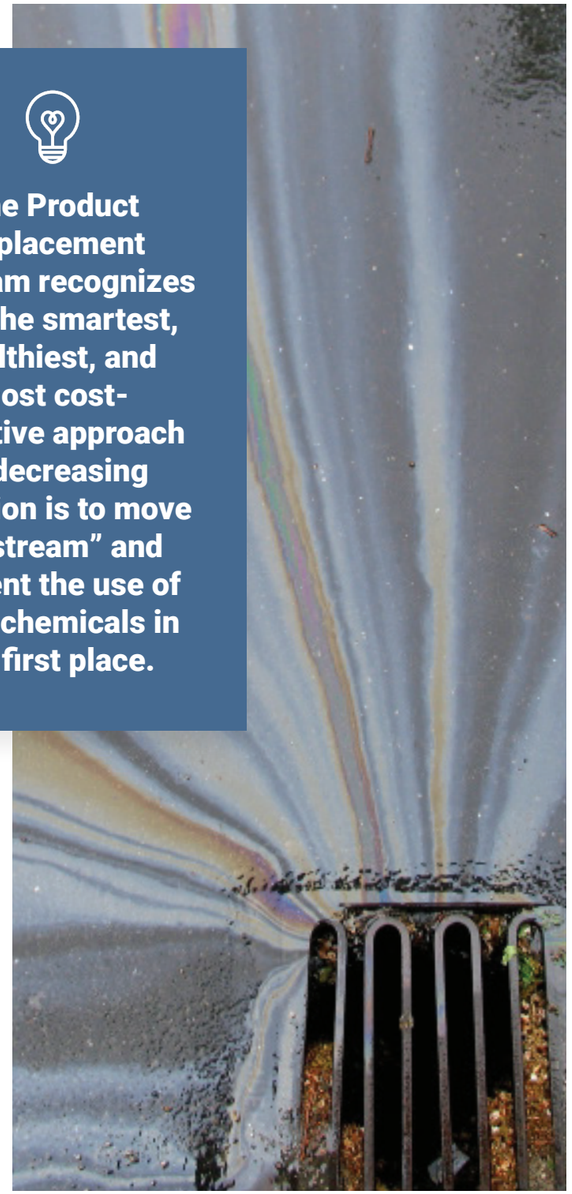


Background

History and philosophy of product replacement

The problem

Small but widespread releases of toxic chemicals found in consumer products and used by Washington state businesses pose one of the greatest threats to public health, the environment, and the economy. For example, we estimate that there are currently two tons of PCBs in Puget Sound sediments. We also estimate that there are 87 tons of PCBs in older building materials and light ballasts. If left unaddressed, these chemicals could migrate from these buildings, contributing to the current pollution in Puget Sound and contaminating ground and drinking water.

These toxic chemical sources could also cause health problems and create contamination that is expensive to clean up. In one instance, a single spill of several ounces of mercury led to a $650,000 cleanup.

> ***I've been in the field of environmental and health protection for over 30 years, and the work we are doing here to replace hazardous and toxic chemicals with safer alternatives is the best! We remove the potential hazard before it can become a problem. This reduces exposures, harm, disposal costs, and liabilities for the businesses and communities.***
>
> –Sue Hamilton, Hazardous Waste Management Program, King County

The solution

To address these concerns, we finalized five Chemical Action Plans[3] (CAPs) that identify the sources, uses, and releases of some of the most toxic chemicals and heavy metals used in commerce today.

These include PCBs,[4] lead,[5] mercury,[6] flame retardants,[7] and polycyclic aromatic hydrocarbons (also called PAHs[8]). A sixth CAP on PFAS[9] is expected to be completed in early 2021.

CAPs also provide recommendations on how to reduce or eliminate the harmful impacts caused by toxic chemicals. Before 2019, we lacked the resources to implement most of those recommendations. While CAPs represented the best thinking on how to address unnecessary exposure, their recommendations were largely left unimplemented due to resource constraints.

Replacing or removing toxic chemicals from consumer products before they are used is the best way to:

- Prevent contamination.
- Protect water quality.
- Save tax dollars.
- Reduce human health risks.

> ***Through the dry cleaner PERC replacement program, I was able to get rid of my old machine and replace with a new one that saves space and is multifunctional. I feel better knowing that this new machine is a safer choice as it no longer uses/produces toxic chemicals. I'm glad this program was available to aid in the effort of producing a cleaner and safer environment.***
>
> –Eric Chac, Owner of Rainier Beach Cleaners, King County

Legislative funding

In July 2019, things changed; the Legislature funded the innovative Product Replacement Program for the 2019–21 biennium. This program replaces toxic chemicals in select consumer products or technologies *before* they get into the environment, which is the best way to prevent environmental contamination, protect water quality, save tax dollars, and reduce human health risks.

To do this, the Legislature allocated $3.7 million in the 2019–21 biennium for action on five product/chemical combinations:

1. **PERC used in dry cleaning washing machines.**
2. **PFAS-containing firefighting foam.**
3. **PCB-containing light ballasts and building materials.**
4. **Flame retardants in exercise equipment and foam pits.**
5. **Mercury-containing thermostats.**

$3.7M
for 2019–21 biennium.

30%
1.1M
to contract with local partners.

70%
2.6M
to product replacement projects.

Of the original $3.7 million allocation, we used $1.1 million to contract with local partners to help implement the program. Our partners discussed opportunities and interest in the Product Replacement Program at over 140 business visits.

The remaining $2.6 million funds actual infrastructure changes and product replacement projects. The funding in this program provides direct financial incentives and technical assistance to businesses eliminating sources of toxic chemicals.

After completing the first year of the Product Replacement Program, we are on track to spend our 2019–21 budget.

Players

Ecology staff

Ecology staff manage and direct the Product Replacement Program from offices across the state. Our staff also create the strategies, guidance, and outreach materials needed to implement the program.

Pollution Prevention Assistance partners

We collaborate with groups, like our Pollution Prevention Assistance partners, to identify and work with businesses participating in the replacement program. The Pollution Prevention Assistance partnership is comprised of local government technical specialists from cities, counties, and health districts. These specialists help small businesses understand and comply with dangerous waste and stormwater laws, and provide assistance with spill prevention and cleanup preparedness. A list of the Pollution Prevention Assistance partners is in the Appendix.

Our work is more successful when we leverage the knowledge, relationships, expertise, and resources of our partners.

