



Pacific Northwest Pollution Prevention Resource Center
Practical solutions for economic and environmental vitality



SAFER ALTERNATIVES FOR AUTOMOTIVE REPAIR SHOPS

*Brake Cleaners, Parts Washers, Degreasers & Other
Cleaners*





WHAT IS THE PURPOSE OF THIS RESOURCE?



The purpose of this training module is twofold:

- To help auto repair technicians, owners, and fleet managers make informed decisions about available safer alternatives
- To show the tangible benefits of best management practices



TOPICS COVERED

1 . Brake Cleaners/Degreasers	3. Antifreeze
2. Parts Washers	4. Floor Cleanup
5. Greening Your Shop	



NOTE BEFORE STARTING

- ❖ You will need speakers with the sound on to hear voice over and video clips. If the slide has a voice-over, it is noted by a speaker icon in the upper right-hand corner 
- ❖ The slides with voice over will change automatically. The slides that are read-only must be changed manually
- ❖ Video clips should also play and change automatically. If this does not happen, the video can be played by clicking the start button on the video bar that shows up when you click on the video screen

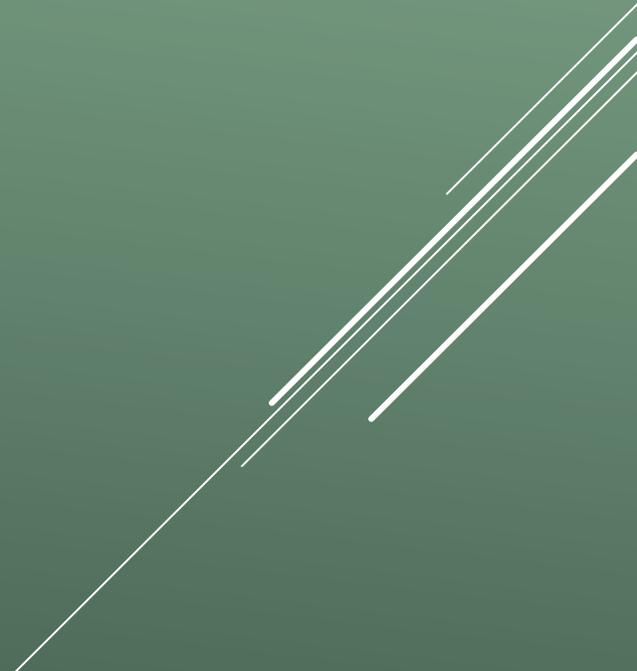


- ❖ The first four sections end with a short three-question quiz. The quiz is for your benefit and does not impact completion of the module



TOPIC 1

BRAKE CLEANERS/ DEGREASERS

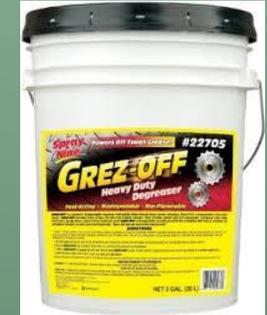




BRAKE CLEANERS

AEROSOL AND NON-AEROSOL

Solvent



Solvent-Based	Aqueous-Based
<ul style="list-style-type: none">• Effectively remove dirt, grime and grease from brakes and other metal parts;• Cost effective;• Can be classified as chlorinated or non-chlorinated;• Chlorinated solvents are hazardous to your health; non-chlorinated can also be hazardous to your health.• Some have been banned.	<ul style="list-style-type: none">• Effectively remove dirt, grime and grease from brakes and other metal parts;• Cost effective• Are non-chlorinated and are water-based• Not hazardous to your health or to the environment;• None have been banned.

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Safer Alternatives For Automotive Repair Shops Training

**Safer Alternatives for Auto Repair Shops: Aerosol & Non-Aerosol Brake Cleaners,
Engine Degreasers & Fuel Injectors
Aqueous And/Or Soy-Based Cleaners**



Preferred Safer Alternatives

- *Ace Coating, Enviro-Power Grease & Tar Remover
- *Brulin & Co, Aquavantage 3800B
- *Brulin & Co, New Terragreen Degreaser ChemFree Corp., Ozzyjuice BT-5 DeGreasing Fluid
- *American BioClean, Corp., ABC Parts Cleaner (PC)
- *Armick Chemicals, Navsolve
- *Clea Degreaser CL46540, Clea Care Essentials
- *DeltaGreen, Inc., Delta Green Concentrate
- *AG Environmental, Soygold 1000

Other Common Solvents

Use With Caution

- *Acetone
 - *Heptane
- These solvents are used to clean metal parts and are good (particularly acetone) for dissolving other substances, such as paint, marker, or glues.

Common Petroleum Hydrocarbons

Extreme Caution

- *Mineral Spirits
 - *Toluene
 - *Xylene
 - *Ethylbenzene
- Petroleum hydrocarbons are the primary constituents in oil, gasoline, diesel, and a variety of solvents and penetrating oils. As such, petroleum hydrocarbons can adversely affect human health via inhalation, dermal, and oral routes. Acute exposure can lead to central nervous system depression resulting in lack of coordination, slowed reactions, and kidney and liver damage.

Common Chlorinated Solvents

Totally AVOID!

The following Chlorinated Solvents are all **CARCINOGENS**:

- *Trichloroethylene (TCE)
- *Methylene Chloride
- *Perchloroethylene (PCE or PER)
- *Carbon Tetrachloride (Carbon Tet)

Chlorinated solvents are a large family of chemical compounds that contain chlorine and are used for a wide variety of commercial and industrial purposes, including degreasers and metal cleaning. Solvent exposure can lead to short-term or long-term health effects, depending on the manner by which they entered your body and the amount of exposure. Short-term side effects may include dizziness, fatigue, headaches, and/or skin rashes. Long-term side effects may include chronic skin problems, and/or damage to the nervous system, kidneys, or liver. Some chlorinated solvents are also known to cause cancer, in both humans and animals.



