

**Hazardous  
Waste  
Factsheet**

*“Automatic aqueous parts washers can reduce labor costs and increase productivity.”*

# Aqueous Parts Washers

Many solvent users are seeking alternative methods for parts cleaning and surface preparation. Regulatory pressures and safety concerns have led to a search for less hazardous cleaners. Many companies have already converted to aqueous (water-based) cleaning systems to reduce costs and regulatory requirements while reducing the liability of waste disposal, air emissions, and worker safety.

## What’s wrong with petroleum solvents?

Mineral spirits and other chlorinated solvents (commonly brake cleaners) are used for parts cleaning because of their ability to quickly dissolve oil, grease, grime, and burnt-on carbon. Although these solvents are very effective, their continued use raises significant environmental, health, and economic concerns:

- Chlorinated solvents can contaminate used oil, resulting in costly disposal.
- Petroleum and chlorinated solvents contain chemicals that may be toxic if inhaled or may increase the risk of cancer.
- Petroleum solvents evaporate quickly, making worker exposure difficult to control.
- Solvent cleaning units are often the largest source of a facility’s hazardous waste.
- Some solvents leave an oily residue, requiring additional cleaning prior to painting or finishing.

## How does an aqueous parts cleaner work?

Aqueous cleaning products are water-based solutions that, unlike petroleum solvents, are nonflammable and non-hazardous. Instead of dissolving grease, aqueous parts washer units utilize heat, pressurized water, soap action, and agitation to break up dirt and grease. Although they clean differently, aqueous cleaners perform as well as solvents in most cases. Some units are even fully automated, thereby reducing labor costs and increasing productivity!

## Types of aqueous cleaning units:

**Spray Cabinets:** Aqueous spray cabinets clean parts by spraying heated solutions at high pressures within an enclosed cabinet. Spray cabinets are available in a full range of capacities from small to very large.

<u>Advantages</u>	<u>Disadvantages</u>
<ul style="list-style-type: none"> <li>• High level of cleaning performance</li> <li>• Ideal for heavily soiled parts</li> <li>• Large cleaning capacities available</li> <li>• Automatic units reduce labor costs</li> <li>• Lower waste management costs</li> <li>• Excellent for aluminum parts</li> </ul>	<ul style="list-style-type: none"> <li>• Moderate to high initial start-up cost</li> <li>• Uses more electricity than solvent unit</li> <li>• May require rust prevention for steel parts (rust inhibitors, additional drying)</li> </ul>

Thurston County Public Health and Social Services Environmental Health Division

2000 Lakeridge Dr. SW  
Olympia, WA 98502-6045

Hazardous Waste Hotline:  
360-786-5457

TDD Line: 360-754-2933

<http://www.co.thurston.wa.us/>



**Ultrasonic units:** Ultrasonic units consist of a steel tank filled with an aqueous solution and are equipped with transducers along the bottom or sides of the tank. The transducers generate high frequency sound waves that produce an intense microscopic scrubbing action on parts surfaces, including interior surface areas.

<u>Advantages</u>	<u>Disadvantages</u>
<ul style="list-style-type: none"> <li>• Ideal for hard to clean parts with blind holes or hidden surfaces (transmissions, carburetors)</li> <li>• Very high performance cleaning</li> <li>• Significant reduction in cleaning labor</li> </ul>	<ul style="list-style-type: none"> <li>• High initial start-up cost</li> </ul>

**Immersion units:** Immersion units consist of a rectangular tank filled with an aqueous solution and a removable false bottom. These units allow parts to be completely submerged in the solution to loosen soils and reduce scrubbing time.

<u>Advantages</u>	<u>Disadvantages</u>
<ul style="list-style-type: none"> <li>• Reduces scrubbing time and reduces labor costs</li> <li>• Allows for extended soaking time</li> </ul>	<ul style="list-style-type: none"> <li>• More expensive than drum top units</li> <li>• May be difficult to clean heavy or stubborn soils</li> </ul>

**Drum top units:** Aqueous drum top units are used for manual cleaning of parts in the same way as conventional solvent units. Some units utilize microbes in the aqueous solution to degrade oils and organic contaminants, which can significantly extend solution life. In addition, microbes are safe and pose no risk to employees.