State contractors and suppliers

We also work with state contractors and suppliers to implement the Product Replacement Program. For example, Ecology works with Clean Harbors, the state's contractor, to collect and dispose of PFAS-containing firefighting foam for Washington state fire departments. We also use suppliers, like dry cleaner machine vendors, to help dry cleaning businesses switch from PERC to safer alternatives.

Our work is more successful when we leverage the knowledge, relationships, expertise, and resources of our partners.

Progress

PERC replacement in the garment care industry

Dry cleaning and garment care can generate dangerous waste. Chemicals in these facilities can contaminate water and soil, and be hazardous to workers and the public. Many Washington dry cleaners use chemicals like PERC in their cleaning process. Although PERC is effective at dissolving stains and dirt from clothing, its use poses significant cancer and neurological health risks.

We identified more than 100 dry cleaners in Washington state that use PERC in their operation. In 2017, we worked with King County's Hazardous Waste Management Program (HazWaste) to develop a small-scale survey. The goal of the survey was to understand what factors fabric cleaning business owners considered when switching from PERC to safer chemical alternatives. We also wanted to understand how we could provide better support to businesses making the switch. Survey results determined that approximately half of the PERC dry cleaners had considered switching to alternative cleaning methods. Most businesses indicated that the best way government could support this transition was through a grant or cash incentive.[10]

In 2019, Ecology identified two safer alternatives to PERC that would qualify for financial reimbursement. Dry cleaners that were willing to transition and met the requirements of the PERC Equipment Replacement Voucher[11] qualified for:

- $20,000 to switch to professional wet cleaning.
- $10,000 to switch to hydrocarbon.

We support professional wet cleaning as the safest option for human health and the environment, which is why we provide the largest reimbursement for making this switch. Switching to professional wet cleaning has a number of benefits:

1. It does not produce dangerous waste.
2. It has a low environmental footprint.
3. It can reduce energy and water use.

We support professional wet cleaning as the safest option for human health and the environment, which is why we provide the largest reimbursement for making this switch.

The high flash hydrocarbon cleaning technology is better for human health and the environment when compared to PERC, but it is not the preferred alternative. The petroleum solvents used in hydrocarbon machines pose a fire risk, and the cleaning process generates dangerous waste. For this reason, businesses that make this switch are eligible for a smaller reimbursement.

As of this report date, we have issued 54 PERC replacement vouchers to participating dry cleaners. Of those, 36 have completed the replacement and received a total of $640,000 in reimbursements. These businesses are located all across Washington. All but five of these businesses opted for professional wet cleaning technology. On average, it took a little over four months for a qualifying business to go from receiving a voucher to the final installation of the new technology.

36 of 108

Washington dry cleaners have replaced PERC with a safer alternative.

They received a combined total of

$640,000

54

PERC replacement vouchers issued.

Aqueous film-forming foam

A Washington state law[12] restricts the use of a class of chemicals called PFAS in firefighting foam and personal protective equipment. The Legislature took this action due to PFAS contamination in communities across the state. Investigations determined the contamination source was likely PFAS-containing firefighting foam.[13]

Using Product Replacement Program funding, we are working with local fire departments and other first responders to collect and safely dispose of PFAS-containing foam. We cover the costs associated with the collection, transport, and disposal of that foam.

PFAS molecules are water soluble and highly mobile, so when released into the environment, they can easily contaminate groundwater and can be hard to filter out. PFAS chemicals and their breakdown products are highly persistent perfluorinated compounds, which accumulate in the tissue of living organisms over time. Moreover, there are no known natural processes that break down these substances. As such, exposure could continue for hundreds or thousands of years.

According to the Washington State Department of Health,[14] exposure to this toxic chemical produces many negative health effects including:

- Increased cholesterol levels.
- Reduced birth weights.
- Reduced immune response to vaccines.
- Increased serum liver enzymes indicative of liver damage.

Other reported health outcomes include thyroid disease and testicular and kidney cancer.

To identify qualifying foam, Ecology worked with the Washington State Fire Marshal's office and the Washington Fire Chiefs Association to contact the hundreds of municipal fire departments across the state. Through an online survey, interested fire departments and other entities provided information on their qualifying foam's location, amount, and condition. The survey revealed between 30,000 and 40,000 gallons of PFAS foam that fire departments would like help in disposing.

Firefighting foam

This foam is located all across the state. The stockpiles range in size from small five-gallon buckets to tanks with thousands of gallons. The national health advisory level for PFAS is 70 parts per trillion, so even small amounts of foam can contaminate millions of gallons of drinking water. As such, the foam slated for disposal under this program represents ***one of the largest unaddressed pollution sources in the state***.

Looking ahead

In addition to PERC and PFAS-containing firefighting foam, the Legislature targeted PCBs in building materials, mercury in thermostats, and flame retardants in both exercise equipment and foam pits. The Product Replacement Program has identified low-investment, high-return actions for both mercury thermostats and flame retardants.

Mercury in thermostats

In May, the Product Replacement Program published a Shoptalk newsletter article[15] alerting businesses to a national mercury thermostat take-back program called Thermostat Recycling Corporation.[16] This program is a non-profit stewardship organization founded in 1998 to facilitate and manage the collection and proper disposal of mercury-containing thermostats. Not wanting to duplicate efforts, the Product Replacement Program opted to encourage participation in the country's pre-existing, highly successful program.

In 2019, this program recovered

1,387 thermostats

in Washington state.

That led to the proper disposal of

13.32 pounds

of highly toxic mercury.

Visit thermostat-recycle.org for more information.

Many of these products contain flame retardants that can cause negative health impacts.

Flame retardants in exercise equipment and foam pits

During the summer of 2020, the Product Replacement Program sent letters to Washington state gyms, play centers, and recreational facilities where foam pits, and wrestling and gymnastic mats are used. Many of these products contain flame retardants that can cause negative health impacts. The letter included a link to a survey seeking information on the barriers that may prevent gym owners and managers from taking protective action and/or switching to safer alternatives. Survey responses will guide our future actions on this matter.

The letter also provided:

- Actions these businesses could take now to determine if their equipment contains these harmful chemicals.
- Ideas for how to protect students, clients, and staff from exposure.
- A list of safer alternatives to use.

Future efforts

While the product replacement efforts mentioned above continue, we have already started selecting the next product/chemical combinations we would like to focus on.