Sample SAFETY DATA SHEET

1. Identification
Product identifier DUSTOFF Brake Parts Cleaner
Other means of identification
Product code 03189, 09089Z, 88580, 84189XY
Recommended use Brake cleaner
Recommended restrictions None known.
Manufacturer/Importer/Supplier/Distributor information
Manufactured or sold by:
Company name Clean Freno Industries, Inc.
Address 8335 Stark Dr.
 Camargo, WA 98001 US
Telephone
General Information 915-674-5000
Technical Assistance 800-631-4000
Customer Service 800-632-2100
24-Hour Emergency (CHEMTREC) 800-242-7200 (US)
 915-227-7227 (International)
Website www.cleanfreno.com

2. Hazard(s) identification

Physical hazards	Gases under pressure	Compressed gas
Health hazards	Skin corrosion/irritation	Category 2
	Carcinogenicity	Category 1B
	Specific target organ toxicity, single exposure	Category 3 narcotic effects
Environmental hazards	Hazardous to the aquatic environment, long-term hazard	Category 2
OSHA defined hazards	Not classified.	
Label elements		

Signal word Danger

Hazard statement Contains gas under pressure; may explode if heated. Causes skin irritation. May cause drowsiness or dizziness. May cause cancer. Toxic to aquatic life with long lasting effects.

Precautionary statement
Prevention Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not puncture or incinerate container. Do not expose to heat or store at temperatures above 49°C/120°F. Use with adequate ventilation. Open doors and windows or use other means to ensure a fresh air supply during use and while product is drying. If you experience any symptoms listed on this label, increase ventilation or leave the area. Avoid breathing mist or vapor. Avoid breathing gas. Wash thoroughly after handling. Wear protective gloves/protective clothing/eye protection/face protection. Avoid release to the environment.

Response If on skin: Wash with plenty of water. If skin irritation occurs: Get medical attention. Take off contaminated clothing and wash before reuse. If inhaled: Remove person to fresh air and keep comfortable for

SAFETY DATA SHEET



Section 2, Hazard(s) identification includes all health hazards regarding the chemical and required label elements.

Section 12, Ecological information includes information to evaluate the environmental impact of the chemical(s) if it were released to the environment.

12. Ecological information

Ecotoxicity Toxic to aquatic life with long lasting effects. Accumulation in aquatic organisms is expected.

Product	Species	Test Results
Brakleen® Brake Parts Cleaner		
Aquatic		
Fish	LC50	Fish 19.1805 mg/l, 96 hours estimated
Components		
Tetrachloroethylene (CAS 127-18-4)		
Aquatic		
Fish	LC50	Rainbow trout,donaldson trout (Oncorhynchus mykiss) 4.73 - 5.27 mg/l, 96 hours

* Estimates for product may be based on additional component data not shown.

Persistence and degradability	Not available.		
Bioaccumulative potential	Not available.		
Partition coefficient n-octanol / water (log Kow)	Tetrachloroethylene	2.88	
Biodegradability in soil	No data available.		
Other adverse effects	No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.		

13. Disposal considerations

Disposal of waste from residues / unused products	This material and its container must be disposed of as hazardous waste. Consult authorities before disposal. Contents under pressure. Do not puncture, incinerate or crush. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose in accordance with all applicable regulations.		
Hazardous waste code	D039: Waste Tetrachloroethylene F001: Waste Halogenated Solvent - Spent Halogenated Solvent Used in Degreasing F002: Waste Halogenated Solvent - Spent Halogenated Solvent		
US RCRA Hazardous Waste U List: Reference			
	Tetrachloroethylene (CAS 127-18-4)	U210	
Contaminated packaging	Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied.		



SAFER ALTERNATIVE INFORMATION SOURCES

- 1. South Coast Air Quality Management District (California)**
Certified Clean Air Solvent Products and Companies List

Website:

<http://www.aqmd.gov/home/programs/business/business-detail?title=certified-clean-air-solvents>

- 2. Toxics Use Reduction Institute (Massachusetts)**
Cleaner Solutions Database

Website:

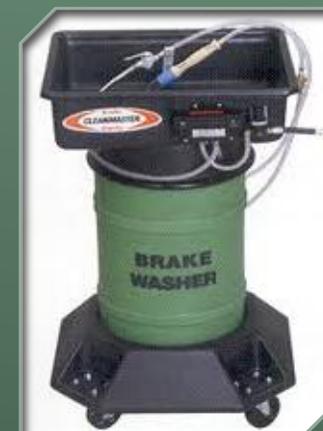
<http://www.cleanersolutions.org>



BRAKE CLEANERS

Brake washing can be performed using these devices:

- Non-Refillable Aerosol Cans
- Refillable Aerosol Cans
- Solvent-Based Washing Units
- Aqueous-Based Washing Units





AEROSOL CANS



- ❖ Propellants commonly found in today's aerosol spray cans are mixtures of volatile hydrocarbons, typically propane, n-butane and isobutene, and carbon dioxide. These are “**greenhouse gases**” that contribute to both climate change and smog formation.
- ❖ Ounce for ounce, spray-on product sold in aerosol cans is roughly twice the cost of bulk product.
- ❖ Every year, individual auto repair and fleet maintenance facilities discard hundreds, and sometimes thousands, of aerosol cans used to dispense brake cleaners, carburetor cleaners, lubricants and penetrants, engine degreasers, and numerous other products as trash. All this takes up valuable landfill space and you pay for excess packaging and disposal.
- ❖ BMP - Look for less hazardous formulations.



AEROSOL CAN DISPOSAL

Aerosol cans are not dangerous waste if they are used until empty. However, partially full (for instance, if the nozzle doesn't work) or discarded full cans may be a dangerous waste because the contents are under pressure and may be toxic or flammable.

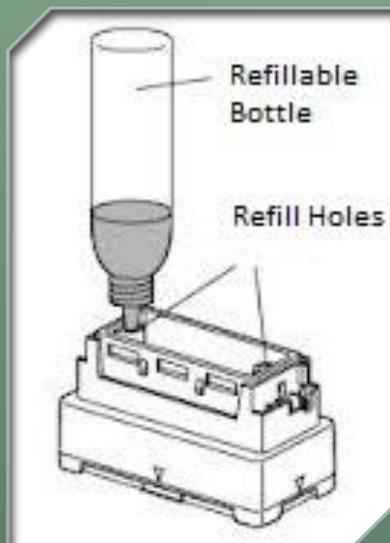
You have two options for disposing of aerosol cans with hazardous contents:

- Send the can with its contents to a permitted dangerous waste facility.
- Puncture the can with a commercial puncturing device. Drain and collect the contents. Manage the collected liquid as dangerous waste. This means putting a dangerous waste label and risk label on the container and keeping it closed when not in use. Recycle empty cans as scrap metal.

