

# NEVADA SMALL BUSINESS DEVELOPMENT CENTER BUSINESS ENVIRONMENTAL PROGRAM

CS-FY9501003

## ALTERNATIVE CLEANER SUBSTITUTION AT WASHOE COUNTY SCHOOL DISTRICT

### Waste Reduction Case Study

#### PROJECT

Washoe County School District received grant funding from the Nevada Division of Environmental Protection (NDEP) to switch from a low-flashpoint/hazardous waste solvent to a high flashpoint alternative cleaner to be used in degreasing operations for routine automotive maintenance and repair work. Prior to switching to an alternative cleaner, Washoe County School District was using solvent in parts cleaning sinks at three of their maintenance facilities (Getto Transportation, Valley Transportation and Reed High School) and paid to have each batch of solvent removed for off-site management. Along with the alternative cleaner, Washoe County School District purchased new solvent sink systems that constantly filter the alternative solvent. At the Reed High School facility, the existing sink was retrofitted with a filtration unit. The filtration system removes the suspended solids and contaminants, which dramatically extends the bath life of the solvent. Not only does this process allow Washoe County to save money on the amount of raw product purchased, it also reduces the amount of hazardous waste generated and shipped off-site.

#### BACKGROUND

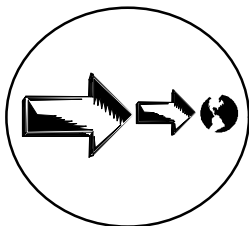
Waste solvents used for degreasing in the automotive repair shops are often managed as a hazardous waste due to the low flashpoint of the solvent as well as the oils, greases, and heavy metals pulled off the parts through cleaning. Under Federal and State regulations, if a waste has a flashpoint of less than 140 degrees Fahrenheit, it is considered an ignitable hazardous waste. The flashpoints of most naphtha-based solvents traditionally used in automotive and heavy equipment maintenance degreasing are between 105 and 120 degrees Fahrenheit, hence the solvents are considered ignitable hazardous wastes. Many automotive repair facilities contract with an outside solvent management firm that supplies solvent and picks it up for off-site management when it is spent. Under this management contract, a business' choice is limited as to how often the waste solvent is changed out and raw solvent is supplied. Each time a solvent sink is changed out under these arrangements, a business is paying for both the new raw solvent provided and for the waste solvent to be recycled and disposed of. Even though the business hires an outside firm to provide raw solvent and manage waste solvent, the business is still responsible for the hazardous waste generated.

In the past, Washoe County School District had five Safety-Kleen tanks for degreasing at the three facilities. Three of the solvent tanks were changed out every two months, the other two were changed every five weeks by the solvent management company. Washoe County School District spent approximately \$4,550 a year and generated approximately 624 gallons of waste solvent per that was managed as a hazardous waste.

#### TECHNOLOGY

Washoe County School District purchased three Zep Super Brute tank and filtration systems and Zep Dyna 143 alternative cleaner. Zep Dyna solvent has a flash point of 143° F. The Zep system provides a traditional solvent sink to hold the solvent for degreasing but also supplies a compact 10 micron spun polypropylene filter cartridge that attaches to the side of the tank. When the tank is in use, the solvent is constantly being filtered to remove suspended particles and contaminants. When the filters become loaded with contaminants, they are replaced but the alternative cleaner is constantly polished and does not need to be changed out on a regular basis. Occasionally, the solvent is passed through the ZEP Dyna external reclaim system to polish the solvent. The external filter system is made up of calcined clay and helps to remove oil, grease and other contaminants from the solvent. The filter medium in the ZEP Dyna external reclaim system needs to be changed after filtering about 75 to 100 gallons of solvent. Many businesses that have switched to an alternative solvent, use the solvent for 18 to 24 months or longer before change out. Instead of purchasing new solvent and paying to dispose of waste solvent once every two months, Washoe County School District is generating only spent filters (approximately two filters a month) and adds 24 gallons per year of make-up cleaner due to drag-out and evaporation.

*"This is a worthy project that has reduced waste," says Charlie Fong of Washoe County School District, "it is important however, to try several different solvents from different manufacturers and use the one that your employees prefer."*



*This case study was developed by the Business Environmental Program of the Nevada Small Business Development Center with funding provided by the Nevada Division of Environmental Protection.*



Two existing solvent tanks were fitted with a *Bio-T* filtration units. The *Bio-T* filtration units are available in a retrofit kit with includes filter housing, mounting bracket, hose and filter canister with directions to assemble. The filter canister is 10 inches long and will filter particles down to 10 microns. The solvent in these tanks were switched to Dyna 143 from Safety Kleen’s 105 solvent.