The Product Replacement Program brought together representatives from the Pollution Prevention Assistance partnership, other state agencies, and other Ecology programs to help make these decisions. This team developed criteria for vetting potential products and brainstormed a draft list of product/chemical combinations. At the team's May 2020 meeting, we ran the draft list through the criteria. In June, the Product Replacement Program presented the results of the May meeting to Ecology's Hazardous Waste and Toxics Reduction program management team.

> ***The scope of this program is really a game-changer in addressing toxic threats to human health and the environment. If we can identify the source of the most problematic chemicals and replace them with safer alternatives, we can help cut off the flow of these hazardous substances right at their source.***
>
> —Darin Rice, Program Manager of Ecology's Hazardous Waste and Toxics Reduction Program

Our team produced the following plan:

Continue product/chemical combinations already underway

- PERC Dry Cleaner Replacement Voucher Program
- PFAS-Containing Fire Fighting Foam Takeback Program
- Mercury thermostats

Develop programs for new product/chemical combinations

- PCB Light Ballast Replacement Program
- Flame retardant-containing exercise equipment
- Solvents and hazardous chemicals in degreasers

Research viability of product/chemical combination programs

- PCBs in building materials
- PFAS in artificial turf fields
- Pesticide use by landscaping businesses

Acknowledgments

The Product Replacement Program would like to thank the following people for their assistance in the execution of this program.

Product Replacement Program Team:
Sean Smith, Myles Perkins, Elaine Snouwaert, Andy Maher, Marietta Sharp, Iffy Isigwe, Thatcher Montgomery, Justin Meyer

HWTR Program Management Team:
Darin Rice, Vince Chavez, Ken Zarker, Eli Levitt, Raman Iyer, Karen Wood, Greg Caron, Michelle Underwood, Erich Ebel, Amy Correa, Linda Riedel

Ecology Finance Program:
Gordon Dovell, Mark Gaffney

Safer Products Team:
Marissa Smith, Saskia VanBergen

CAP Implementation:
Cheryl Niemi, Irina Makarow

Office of Finance Management:
Tear Hyder

Washington Department of Health:
Elinor Fanning, Holly Davies, Barbara Morrissey

King County Hazardous Waste Management:
Steve Whittaker, Katie Fellows, Sue Hamilton, Ashley Pedersen

Pollution Prevention Assistance partners:
Twenty-one county and city organizations (see Appendix)

Report development, layout, and design:
Ruth Froese

Partner spotlights

Pollution Prevention Assistance partners and other staff from local government are instrumental in the success of the Product Replacement Program. Partners such as Alison Schweitzer, Abby Hawley, and Robert Bernard with King County DNR have collectively conducted more than 10 initial and follow-up visits to participating dry cleaners. In addition to contracted support for Ecology's dry cleaner program, this work was made possible by King County HazWaste's extensive, decade-long research[17] into the local dry cleaning industry. Led by Steve Whittaker, King County HazWaste examined data on PERC and alternative solvent toxicity, as well as statistics on worker exposure.

We have also benefitted from the groundwork established by King County through their engagement in the Korean dry cleaning community (84% of dry cleaner owners in King County), and King County's voucher program, which provided a workable model upon which Ecology expanded for implementation of our statewide program.

Our contracted partners also built strong relationships with the dry cleaning community over the course of this program. By the end of May 2020, the City of Kirkland had switched two of the city's three PERC dry cleaners to professional wet cleaning machines. Kirkland prioritized this work and found additional in-language support services to minimize any barriers to participation. The remaining PERC business is in the process of switching to safer technology but has been delayed by the COVID-19 pandemic.

> ***With the Product Replacement Program, The Department of Ecology has brought an opportunity to the entire state that many of us in the pollution prevention world didn't think was possible. Ecology both prioritized the health of our local water bodies and showed flexibility in … working with communities that speak English as a second language. Because of this program and its creative approach, Ecology made it possible to remove a truly harmful chemical from the market, and has helped the City of Kirkland become a 100% PERC-free city.***
>
> —John Loyd, Pollution Prevention Specialist, City of Kirkland

> ***As a PPA Specialist, I worked with many dry cleaners that were interested in switching out their PERC machine for a safer alternative. Making this switch to a new dry cleaning machine is a costly decision—Ecology's Product Replacement Program helps provide much needed financial aid to these dry cleaner businesses. Without the financial assistance, I am not sure how many of those dry cleaners would have made the switch. With many PERC machines reaching the end of their expected lifespan, we need the Product Replacement Program to continue providing financial aid for dry cleaners to switch to safer alternatives.***
>
> – Alison Schweitzer, former PPA Specialist, King County

Appendix

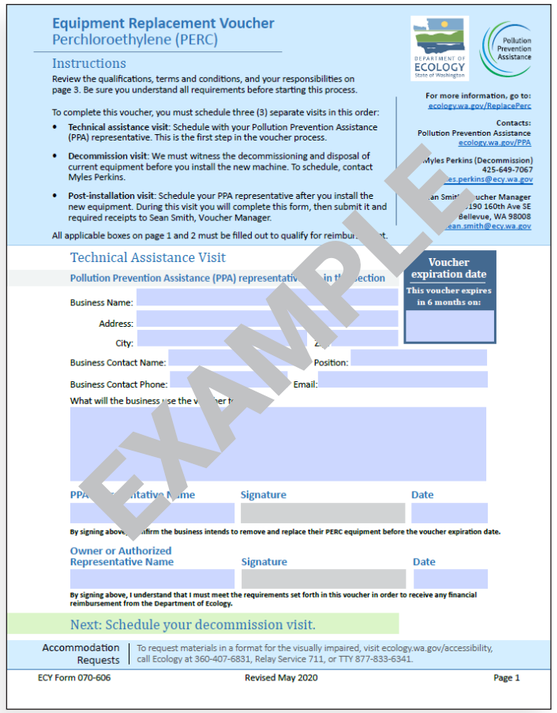
Pollution Prevention Assistance partners

- *City of Port Angeles*
- *Clark County Public Health*
- *Clark County Public Works*
- *Jefferson County Public Health*
- *City of Bothell*
- *City of Issaquah*
- *City of Kirkland*
- *City of Redmond*
- *City of Shoreline*
- *King County Water and Land*
- *Seattle Public Utilities*
- *Kitsap Public Health District*
- *City of Puyallup*
- *City of Sumner*
- *Tacoma-Pierce County Health Department*
- *Skagit County Department of Public Health*
- *Snohomish Health District*
- *Spokane Regional Health District*
- *Thurston County Public Health*
- *City of Bellingham*
- *Whatcom County Health Department*

PERC voucher

Equipment Replacement Voucher Perchloroethylene (PERC)

Form: 070-606



Equipment Replacement Voucher
Perchloroethylene (PERC)

Instructions

Review the qualifications, terms and conditions, and your responsibilities on page 3. Be sure you understand all requirements before starting this process.