Dangerous waste aerosol cans with full or partial contents must be accumulated, counted, labeled, and reported according to dangerous waste requirements. Check labels and Safety Data Sheets (formerly Material Safety Data Sheets or MSDS) to make sure you are all aware of the hazards to your shop.



REFILLABLE SPRAY BOTTLES



Buying the product in bulk and using refillable spray bottles will generate less aerosol can waste.

There are two basic types of refillable spray bottles: metal bottles that spray product using compressed air and plastic bottles that use a hand pump.

1. Metal bottles are filled with cleaning solution from a bulk container and are pressurized with air from a compressor.

2. Plastic bottles are also filled from a bulk container, but are operated by pumping a trigger to create a mist or stream of product.





AEROSOL CANS



- ❖ Shops and facilities that switch to refillable spray bottles are saving money by avoiding the high cost of aerosol cans and are helping to protect the environment by eliminating the solid and potentially hazardous waste stream they produce.
- ❖ When compared to refillable spray bottles and aqueous brake washing units, aerosol cans are costlier and have more negative environmental and employee health impacts.
- ❖ Ounce for ounce, spray on product sold in aerosol cans is about twice the cost of bulk product. You pay for propellants (10 – 15 percent by weight) and excess packaging in every aerosol can.

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Safer Alternatives For Automotive Repair Shops Training



REFILLABLE SPRAY BOTTLES

Refillable Spray Bottles: Perceived Problems

Perceived Problem	Reality
1. Refillable spray bottles require more labor time because they must be refilled	1. The actual time to refill a bottle is between 1 and 3 minutes, comparable to the time of disposing of a can and obtaining a new one
2. Refillable spray bottles are cumbersome	2. Spray bottles the size of a typical aerosol can also be purchased, or nozzle extensions can be attached to larger bottles.
3. Refillable spray nozzles clog	3. Although clogs are rare, blowing compressed air through both sides of the spray nozzle can eliminate them.

Source: City of Denver's "Certifiably Green Denver" Program



REFILLABLE SPRAY BOTTLE/AEROSOL CAN COMPARISON

Refillable Spray Bottle		Aerosol Cans	
Advantages	Disadvantages	Advantages	Disadvantages
<ul style="list-style-type: none">• Increased savings over time (buying bulk cleaner v.s. aerosol cans)• Eliminates and prevents propellants like carbon dioxide, butane, and propane found in aerosol cans from being released into the atmosphere• Reduces the amount of waste generated from discarded cans	<ul style="list-style-type: none">• Higher initial costs due to equipment purchases	<ul style="list-style-type: none">• Lower initial costs (no equipment purchases)• Allows easier access to hard-to-reach places during engine/brake repair or maintenance	<ul style="list-style-type: none">• More expensive than refillable spray bottles over time• Release of GHGs such as carbon dioxide, butane, and propane into the atmosphere• Significantly increases the generation of waste (discarded cans)• Can potentially be considered a dangerous waste when cans are spent (see the WA Dept. of Ecology's <i>Dangerous Waste Designation Tool</i>)*

* Ecology's 'Dangerous Waste Designation Tool': http://www.ecy.wa.gov/programs/hwtr/manage_waste/des_intro.html



QUICK QUIZ FOR BRAKE CLEANERS/DEGREASERS SECTION

Question 1

1. Full or partially full aerosol cans may qualify as dangerous waste because_____?

A: the contents are under pressure and may be toxic or flammable

B: the contents may leach into groundwater from a landfill

C: children may play with the cans and injure themselves or others

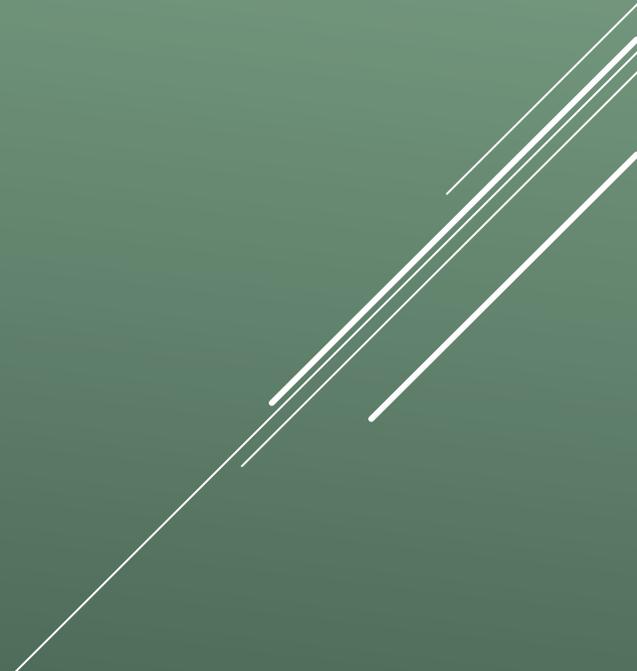
D: if managed improperly the contents can create a brownfield clean-up site



QUICK QUIZ FOR BRAKE CLEANERS/DEGREASERS SECTION

CORRECT!