**WASTE MANAGEMENT**

Prior to switching over to an alternative cleaner, Washoe County School District was generating approximately 624 gallons of spent solvent per year which was handled as a hazardous waste. With the new system the routine waste generation is reduced to spent filters and occasional spent solvents. Washoe County School District had a spent filter from the filtration system analyzed by the 7-11 Toxicity Characteristics Leaching Procedure (TCLP). Laboratory results indicate that the filters are not a hazardous waste, so Washoe County School District is able to dispose of their waste filters as non-hazardous solid waste. Business that generate waste filters from a solvent filtration system should have a spent filter tested by a laboratory to determine if the used filters are hazardous waste. After using their new alternative cleaner system for over a year, Washoe County School District has had to change out the alternative cleaner once. Washoe County School District had a laboratory run a 7-11 TCLP on the waste solvent. The solvent passed the TCLP test, however, it had been contaminated with brake cleaner which had been sprayed on parts over the solvent sink. The brake cleaner contained 35 to 40 percent toluene, and the toluene showed up on the lab analysis of the solvent. Since the brake cleaner contains more than ten percent toluene, it is considered an F-listed solvent and since it was sprayed into the solvent sink (and mixed with the non-hazardous cleaner) the entire mixture needed to be handled as hazardous waste. “The solvent gets cross contaminated with toluene due to certain other degreasers we use on dirty bearings prior to cleaning them with the Zep solvent,” says Charlie Fong, Risk Manager, at Washoe County School District, “currently we clean our brakes by spraying the brake cleaner on the brakes held over the solvent tank; we are hoping to change this practice and eliminate having to dispose of this as a hazardous waste.”

**COST SAVINGS**

In the past, Washoe County School District was generating approximately 624 gallons of waste solvent per year that was being managed as an ignitable hazardous waste at a yearly combined cost of \$4,550. The initial costs associated with switching over to an alternative cleaner included 3 Zep Super Brute tanks with filtration (\$1115 per unit) and 2 Zep Dyna external filtration units (\$500 each), two Bio-T external filtration retro-fit units (\$125 each) and 330 gallons of Dyna 143 cleaner (275 gallons @ \$7.25 per gallon for a cost of \$2400); total start up costs amounted to \$6,745. NDEP provided half the amount in grant money. A pack of 2 filters costs \$19.25 and the 24 gallons of make up solvent \$192 per year. The yearly operating cost is \$423 (12 filter packs at \$19.25 and 24 gallons of makeup at \$8 a gallon). Washoe County estimates one 55 gallon drum of spent solvent to dispose of per year at \$200 a drum. **It will take Washoe County School District approximately 1.7 years to break even on the investment made in the new equipment and alternative cleaner. After that, they will save approximately \$3,927 per year.** The TCLP tests on the spent filter and spent solvent cost Washoe County School District \$921, this is an one time cost. The Washoe County School District also reduced their generator status to Conditionally Exempt Small Quantity Generator (CESQG) at all of the three sites, which resulted in significant recordkeeping and reporting cost savings.

**COMMENTS**

There are a variety of alternative cleaners on the market. They range from pure water, to combinations of water, hydrocarbons, detergents, saponifiers, surfactants, corrosion inhibitors, and special additives. Ideally, an alternative cleaner will have a flashpoint above 140 degrees Fahrenheit so that it will not need to be managed as an ignitable hazardous waste. Selecting an alternative cleaner can be a challenge; what works for one shop may not work for another and what some employees are happy with, others may not be. "This is a worthy project that has reduced waste," says Charlie Fong of Washoe County School District, "it is important however, to try several different solvents from different manufacturers and use the one that your employees prefer."

Washoe County’s experience shows that retrofitting an existing solvent tank can be an economical option to purchasing new solvent tanks. The County’s project also demonstrated problems associated with contamination of alternative cleaners. Some possible solutions to Washoe County’s problems with toluene contamination include switching to brake cleaners which do not contain toluene and/or modifying work practices so brake cleaner is not introduced into the solvent sinks. Congratulations Washoe County School District; Charlie Fong can be reached at (702) 348-0343.

**ALTERNATIVE CLEANER SUPPLIERS**

Inland Technology 401 East 27th Street Tacoma, WA 98421 (800) 552-3100	Zep Manufacturing POB 15404 Las Vegas, NV (702) 367-4288	Ecolink-Sentry 1481 Rock Mountain Blvd. Stone Mountain, GA 30086 (800) 886-8240
PurChem 614 Chris Ave. Elko, NV (702) 753-7033	Enviro-Motive Service Institute 220 W. Santa Ana Street Anaheim, CA 92805 (714) 778-5155	

**BIO-T RETROFIT FILTER SYSTEM KITS**





Mamco International Corporation  
1042 Country Club Drive, P.O. Box 5  
Moraga, CA 94556  
(800) 442-4686

*Note: The above listing of vendors and manufacturers is provided for informational purposes only. This list is provided as a service to Nevada businesses in order to assist them with waste minimization. This listing of businesses is not to be construed as an actual or implied endorsement of their products or services. Additionally, other businesses which provide similar products and services may not be listed; this omission is not to be construed as an actual or implied denouncement of those businesses.*



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