To complete this voucher, you must schedule three (3) separate visits in this order:

- **Technical assistance visit**: Schedule with your Pollution Prevention Assistance (PPA) representative. This is the first step in the voucher process.
- **Decommission visit**: We must witness the decommissioning and disposal of current equipment before you install the new machine. To schedule, contact Myles Perkins.
- **Post-installation visit**: Schedule your PPA representative after you install the new equipment. During this visit you will complete this form, then submit it and required receipts to Sean Smith, Voucher Manager.

All applicable boxes on page 1 and 2 must be filled out to qualify for reimbu[illegible]t.

For more information, go to: ecology.wa.gov/ReplacePerc

Contacts:
Pollution Prevention Assistance
ecology.wa.gov/PPA

[illegible]yles Perkins (Decommission)
425-649-7067
[illegible]es.perkins@ecy.wa.gov

[illegible]an Smith, Voucher Manager
[illegible]190 160th Ave SE
Bellevue, WA 98008
[illegible]ean.smith@ecy.wa.gov

Technical Assistance Visit

Pollution Prevention Assistance (PPA) representative [illegible]n this section

Voucher expiration date
This voucher expires in 6 months on:

Business Name:
Address:
City: Z[illegible]
Business Contact Name: Position:
Business Contact Phone: Email:
What will the business use the v[illegible]er f[illegible]

PPA [illegible]ntative Name | Signature | Date

By signing above, [illegible]firm the business intends to remove and replace their PERC equipment before the voucher expiration date.

Owner or Authorized Representative Name | Signature | Date

By signing above, I understand that I must meet the requirements set forth in this voucher in order to receive any financial reimbursement from the Department of Ecology.

Next: Schedule your decommission visit.

Accommodation Requests | To request materials in a format for the visually impaired, visit ecology.wa.gov/accessibility, call Ecology at 360-407-6831, Relay Service 711, or TTY 877-833-6341.

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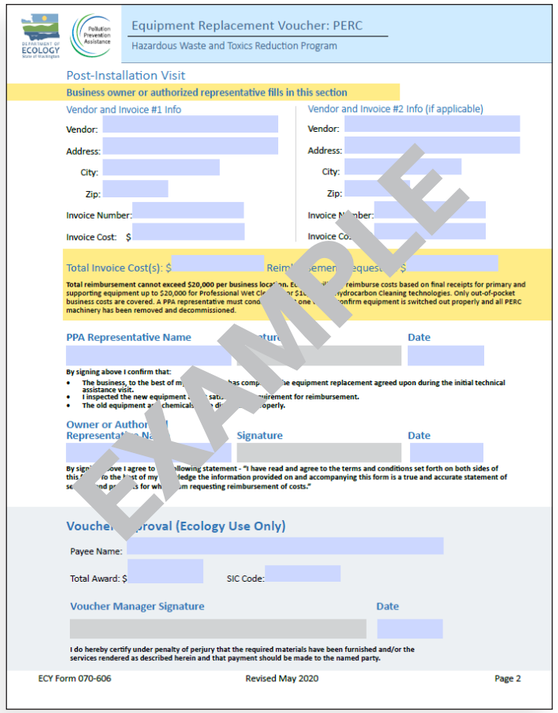

Equipment Replacement Voucher: PERC
Hazardous Waste and Toxics Reduction Program

Post-Installation Visit

Business owner or authorized representative fills in this section

Vendor and Invoice #1 Info
Vendor:
Address:
City:
Zip:
Invoice Number:
Invoice Cost: $

Vendor and Invoice #2 Info (if applicable)
Vendor:
Address:
City:
Zip:
Invoice Number:
Invoice Co[illegible]

Total Invoice Cost(s): $ Reim[illegible]emer[illegible]equest: $

Total reimbursement cannot exceed $20,000 per business loca[illegible]n. E[illegible] reimburse costs based on final receipts for primary and supporting equipment up to $20,000 for Professional Wet Cl[illegible]r $1[illegible] Hydrocarbon Cleaning technologies. Only out-of-pocket business costs are covered. A PPA representative must cond[illegible]one [illegible]confirm equipment is switched out properly and all PERC machinery has been removed and decommissioned.

PPA Representative Name [illegible]ture Date

By signing above I confirm that:

- The business, to the best of m[illegible]has comp[illegible]e equipment replacement agreed upon during the initial technical assistance visit.
- I inspected the new equipment [illegible]sfa[illegible] [illegible]irement for reimbursement.
- The old equipment a[illegible]chemicals [illegible]d di[illegible]operly.

Owner or Author[illegible] Representat[illegible]ve Na[illegible] Signature Date

By sign[illegible]ove I agree to [illegible]llowing statement - "I have read and agree to the terms and conditions set forth on both sides of this [illegible]o the best of my [illegible]ledge the information provided on and accompanying this form is a true and accurate statement of se[illegible]nd [illegible]s for wh[illegible]m requesting reimbursement of costs."

Voucher[illegible]roval (Ecology Use Only)

Payee Name:
Total Award: $ SIC Code:

Voucher Manager Signature Date

I do hereby certify under penalty of perjury that the required materials have been furnished and/or the services rendered as described herein and that payment should be made to the named party.