<u>Advantages</u>	<u>Disadvantages</u>
<ul style="list-style-type: none"> <li>• Ideal for light duty cleaning activities</li> <li>• Lower initial start-up cost</li> <li>• No toxic vapors, less irritating to skin</li> <li>• Minimal waste production</li> </ul>	<ul style="list-style-type: none"> <li>• Microbial units require more maintenance to keep microbes alive</li> <li>• Difficult to clean heavy or stubborn soils</li> <li>• Not suitable for large parts</li> </ul>

## Managing Aqueous Cleaning Wastes

Since aqueous waste is typically less toxic than petroleum solvents, waste management is often easier and less expensive. How you manage your spent aqueous waste depends on the type of cleaning solution used, type of equipment, and the type of wastewater treatment system at your facility (i.e. onsite septic, oil/water separator, municipal sewer system). *It is illegal to dispose of any parts washer solutions into drywells, onsite septic systems, storm drains, or onto the ground.*

- **Onsite septic systems:** No type of industrial waste may ever be disposed into on-site septic systems. Doing so may contaminate your septic tank or drain field and disrupt the normal biological processes in a working system, which may result in costly system failure.
- **Oil/water separators:** Since parts washers emulsify oils and greases, disposal of aqueous solution into an oil/water separator is not effective. When emulsified, oils are not separated and will simply pass through the system.
- **Municipal sewer system:** In some cases, aqueous solutions may be disposed into the municipal sewer system. However, special permission is required from the sewer utility, who may also require laboratory testing of the waste. *Always contact your municipal wastewater utility before utilizing this disposal method.*
- **Evaporation of aqueous solutions:** Since most aqueous solutions do not contain volatile organic compounds (VOCs), they may be evaporated, leaving only a smaller amount of sludge for disposal. Some parts washers may contain special evaporator units for this specific purpose. *It is illegal to evaporate petroleum solvents for disposal purposes.*

- **Disposal by hazardous waste vendor:** Utilizing a waste disposal vendor is the preferred method for managing aqueous solutions. Since aqueous solutions are less toxic than petroleum solvents, disposal costs are generally less. A recent study by the Washington Department of Ecology found that large waste vendors typically charge approximately 1/3 less for aqueous solutions. Furthermore, utilizing a licensed vendor reduces your liability and ensures that the waste is properly disposed.
- **Disposal of aqueous sludge:** Tests have shown that aqueous sludge typically contains toxic heavy metals and therefore, should not be disposed into the normal trash. It is recommended that all sludge be managed as hazardous waste.
- **Other types of waste:** Waste such as skimmed oil sludge and solution filters should be managed as hazardous waste. *The Washington Department of Ecology does not allow skimmed oil or sludge to be mixed with used oil.*

## Maximizing Aqueous Solution Life

With proper management, aqueous cleaning solutions can last longer than petroleum solvents. Extending the life of an aqueous solution will save you money by reducing your chemical purchase and waste disposal costs. Doing the following will help maximize the life of your aqueous solutions:

- **Filter the solution:** Filters, typically cartridge filters, are used to remove solids as small as a few microns in size.
- **Perform oil skimming:** Oil skimmers remove free-floating oil from the solution, reducing the amount of oil residuals left on parts and significantly extending solution life.
- **Change solution only when necessary:** Change the solution only when the cleaning effectiveness declines. Do not change solutions on a scheduled, “need it or not” basis.
- **Maintain solution concentration:** Perform chemical additions as needed to maintain the cleaning strength of the solution. Some vendors may offer easy-to-use test kits to measure the concentration and determine when chemical additions are necessary.
- **Accept solution discoloration:** Many aqueous solutions turn gray or brown during use, but this discoloration does not affect its cleaning ability. Do not change cleaning solution simply because it looks dirty.