Next Question





QUICK QUIZ FOR BRAKE CLEANERS/DEGREASERS SECTION

INCORRECT! - While this may be possible, it is not the reason full or partially full aerosol cans may qualify as dangerous waste

[Try Again](#)



QUICK QUIZ FOR BRAKE CLEANERS/DEGREASERS SECTION
Question 2

1. You can always find the hazardous constituents and their percentages in a product on the_____?

A: Container label

B: Internet

C: Product brochure

D: Safety Data Sheet



QUICK QUIZ FOR BRAKE CLEANERS/DEGREASERS SECTION

CORRECT! – The Safety Data Sheet will show each hazardous constituent and the percentage of that constituent in the product

Next Question



QUICK QUIZ FOR BRAKE CLEANERS/DEGREASERS SECTION

While this may sometimes be true, it is not always true

[Try Again](#)



QUICK QUIZ FOR BRAKE CLEANERS/DEGREASERS SECTION
Question 3

3. True or False: Chlorinated solvents are all known or suspected human carcinogens (cancer-causing).

True

False



QUICK QUIZ FOR BRAKE CLEANERS/DEGREASERS SECTION

CORRECT! Chlorinated solvents are all known or suspected human carcinogens (cancer-causing)

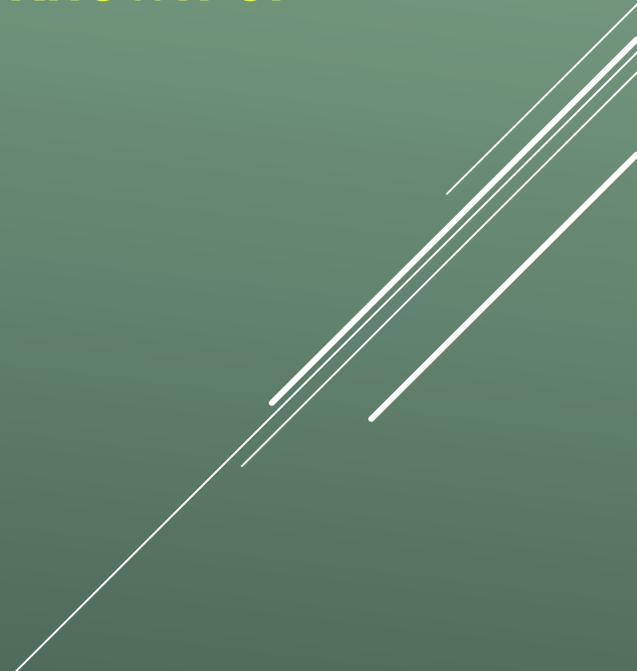
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QUICK QUIZ FOR BRAKE CLEANERS/DEGREASERS SECTION

False is not the right answer! Chlorinated solvents are all known or suspected human carcinogens (cancer-causing)

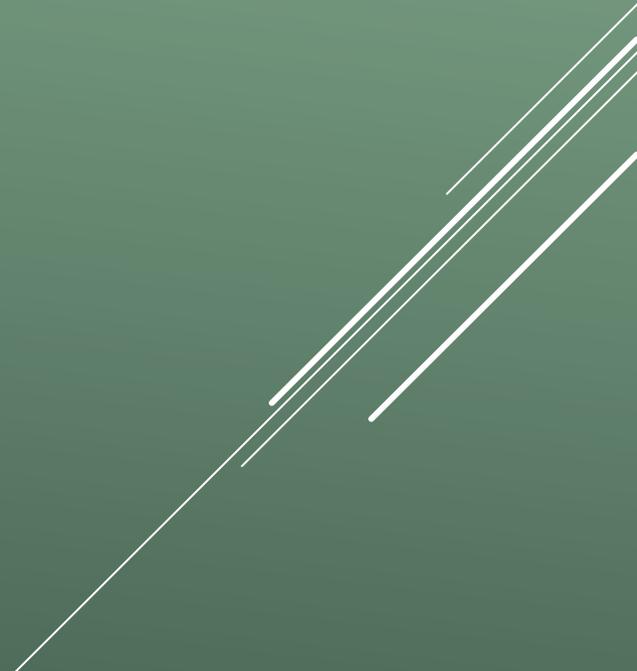
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TOPIC TWO

PARTS WASHERS





PARTS WASHERS



- The best environmental practice for brake washing is to use aqueous brake/parts washing units, which eliminates the use of both aerosol cans and solvents.
- Aqueous brake washing solutions contain compounds that are either non-hazardous or considerably less hazardous than solvents.
- With proper filtration and regular addition of fresh solution, many shops can go for years without requiring solution disposal.

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ADVANTAGES OF USING AQUEOUS PARTS/BRAKE WASHERS

- ❖ Little or no solvent vapors or aerosol mists that can be harmful to your workers' health.
- ❖ Nonflammable.
- ❖ Do not contribute to smog formation, climate change, or ozone depletion.
- ❖ No empty aerosol cans discarded as bulky, non-biodegradable trash.
- ❖ Reduces overall environmental and safety liabilities for your shop.
- ❖ Can save you hundreds of dollars per year after payback period.



MANAGING PARTS WASHER WASTES

Your business is responsible for complying with the laws about the safe handling and disposal of your waste. In Washington, hazardous waste and other kinds of waste with certain criteria are called dangerous waste. The laws that govern these kinds of waste are called the Dangerous Waste Regulations, Chapter 173-303 Washington Administrative Code (WAC).

The process of knowing whether you have dangerous waste is called designation. Designation is a big part of knowing how to handle your waste. You must designate all of your waste streams to determine whether they are dangerous. To get information about designating waste, please contact your regional Ecology office or visit Ecology's website at:
www.ecy.wa.gov/programs/hwtr/managewaste.html.



MANAGING PARTS/BRAKES WASHER WASTES

Sink-type parts washers used for cleaning smaller parts and tools have solvent tanks that usually contain one or more of these solvents:

Mineral Spirits	Stoddard Solvent
Petroleum Naptha	Citrus-Based Solvent

These spent solvents are usually ignitable, toxic, or pick up hazardous material such as heavy metals and become dangerous wastes the moment the waste tank is replaced with a fresh tank.

If the spent solvent is recycled, and your business is required to prepare a Pollution Prevention Plan in the state of Washington, you can claim “recycling credits” to reduce your Pollution Prevention Planning fee.



MANAGING PARTS/BRAKES WASHER WASTES

Best Management Practices:

- ❖ Keep different types of solvents in separate, labeled, closed containers.
- ❖ Don't mix solvents with any other waste.
- ❖ Don't mix solvents into used oil.
- ❖ Don't use spray cans over solvent tanks; it can contaminate the solvent in the tank.