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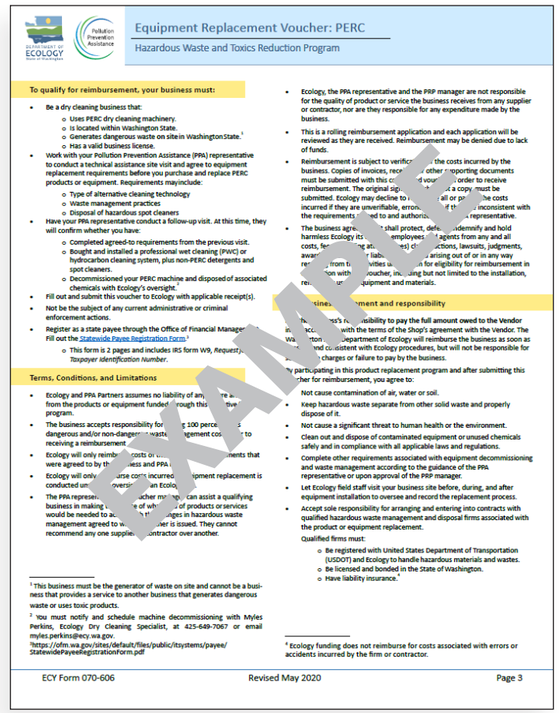

Equipment Replacement Voucher: PERC
Hazardous Waste and Toxics Reduction Program

To qualify for reimbursement, your business must:

- Be a dry cleaning business that:
  - Uses PERC dry cleaning machinery.
  - Is located within Washington State.
  - Generates dangerous waste on site in Washington State.[1]
  - Has a valid business license.
- Work with your Pollution Prevention Assistance (PPA) representative to conduct a technical assistance site visit and agree to equipment replacement requirements before you purchase and replace PERC products or equipment. Requirements mayinclude:
  - Type of alternative cleaning technology
  - Waste management practices
  - Disposal of hazardous spot cleaners
- Have your PPA representative conduct a follow-up visit. At this time, they will confirm whether you have:
  - Completed agreed-to requirements from the previous visit.
  - Bought and installed a professional wet cleaning (PWC) or hydrocarbon cleaning system, plus non-PERC detergents and spot cleaners.
  - Decommissioned your PERC machine and disposed of associated chemicals with Ecology's oversight.[2]
- Fill out and submit this voucher to Ecology with applicable receipt(s).
- Not be the subject of any current administrative or criminal enforcement actions.
- Register as a state payee through the Office of Financial Manage[illegible] Fill out the Statewide Payee Registration Form.[3]
  - This form is 2 pages and includes IRS form W9, Request[illegible] Taxpayer Identification Number.

Terms, Conditions, and Limitations

- Ecology and PPA Partners assumes no liability of an[illegible]re a[illegible] from the products or equipment funded through this [illegible]ve program.
- The business accepts responsibility for [illegible]g 100 perce[illegible] dangerous and/or non-danger[illegible]waste[illegible]agement co[illegible]r to receiving a reimbursement.
- Ecology will only reimb[illegible]costs or [illegible]ments that were agreed to by th[illegible]ness and PPA.
- Ecology will only [illegible]urse costs incurred[illegible]pment replacement is conducted un[illegible]rvision [illegible]an Ecolo[illegible]
- The PPA represen[illegible]ucher re[illegible]n can assist a qualifying business in making [illegible]e of wh[illegible]of products or services would be needed to a[illegible]h th[illegible]ges in hazardous waste management agreed to w[illegible]er is issued. They cannot recommend any one supplie[illegible]ontractor over another.
- Ecology, the PPA representative and the PRP manager are not responsible for the quality of product or service the business receives from any supplier or contractor, nor are they responsible for any expenditure made by the business.
- This is a rolling reimbursement application and each application will be reviewed as they are received. Reimbursement may be denied due to lack of funds.
- Reimbursement is subject to verific[illegible]n the costs incurred by the business. Copies of invoices, rec[illegible]d other supporting documents must be submitted with this c[illegible]d vouc[illegible]r order to receive reimbursement. The original sig[illegible]d a copy, must be submitted. Ecology may decline to r[illegible]all or pa[illegible]e costs incurred if they are unverifiable, errone[illegible]f th[illegible]y inconsistent with the requirements[illegible]ed to and authoriz[illegible]representative.
- The business agre[illegible]shall protect, defe[illegible]demnify and hold harmless Ecology its [illegible]employees[illegible]agents from any and all costs, fe[illegible]e a[illegible]s[illegible]) cl[illegible]ctions, lawsuits, judgments, awar[illegible]liab[illegible]arising out of or in any way re[illegible]from fi[illegible]ities a[illegible]n for eligibility for reimbursement in [illegible]on with[illegible]oucher, in[illegible]ing but not limited to the installation, re[illegible]quipment and materials.

[illegible]ines[illegible]ment and responsibility

[illegible]s's r[illegible]sibility to pay the full amount owed to the Vendor ac[illegible]with the terms of the Shop's agreement with the Vendor. The Wa[illegible]rtment of Ecology will reimburse the business as soon as [illegible]nd consistent with Ecology procedures, but will not be responsible for [illegible]charges or failure to pay by the business.

[illegible]y participating in this product replacement program and after submitting this [illegible]cher for reimbursement, you agree to:

- Not cause contamination of air, water or soil.
- Keep hazardous waste separate from other solid waste and properly dispose of it.
- Not cause a significant threat to human health or the environment.
- Clean out and dispose of contaminated equipment or unused chemicals safely and in compliance with all applicable laws and regulations.
- Complete other requirements associated with equipment decommissioning and waste management according to the guidance of the PPA representative or upon approval of the PRP manager.
- Let Ecology field staff visit your business site before, during, and after equipment installation to oversee and record the replacement process.
- Accept sole responsibility for arranging and entering into contracts with qualified hazardous waste management and disposal firms associated with the product or equipment replacement.

Qualified firms must:

- Be registered with United States Department of Transportation (USDOT) and Ecology to handle hazardous materials and wastes.
- Be licensed and bonded in the State of Washington.
- Have liability insurance.[4]

[1] This business must be the generator of waste on site and cannot be a business that provides a service to another business that generates dangerous waste or uses toxic products.

[2] You must notify and schedule machine decommissioning with Myles Perkins, Ecology Dry Cleaning Specialist, at 425-649-7067 or email myles.perkins@ecy.wa.gov.

[3] https://ofm.wa.gov/sites/default/files/public/itsystems/payee/StatewidePayeeRegistrationForm.pdf

[4] Ecology funding does not reimburse for costs associated with errors or accidents incurred by the firm or contractor.