## Equipment and Waste Disposal Vendors

Vendors offer a wide variety of services that can assist with all of your parts washing needs. Some vendors offer equipment leases, service contracts, as well as waste disposal services. They can also evaluate your specific needs and make recommendations to help maximize your dollar.

Company Name	Phone	Website	Equipment Sales/Lease	Chemical Sales	Waste Disposal
Advanced Environmental Solutions	(800) 275-3549	www.advenvironmental.com	X	X	
Arcom Oil	(800) 831-5243	none			X
Ben's Cleaner Sales	(800) 446-8778	www.benscleaner.com	X	X	
Clean Harbors	(253) 288-2814	www.cleanharbors.com			X
Cuda Washington, Inc.	(866) 344-8144	www.cudausa.com	X	X	X
Emerald Services	(888) 832-3008	www.emeraldncw.com	X	X	X
Inland Technologies	(800) 552-3100	www.inlandtech.com	X	X	
PSC Environmental Services	(800) 547-2436	www.pscnow.com			X
Safety-Kleen	(253) 939-2022	www.safety-kleen.com	X	X	X
Thermofluids, Inc.	(800) 350-7565	www.thermofluids.com	X	X	X

## Frequently Asked Questions

### **Question #1: Are aqueous parts washers more expensive?**

Answer: Companies can reduce labor costs by utilizing automatic aqueous parts washers. Start-up costs may be greater initially, but many units can pay for themselves with increased productivity. A local car dealership in the Olympia Auto Mall prefers an automatic unit, since it allows mechanics to continue working while the parts washer cleans by itself.

### **Question #2: A supplier says that a cleaner is completely biodegradable. Does this mean I can dispose of it down the drain?**

Answer: Not necessarily. "Biodegradable" does not mean the same thing as "non-hazardous." Biodegradable cleaners may still contain regulated chemicals that classify them as a dangerous waste in the State of Washington. Other "biodegradable" cleaners may be highly acidic or caustic, which will also result in a regulated waste (pH greater than 12.5 or less than 2). Keep in mind that even truly non-hazardous cleaners can pick up hazardous contaminants during the cleaning process. Always contact your local wastewater utility before disposing any waste into the drain.

### **Question #3: Can rusting be a problem?**

Answer: Rust can be minimized by simply drying the part quickly. Commercial rust inhibitors can also be added to aqueous cleaners to reduce rust formation.

### **Question #4: I just cleaned a part using only hot water, without cleaning solution. Can I dispose of the wastewater into my septic system?**

Answer: No. The water may now be contaminated with oils, solvents, or heavy metals. No type of industrial wastewater may ever be disposed into on-site septic systems.

### **Question #5: Aqueous parts washers hold more cleaning solution than my petroleum solvent parts washer. Wouldn't it be better to stick with my old solvent unit?**

Answer: Aqueous washers may produce a greater volume of waste, but that waste is less toxic and may be treated on site by evaporation or disposed into the sanitary sewer (only with permission from the local utility). Unlike flammable or toxic petroleum solvents, disposal of non-hazardous aqueous waste is exempt from Washington Department of Ecology dangerous waste reporting requirements.

### **Question #6: You mentioned that aqueous solutions and sludge can be contaminated by toxic metals, oils, or other solvents. How do I determine if my aqueous waste is a regulated dangerous waste?**

Answer: A laboratory can analyze a sample of your waste to determine if it is non-hazardous or a regulated waste. This may be worthwhile for larger volumes of waste, since it could reduce disposal costs. However, for smaller volumes of waste such as sludge and filters, it may be less expensive to just assume that it's hazardous and dispose of it accordingly. It all depends on the volume of waste, your vendor's disposal rates, type of cleaners, and the individual cleaning processes. Your hazardous waste vendor can help you make this decision.

For any questions regarding wastewater discharge regulations, please contact LOTT Alliance at (360) 664-2333, extension 1108. For questions on small business hazardous waste, contact the Business Pollution Prevention Program at (360) 786-5457, Monday through Friday during regular business hours or TDD (360) 754-2933. or visit: <http://www.co.thurston.wa.us/health/ehhw/index.html>