To reduce the amount of dangerous waste from parts washers:

- ❖ Make solvent last longer by pre-cleaning parts with a rag or brush to remove the heaviest dirt.
- ❖ Make sure the solvent is actually too dirty to use before replacing it with new solvent.
- ❖ Keep the lid closed when not in use. This prevents accidental mixing with other chemicals and minimizes evaporation.
- ❖ Use a water-based cabinet-type parts washer if appropriate. These work like a dish washer and often do not require hazardous solvents. Test the sludge to be sure it doesn't contain regulated levels of heavy metals.



VENDOR SELECTION

Questions to ask about brake/parts washer service

1. Do you have a washer with an attached still or cartridge filter? *(This will make your solvent last longer and generate less dangerous waste. Used filters may be a dangerous waste, but still reduce the total amount of waste.)*
2. Do you offer waste disposal of the spent solution as part of the rental service?
3. How often will I need to change the solution?
4. How much will it cost to refill the unit?
5. How often will I need to change or clean the filters?
6. How should I dispose of solution and filters/wastes?



QUICK QUIZ FOR BRAKE/PARTS WASHER SECTION

Question 1

1. In Washington, wastes that are considered hazardous or meet certain other criteria are called _____?

A: Toxic Waste

B: Hazardous Waste

C: Dangerous Waste

D: Special Waste



QUICK QUIZ FOR BRAKE/PARTS WASHER SECTION

CORRECT! Wastes that are considered hazardous or meet certain other criteria are called Dangerous wastes

[Next Question](#)



QUICK QUIZ FOR BRAKE/PARTS WASHER SECTION

SORRY – That's not the correct answer for Washington State

Try Again



QUICK QUIZ FOR BRAKE/PARTS WASHER SECTION

Question 2

2. Which of the following is NOT true about aqueous parts washers?

A: Reduces Harmful Vapors

B: Can Reduce Business Operating Costs

C: Can Reduce Business Taxes

D: Is Non-Flammable



QUICK QUIZ FOR BRAKE/PARTS WASHER SECTION

CORRECT! Aqueous parts washers will not reduce your business taxes

Next Question



QUICK QUIZ FOR BRAKE/PARTS WASHER SECTION

This is true – Aqueous parts washers reduce exposure to harmful vapors and mists

Try Again



QUICK QUIZ FOR BRAKE/PARTS WASHER SECTION

This is true – Aqueous parts washers use non-flammable cleaners

Try Again



QUICK QUIZ FOR BRAKE/PARTS WASHER SECTION

This is true – Aqueous parts washers can save money after the initial payback period

Try Again



QUICK QUIZ FOR BRAKE/PARTS WASHER SECTION
Question 3

3. True or False: proper filtration and regular make-up with fresh solution can extend the life of parts washer solution up to several years, depending on frequency of use.

True

False



QUICK QUIZ FOR BRAKE CLEANERS/DEGREASERS SECTION

CORRECT! Adding new solvent to replace loss and using proper filtration can significantly extend the life of your parts washer solution

Next Topic

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QUICK QUIZ FOR BRAKE CLEANERS/DEGREASERS SECTION

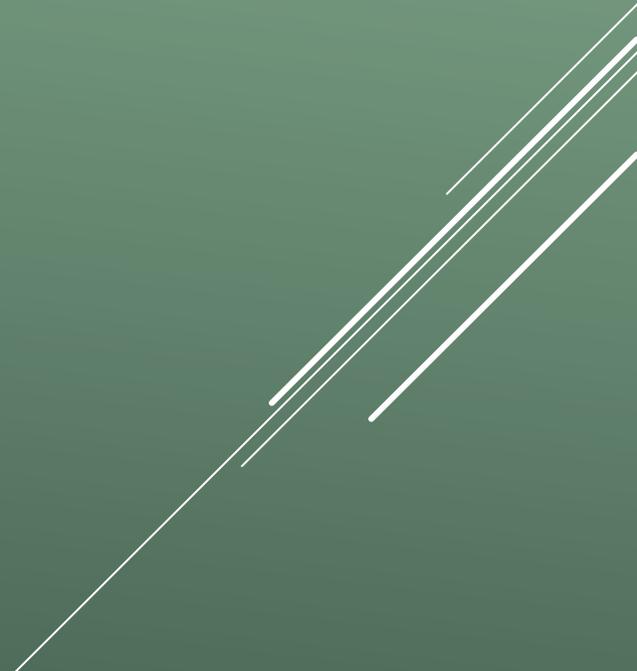
INCORRECT! Adding new solvent to replace loss and using proper filtration has been shown to significantly extend the life of your parts washer solution

[Next Topic](#)



TOPIC THREE

ANTIFREEZE



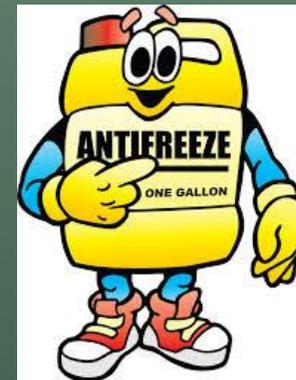


WHY RECYCLE ANTIFREEZE?

Dumping waste antifreeze is unlawful in the state of Washington: waste antifreeze may contain heavy metals such as lead, cadmium, and chromium in high enough levels to make it a regulated dangerous waste. A dangerous waste may never be dumped on land or discharged into a sanitary sewer, storm drain, ditch, dry well or septic system.

It's Cost-Effective: recycled antifreeze is less expensive than virgin antifreeze.

It Saves Resources: ethylene glycol is produced from natural gas, a non-renewable resource.





ANTIFREEZE RECYCLING

Recycle On or Off-site

Sometimes antifreeze is recycled on-site through reuse, distillation, filtration or ion exchange. On-site recyclers should note that filters from an antifreeze-recycling machine probably designate as dangerous waste. Also, dangerous-waste sludges must be tracked and properly disposed of off-site. Many send antifreeze off-site for recycling through a vendor. In some areas, a mobile recycling unit may travel to facilities.

Contain and Label Spent Antifreeze

Suitable containers for spent antifreeze may include metal or plastic barrels or jugs, in good condition. Lids must be in place at all times, except when adding or removing waste. Keep waste antifreeze free from cross-contamination with other wastes, including used oil, fuels, degreasers, or radiator flush chemicals. Keep used antifreeze equipment (funnels, pads, storage containers) separate from equipment used in other waste. Secondary containment is essential, because antifreeze is a liquid.