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Outreach materials

Decommissioning perchloroethylene (PERC) dry cleaning machines: Guide to proper disposal and worker protection

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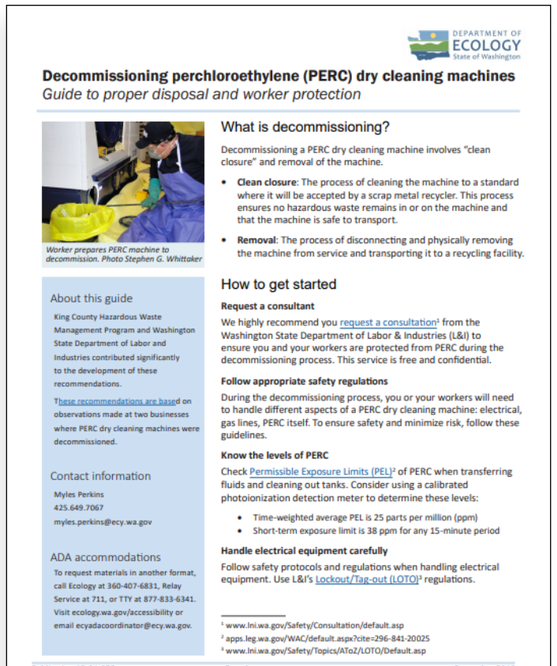

DEPARTMENT OF ECOLOGY State of Washington

Decommissioning perchloroethylene (PERC) dry cleaning machines
Guide to proper disposal and worker protection

Worker prepares PERC machine to decommission. Photo Stephen G. Whittaker

About this guide

King County Hazardous Waste Management Program and Washington State Department of Labor and Industries contributed significantly to the development of these recommendations.

These recommendations are based on observations made at two businesses where PERC dry cleaning machines were decommissioned.

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ADA accommodations

To request materials in another format, call Ecology at 360-407-6831, Relay Service at 711, or TTY at 877-833-6341. Visit ecology.wa.gov/accessibility or email ecyadacoordinator@ecy.wa.gov.

What is decommissioning?

Decommissioning a PERC dry cleaning machine involves "clean closure" and removal of the machine.

- **Clean closure**: The process of cleaning the machine to a standard where it will be accepted by a scrap metal recycler. This process ensures no hazardous waste remains in or on the machine and that the machine is safe to transport.
- **Removal**: The process of disconnecting and physically removing the machine from service and transporting it to a recycling facility.

How to get started

Request a consultant

We highly recommend you request a consultation[1] from the Washington State Department of Labor & Industries (L&I) to ensure you and your workers are protected from PERC during the decommissioning process. This service is free and confidential.

Follow appropriate safety regulations

During the decommissioning process, you or your workers will need to handle different aspects of a PERC dry cleaning machine: electrical, gas lines, PERC itself. To ensure safety and minimize risk, follow these guidelines.

Know the levels of PERC

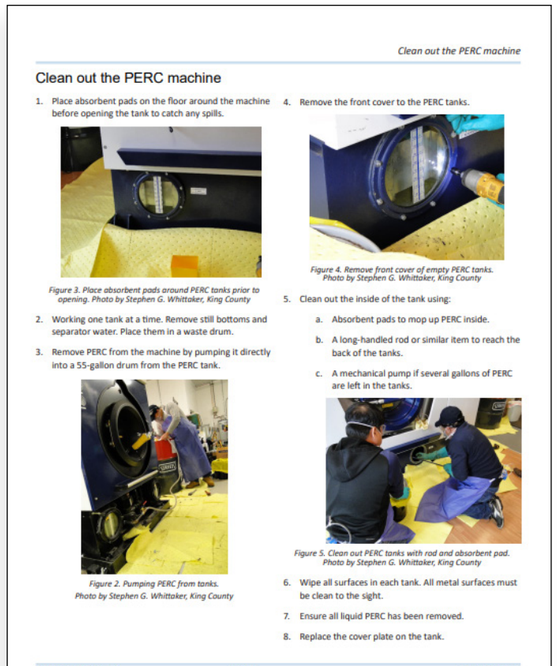
Check Permissible Exposure Limits (PEL)[2] of PERC when transferring fluids and cleaning out tanks. Consider using a calibrated photoionization detection meter to determine these levels:

- Time-weighted average PEL is 25 parts per million (ppm)
- Short-term exposure limit is 38 ppm for any 15-minute period

Handle electrical equipment carefully

Follow safety protocols and regulations when handling electrical equipment. Use L&I's Lockout/Tag-out (LOTO)[3] regulations.

[1] www.lni.wa.gov/Safety/Consultation/default.asp
[2] apps.leg.wa.gov/WAC/default.aspx?cite=296-841-20025
[3] www.lni.wa.gov/Safety/Topics/AToZ/LOTO/Default.asp



Clean out the PERC machine

1. Place absorbent pads on the floor around the machine before opening the tank to catch any spills.

Figure 3. Place absorbent pads around PERC tanks prior to opening. Photo by Stephen G. Whittaker, King County

2. Working one tank at a time. Remove still bottoms and separator water. Place them in a waste drum.
3. Remove PERC from the machine by pumping it directly into a 55-gallon drum from the PERC tank.

Figure 2. Pumping PERC from tanks. Photo by Stephen G. Whittaker, King County

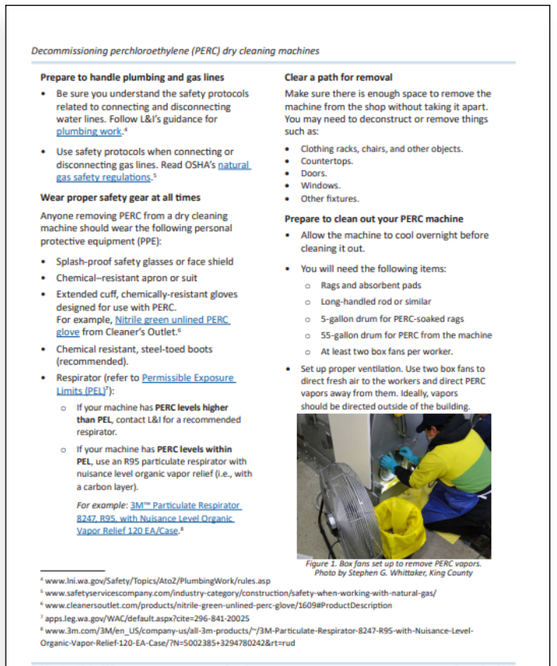
4. Remove the front cover to the PERC tanks.