All containers of spent antifreeze waiting to be recycled must have a "spent antifreeze" label and a risk label reading "toxic." If reusing empty containers, remove or obliterate old labels and re-label.



ANTIFREEZE

Ethylene Glycol is the most common and abundant constituent of antifreeze products and has a special regulatory status in Washington state. Antifreeze should always be recycled. If it is not recycled, it must either be proven to be safe (rare), or handled as dangerous waste, subject to full regulation.

Recycled Antifreeze can be found in the Dangerous Waste Regulations at WAC 173-303-522.

The Dangerous Waste Regulations encourage the recycling of spent antifreeze. It is a "state-only" waste, due to its toxicity after use. However, if antifreeze is recycled, it may be exempt from most dangerous-waste regulations. It will not be counted toward generator status.

Some Antifreeze Sludges and filters from self-recyclers may still be dangerous waste, but businesses who collect antifreeze for a vendor to recycle only need to follow a few simple handling procedures detailed in the information below. However, exemptions from the dangerous waste regulations require that antifreeze be recycled properly.



ANTIFREEZE RECYCLING RECORDS

Those who generate antifreeze for recycling must keep good records. See the chart below for the types of information that inspectors will need to see.

Where Recycled	Records Needed (Keep for 5 Years)
On-Site	Record Recycling Activity: amount of antifreeze recycled, when, weight of dangerous-waste filters, and sludge shipped off-site.
Off-Site	Record amount of spent antifreeze sent for recycling, when shipped, and to whom
Mobile	Record amount of antifreeze recycled, by whom, and when.



ONSITE ANTIFREEZE RECYCLING LOG

Antifreeze Recycling Log

Keep track of the amount of antifreeze recycled on-site by recording the information on this log or in another format. Keep these records for five years.



Date	Antifreeze Collected Before Recycling	Operator Initials

Date	Sludge Weight	Operator Initials

Instructions

Businesses that recycle their antifreeze on-site are required to keep track of the amount recycled. Also, keep track of amount of sludge and any dangerous-waste filters that are sent off-site for disposal. While the use of this form is not required, it is offered as a service to antifreeze recyclers.

http://www.ecy.wa.gov/programs/hwtr/dangermat/antifreeze_recycling_log.pdf



ANTIFREEZE DO'S AND DON'TS

Do's:

- Drain antifreeze from radiators and heater cores into a recycling container as soon as possible.
- Place labels on the container that identify the contents of the container and list any risks the waste poses to employees, emergency response personnel, and the public. Use two separate containers for your spent antifreeze. Write "TOXIC" on both containers:
 - Label one "Usable Antifreeze Only," for antifreeze that can be reused in your shop without further treatment.
 - Mark the other "Spent Antifreeze Only," for antifreeze that cannot be reused without recycling.



ANTIFREEZE DO'S AND DON'TS

Do's:

- Avoid spills by keeping containers closed except when adding or removing waste. Maintain containers so they do not leak, rupture, or tip over when being opened, handled, or stored.
- Store containers on a concrete or non-porous surface.
- Use secondary containment for containers of liquid waste
- Keep spill-control equipment in a central location, accessible to employees. Train employees to use it.
- Keep volumes of spent antifreeze low by properly and routinely recycling the waste.
- Spent antifreeze filters and any particulate matter generated from recycling antifreeze must be counted and managed as dangerous waste, unless it can be shown to be non-hazardous through laboratory analysis. For laboratory contact information, go to <http://www.ecy.wa.gov/apps/hwtr/hwsd/default.htm>



ANTIFREEZE DO'S AND DON'TS

Don'ts:

- ❖ Never dispose of spent antifreeze into a sewer.
- ❖ Never dispose of antifreeze to a storm drain, septic tank, or dry well.
- ❖ Never pour antifreeze on the ground.
- ❖ Don't mix spent antifreeze with any other waste. Keep it separate.



QUICK QUIZ FOR ANTIFREEZE SECTION
Question 1

1. Best Management Practices (BMP's) include _____.

A: Store containers on a concrete or non-porous surface

B: Keep spill control equipment easily accessible

C: Never disposing of antifreeze to a storm drain or septic tank

D: All of the above



QUICK QUIZ FOR ANTIFREEZE SECTION

This statement is true, but it's not the answer we are looking for

Try Again



QUICK QUIZ FOR ANTIFREEZE SECTION

CORRECT! Statements A, B and C are all BMPs

Next Question



QUICK QUIZ FOR ANTIFREEZE SECTION

Question 2

2. Antifreeze containing _____ must be recycled or treated as dangerous waste?

A: Ethylene Glycol

B: Propylene Glycol

C: Sodium Silicate

D: Sugarcane Ethanol



QUICK QUIZ FOR BRAKE/PARTS WASHER SECTION

CORRECT! Ethylene Glycol must be recycled or treated as dangerous waste

[Next Question](#)



QUICK QUIZ FOR BRAKE/PARTS WASHER SECTION

SORRY – That's not the correct answer for Washington State

[Try Again](#)



QUICK QUIZ FOR ANTIFREEZE SECTION
Question 3

3. True or False: Chrysler, Ford, General Motors and a majority of import manufacturers have approved the use of recycled coolant, provided the recycled coolant meets their quality specifications and/or the American Society of Testing Materials (ASTM) standards.

A: True

B: False



QUICK QUIZ FOR BRAKE CLEANERS/DEGREASERS SECTION

CORRECT! Most auto manufacturers have approved the use of recycled antifreeze that meets standards

[Next Topic](#)



QUICK QUIZ FOR BRAKE CLEANERS/DEGREASERS SECTION

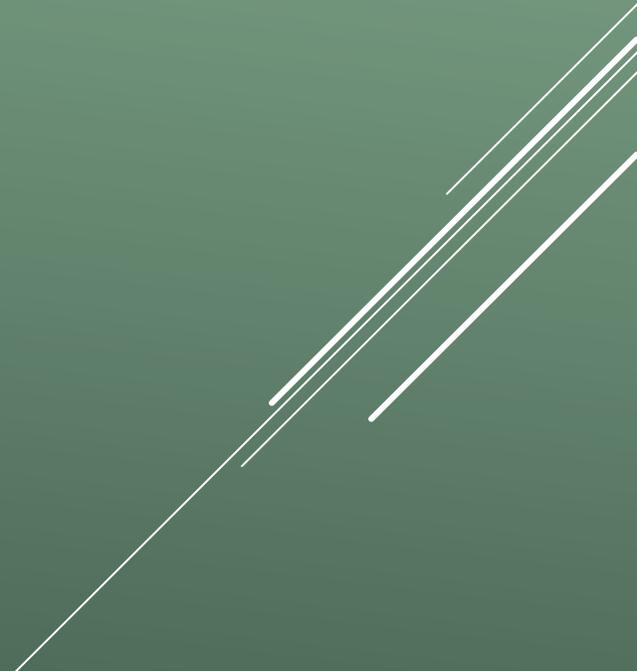
False is incorrect! Most auto manufacturers have approved the use of recycled antifreeze that meets standards

Next Topic



TOPIC FOUR

FLOOR CLEANUP





FLOOR CLEANUP



Why Is Having a Clean Floor Important?

- ❖ Protects the environment and community by minimizing or eliminating the potential for toxics entering local waterways via storm drains.
- ❖ Reduces liability.
- ❖ Better personnel retention.
- ❖ Provides safer work environment for personnel and customers.
- ❖ Generates more repeat business.
- ❖ Reduces the amount of chemicals and labor needed to clean eventual dirt and contaminant buildup on floor.

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FLOOR CLEANUP

A Clean and Safe Shop

- ❖ Tries to prevent spills from ever reaching the floor
- ❖ Immediately contains spills when they occur

To Immediately Contain Spills

- ❖ Personnel should carry rags and use them to immediately clean small spills once they occur. Do not leave the spill for someone else to clean.
- ❖ For larger spills, cleanup equipment should be clearly marked. For example, attach red flags to buckets used for spill cleanup for easy identification
- ❖ Sweep your floor with a broom every day to prevent unnecessary dirt and contaminant buildup.
- ❖ Never hose down your work area! This practice generates large quantities of contaminated wash water that is discharged to a sewer, or worse, is flushed out of a shop to a storm drain.



FLOOR CLEANUP

Chemical Reduction and Safer Alternative Selection

- ❖ Eliminate the use of powdered or granular absorbent for routine cleanup.
- ❖ Eliminate the use of cleaners and lubricants containing n-hexane (e.g. aerosol brake cleaners and degreasers).
- ❖ Use a water-based brake washing method.
- ❖ Do not contaminate cleaning solution by washing parts sprayed with chlorinated cleaners or petroleum distillates.
- ❖ Use no- or low-copper brake pads whenever possible.*
- ❖ Use longer-lasting synthetic oils.
- ❖ Purchase re-refined oil and antifreeze for use in your shop.
- ❖ Use a detergent-based rather than caustic-based solution in a hot tank.

* **Note:** In 2010, Washington State passed a law reducing the use of toxic material in automotive brake pads and shoes. Brake pads manufactured after January 1, 2021, must not contain more than 5% copper by weight.



FLOOR CLEANUP

Reuse or Recycle Dangerous Substances

- ❖ Use an industrial laundry service for shop rags and uniforms (Keep rags in a covered container and do not saturate).
- ❖ Use a rag/uniform service that recycles its wastewater.
- ❖ Recycle empty dangerous materials containers including drums).
 - Either return to supplier for refill; or
 - Recondition onsite (permit requirements may apply); or
 - Contract with drum re-conditioner.
- ❖ Recycle and reuse antifreeze onsite if you have/use large volumes.
- ❖ Crush used oil filters to recover as much oil as possible for recycling.
- ❖ Filter and reuse parts cleaning liquid onsite.
- ❖ Recycle and reuse all properly recovered refrigerant from air conditioning systems.
- ❖



FLOOR CLEANUP

Consider Sealing the Shop Floor

Sealing your shop floor with epoxy or other suitable sealant can be expensive, but there are several benefits by doing so. An epoxy-sealed floor:

- ❖ Will not absorb spills the way unsealed concrete does
- ❖ Makes spill cleanup easier. (You can squeegee small spills into a dustpan and pour liquid into an appropriate drum.)
- ❖ Requires less water and time to clean
- ❖ Lasts for years and reduces long-term liability for cleanup of a contaminated shop floor and soil below; and
- ❖ Looks great to workers and customers alike.



FLOOR CLEANUP

Floor Sweep (Grease Sweep, “Kitty Litter”, Rice Hull, etc.)

- ❖ These absorbents should be used only when the spill can not be cleaned with shop rags or dedicated mops.
- ❖ Use a hydrophobic mop.
- ❖ Restrict the use of these absorbents to cleaning up gasoline, solvent, or other dangerous waste chemical spills. Manage these contaminated absorbents as dangerous waste.
- ❖ Collect all metal filings, dust, and paint chips from grinding, shaving, and sanding, and dispose of properly. Collect all dust from brake pads separately and dispose of properly. Never sweep these wastes outside.
- ❖ Use dry cleaning methods (i.e. sweeping, vacuuming) to prevent the discharge of pollutants into the storm drain conveyance system.
- ❖ If cleaning agents are used, select biodegradable products.



FLOOR CLEANUP – SECONDARY CONTAINMENT

Spill Prevention Equipment - Secondary Containment

Water troughs can be used for secondary containment (available from your local feed store). Insert waste drums into the trough. Ensure that the secondary containment trough will hold at least 110% of the capacity of the largest drum with liquid waste.

Benefits of using troughs as secondary containment can include:

- ❖ Cost effectiveness. Troughs are relatively inexpensive
- ❖ Water-tightness. Since troughs are used as drinking containers for livestock, they are engineered to be leak-free. However, the troughs must be checked regularly to ensure they remain water-tight
- ❖ Clearly mark all stored materials
- ❖ Keep troughs clean and dry



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FLOOR CLEANUP

Funnel drum covers

- These items minimize spills when transferring liquids from one container to another.
- They also can be used to drain oil filters.

BMP - Bulk, pressurized, overhead fluid delivery (available from all major motor oil manufacturers)

- Used for oil changes and lube jobs to reduce spills.
- Allows these jobs to be done more quickly.
- The equipment is often provided by the oil manufacturer at no charge.