Figure 4. Remove front cover of empty PERC tanks. Photo by Stephen G. Whittaker, King County

5. Clean out the inside of the tank using:
   a. Absorbent pads to mop up PERC inside.
   b. A long-handled rod or similar item to reach the back of the tanks.
   c. A mechanical pump if several gallons of PERC are left in the tanks.

Figure 5. Clean out PERC tanks with rod and absorbent pad. Photo by Stephen G. Whittaker, King County

6. Wipe all surfaces in each tank. All metal surfaces must be clean to the sight.
7. Ensure all liquid PERC has been removed.
8. Replace the cover plate on the tank.



Prepare to handle plumbing and gas lines

- Be sure you understand the safety protocols related to connecting and disconnecting water lines. Follow L&I's guidance for plumbing work.[4]
- Use safety protocols when connecting or disconnecting gas lines. Read OSHA's natural gas safety regulations.[5]

Wear proper safety gear at all times

Anyone removing PERC from a dry cleaning machine should wear the following personal protective equipment (PPE):

- Splash-proof safety glasses or face shield
- Chemical–resistant apron or suit
- Extended cuff, chemically-resistant gloves designed for use with PERC. For example, Nitrile green unlined PERC glove from Cleaner's Outlet.[6]
- Chemical resistant, steel-toed boots (recommended).
- Respirator (refer to Permissible Exposure Limits (PEL)[7]):
  - If your machine has **PERC levels higher than PEL**, contact L&I for a recommended respirator.
  - If your machine has **PERC levels within PEL**, use an R95 particulate respirator with nuisance level organic vapor relief (i.e., with a carbon layer).

  For example: 3M™ Particulate Respirator 8247, R95, with Nuisance Level Organic Vapor Relief 120 EA/Case.[8]

Clear a path for removal

Make sure there is enough space to remove the machine from the shop without taking it apart. You may need to deconstruct or remove things such as:

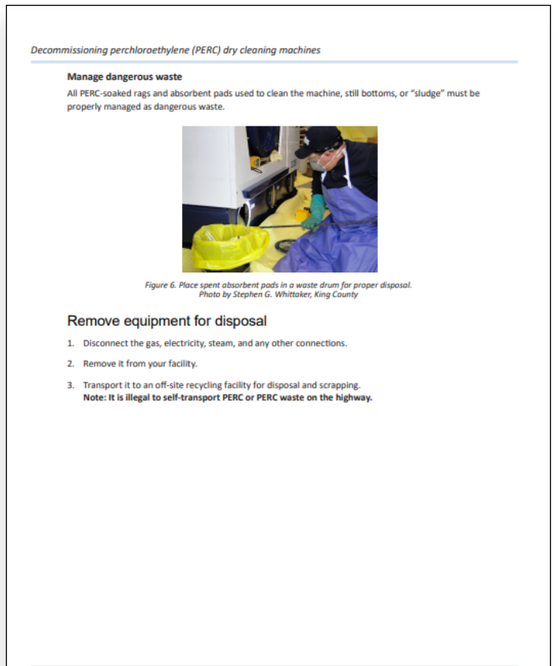
- Clothing racks, chairs, and other objects.
- Countertops.
- Doors.
- Windows.
- Other fixtures.

Prepare to clean out your PERC machine

- Allow the machine to cool overnight before cleaning it out.
- You will need the following items:
  - Rags and absorbent pads
  - Long-handled rod or similar
  - 5-gallon drum for PERC-soaked rags
  - 55-gallon drum for PERC from the machine
  - At least two box fans per worker.
- Set up proper ventilation. Use two box fans to direct fresh air to the workers and direct PERC vapors away from them. Ideally, vapors should be directed outside of the building.

Figure 1. Box fans set up to remove PERC vapors. Photo by Stephen G. Whittaker, King County

[4] www.lni.wa.gov/Safety/Topics/AtoZ/PlumbingWork/rules.asp
[5] www.safetyservicescompany.com/industry-category/construction/safety-when-working-with-natural-gas/
[6] www.cleanersoutlet.com/products/nitrile-green-unlined-perc-glove/1609#ProductDescription
[7] apps.leg.wa.gov/WAC/default.aspx?cite=296-841-20025
[8] www.3m.com/3M/en_US/company-us/all-3m-products/~/3M-Particulate-Respirator-8247-R95-with-Nuisance-Level-Organic-Vapor-Relief-120-EA-Case/?N=5002385+3294780242&rt=rud



Manage dangerous waste

All PERC-soaked rags and absorbent pads used to clean the machine, still bottoms, or "sludge" must be properly managed as dangerous waste.

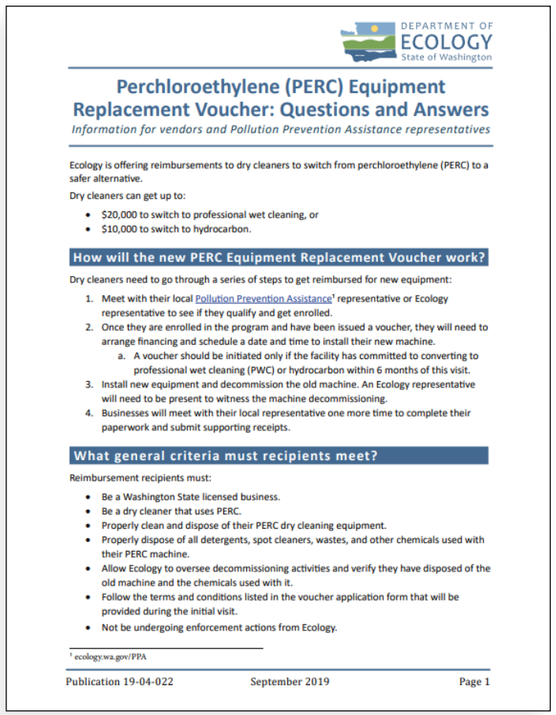
Figure 6. Place spent absorbent pads in a waste drum for proper disposal. Photo by Stephen G. Whittaker, King County

Remove equipment for disposal

1. Disconnect the gas, electricity, steam, and any other connections.
2. Remove it from your facility.
3. Transport it to an off-site recycling facility for disposal and scrapping.
   Note: It is illegal to self-transport PERC or PERC waste on the highway.

Perchloroethylene (PERC) Equipment Replacement Voucher: Questions and Answers

Publication: 19-04-022
Link: https://fortress.wa.gov/ecy/publications/SummaryPages/1904022.html



DEPARTMENT OF ECOLOGY State of Washington

Perchloroethylene (PERC) Equipment Replacement Voucher: Questions and Answers

Information for vendors and Pollution Prevention Assistance representatives

Ecology is offering reimbursements to dry cleaners to switch from perchloroethylene (PERC) to a safer alternative.

Dry cleaners can get up to:

- $20,000 to switch to professional wet cleaning, or
- $10,000 to switch to hydrocarbon.

How will the new PERC Equipment Replacement Voucher work?

Dry cleaners need to go through a series of steps to get reimbursed for new equipment:

1. Meet with their local Pollution Prevention Assistance[1] representative or Ecology representative to see if they qualify and get enrolled.
2. Once they are enrolled in the program and have been issued a voucher, they will need to arrange financing and schedule a date and time to install their new machine.
   a. A voucher should be initiated only if the facility has committed to converting to professional wet cleaning (PWC) or hydrocarbon within 6 months of this visit.
3. Install new equipment and decommission the old machine. An Ecology representative will need to be present to witness the machine decommissioning.
4. Businesses will meet with their local representative one more time to complete their paperwork and submit supporting receipts.

What general criteria must recipients meet?

Reimbursement recipients must:

- Be a Washington State licensed business.
- Be a dry cleaner that uses PERC.
- Properly clean and dispose of their PERC dry cleaning equipment.
- Properly dispose of all detergents, spot cleaners, wastes, and other chemicals used with their PERC machine.
- Allow Ecology to oversee decommissioning activities and verify they have disposed of the old machine and the chemicals used with it.
- Follow the terms and conditions listed in the voucher application form that will be provided during the initial visit.
- Not be undergoing enforcement actions from Ecology.

[1] ecology.wa.gov/PPA

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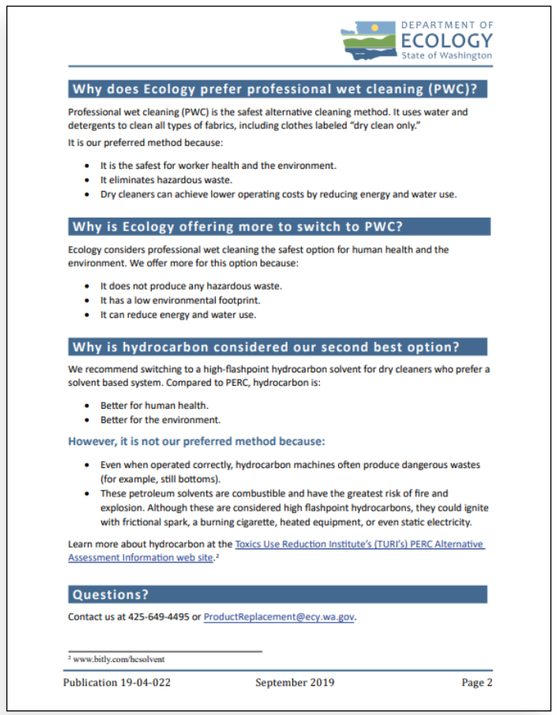

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Why does Ecology prefer professional wet cleaning (PWC)?

Professional wet cleaning (PWC) is the safest alternative cleaning method. It uses water and detergents to clean all types of fabrics, including clothes labeled "dry clean only."

It is our preferred method because:

- It is the safest for worker health and the environment.
- It eliminates hazardous waste.
- Dry cleaners can achieve lower operating costs by reducing energy and water use.

Why is Ecology offering more to switch to PWC?

Ecology considers professional wet cleaning the safest option for human health and the environment. We offer more for this option because:

- It does not produce any hazardous waste.
- It has a low environmental footprint.
- It can reduce energy and water use.

Why is hydrocarbon considered our second best option?

We recommend switching to a high-flashpoint hydrocarbon solvent for dry cleaners who prefer a solvent based system. Compared to PERC, hydrocarbon is:

- Better for human health.
- Better for the environment.

However, it is not our preferred method because:

- Even when operated correctly, hydrocarbon machines often produce dangerous wastes (for example, still bottoms).
- These petroleum solvents are combustible and have the greatest risk of fire and explosion. Although these are considered high flashpoint hydrocarbons, they could ignite with frictional spark, a burning cigarette, heated equipment, or even static electricity.

Learn more about hydrocarbon at the Toxics Use Reduction Institute's (TURI's) PERC Alternative Assessment Information web site.[2]

Questions?

Contact us at 425-649-4495 or ProductReplacement@ecy.wa.gov.

[2] www.bitly.com/hcsolvent

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Endnotes

1 https://ecology.wa.gov/Waste-Toxics/Reducing-toxic-chemicals/Product-Replacement-Program

2 https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Preventing-hazardous-waste-pollution/Technical-assistance-for-business/Pollution-prevention-assistance

3 https://ecology.wa.gov/Waste-Toxics/Reducing-toxic-chemicals/Addressing-priority-toxic-chemicals

4 https://fortress.wa.gov/ecy/publications/documents/1507002.pdf

5 https://fortress.wa.gov/ecy/publications/documents/0907008.pdf

6 https://fortress.wa.gov/ecy/publications/documents/0303001.pdf

7 https://fortress.wa.gov/ecy/publications/documents/0507048.pdf

8 https://fortress.wa.gov/ecy/publications/documents/1207048.pdf

9 https://fortress.wa.gov/ecy/publications/documents/1804005.pdf

10 Myles Perkins, "Fabric Cleaning Industry Survey Report," Hazardous Waste and Toxics Reduction Program, Washington State Department of Ecology, October 2017.

11 https://fortress.wa.gov/ecy/publications/documents/2004020.pdf

12 http://app.leg.wa.gov/RCW/default.aspx?cite=70.75A&full=true

13 Geosyntec Consultants, Hydrogeological Characterization Report, November 2016.

14 "PFAS: About PFAS," Washington Department of Health, 2020: https://www.doh.wa.gov/CommunityandEnvironment/Contaminants/PFAS.

15 https://fortress.wa.gov/ecy/publications/SummaryPages/2004002.html

16 https://www.thermostat-recycle.org/

17 https://www.kingcountyhazwastewa.gov/about-us/about-us-library?class=TECHNICAL-REPORT,&doc-search=drycleaning

For more information about the Product Replacement Program, visit: ecology.wa.gov/productreplacement.