QUICK QUIZ FOR FLOOR CLEAN-UP SECTION

Question 1

1. The benefits of sealing your shop floor are:

A: It will not absorb spills the way unsealed concrete does

B: It makes spill cleanup easier

C: It improves shop appearance to workers and customers alike

D: All of the above



QUICK QUIZ FOR FLOOR CLEAN-UP SECTION
Question 1

CORRECT! Statements A, B and C are all benefits of sealing your shop floor

[Next Question](#)



QUICK QUIZ FOR FLOOR CLEAN-UP SECTION
Question 1

This statement is true, but it's not the answer we are looking for

[Try Again](#)



QUICK QUIZ FOR ANTIFREEZE SECTION
Question 2

2. True or False: Absorbents used to clean up gasoline, solvent, or other chemical spills must be managed as dangerous waste

A: True

B: False



QUICK QUIZ FOR FLOOR CLEAN-UP SECTION
Question 2

CORRECT! Absorbents used to clean up gasoline, solvent, or other chemical spills must be managed as dangerous waste

[Next Question](#)



QUICK QUIZ FOR FLOOR CLEAN-UP SECTION
Question 2

INCORRECT! In fact, absorbents used to clean up gasoline, solvent, or other chemical spills must be managed as dangerous waste

[Next Question](#)



QUICK QUIZ FOR FLOOR CLEAN-UP SECTION
Question 3

3. Which of the following is not true? Secondary containment for waste containers:

A: Must be able to contain 110% of the largest container volume

B: Must be leak-proof

C: Must be commercially designed for secondary containment

D: Must have all contents clearly marked



QUICK QUIZ FOR FLOOR CLEAN-UP SECTION
Question 3

CORRECT! While there are effective and attractive commercial options available, the fact is that any method that meets the requirements can be effectively used as secondary containment

[Last Topic](#)



QUICK QUIZ FOR FLOOR CLEAN-UP SECTION
Question 3

INCORRECT! Secondary containment must be able to contain 110% of the volume of the largest container

Try Again



QUICK QUIZ FOR FLOOR CLEAN-UP SECTION
Question 3

INCORRECT! Whatever you use as secondary containment must be leak-proof. That's the point of secondary containment!

Try Again



QUICK QUIZ FOR FLOOR CLEAN-UP SECTION
Question 3

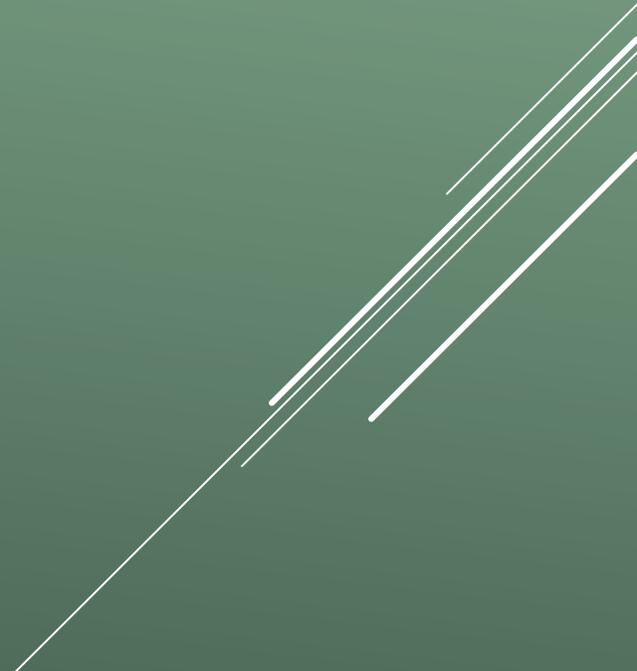
INCORRECT! All containers are required to have the contents clearly marked

Try Again



TOPIC FIVE

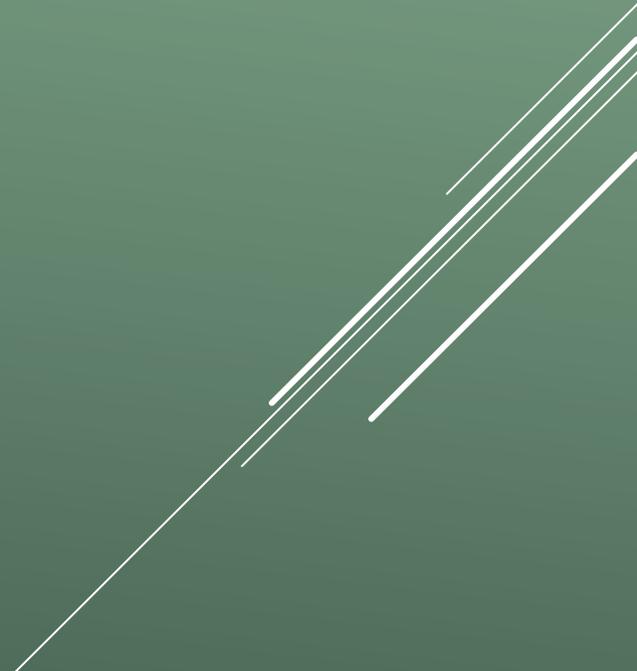
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City of Seattle Vehicle Maintenance

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Training Module Completed!

Thank You For Your Participation

ADDITIONAL RESOURCES

Washington Department of Ecology – Pollution Prevention (Automotive) Staff

John Blunt	509-329-3525	John.Blunt@ecy.wa.gov	Eastern Regional Office
Scott Lamb	425-649-7268	Scott.Lamb@ecy.wa.gov	Northwest Regional Office

Washington Department of Ecology – Auto Repair Web Resources:

<http://www.ecy.wa.gov/programs/hwtr/p2/sectors/auto1.html>

Coordinating Committee for Automotive Repair (CCAR)

The mission of CCAR is to provide consistent and compliant Safety, Pollution Prevention, and HazMat training, as well as Education and Environmental best practices for the global motor vehicle industry.

Website: <http://ccar-greenlink.org/>

For more information, contact PPRC at 206-352-2050 or at www.pprc.org