

# ANTIFREEZE

CITY OF ABILENE—STORMWATER SERVICES DIVISION

Many people know that antifreeze (ethylene Glycol) is poisonous to humans and animals; however, they may not know that flushing antifreeze into a storm drain can have serious consequences for the environment as well. Ethylene glycol and propylene glycol are used as coolants for automotive engine systems because they

**Flushing antifreeze into a storm drain will pollute waterways.**

lower the freezing point of water and are less corrosive and flammable than other coolant compounds. While propylene glycol has become a popular, less toxic substitute for ethylene glycol, it is still combustible, toxic if ingested, and will harm the environment. Other lesser known antifreeze compounds such as methanol and isopropanol (used as gasoline additives in fuel lines and carburetors) also have flammable and toxic properties.

The Stormwater Utility Division is responsible for preventing or stopping illegal pollutant discharges to the city storm drainage system or waterways as mandated by the City's permit to discharge under the Texas Pollutant Discharge Elimination System (TPDES) under provisions of Section 402 of the of the Clean Water Act

and Chapter 26 of the Texas Water Code. This fact sheet provides information to automotive repair shop operators on how antifreeze should be used and disposed of without polluting Abilene's valuable water resources.

## The Problem

### Improper flushing of radiators.

Radiators are flushed when they overheat and during fluid changes. It is illegal to discharge the antifreeze wastewater onto the ground or into a storm drain where it is carried to a stormwater pond, creek or lake. When antifreeze compounds enter a storm drain pipe, they vaporize in the confined space creating a potential explosion or fire hazard. Ethylene glycol has a sweet taste making it attractive to pets and young children, another reason its discharge to the ground is prohibited. Both ethylene and propylene glycols

are toxic to humans, animals, and aquatic life. Waste antifreeze contains heavy metals from wear and tear of engine parts. Discharges of waste antifreeze on the ground or to a stormwater pond results in expensive soil and sediment clean-up. The Stormwater Utility Division provides a fact sheet explaining the proper use of stormwater ponds.

### Improper cleaning of radiators.

During radiator repair, the radiator is removed from the vehicle and thoroughly cleaned. This is often accomplished by pressure washing with a hose (using plain water and/or a soap) or dipping in a vat of heated caustic cleaner to remove mineral accumulations. If the pressure washing is done outside in an uncontained area or inside adjacent to a storm drain, the contaminated wastewater flows to the storm sewer and pollutes the receiving streams and lakes.

## Did you know...

**Two ounces of ethylene glycol (antifreeze) can kill a dog, one teaspoon can kill a cat, two tablespoons a child, and three ounces can kill an adult.**



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## **Improper disposal of tank wastewater.**

Automotive shops that repair radiators contaminate their leak check tank water during immersion of radiators, and if soldering is done over the tank. The tank water becomes contaminated with antifreeze, loose debris, and heavy metals (e.g. lead, copper, and zinc). The boil-out tank contains the same contaminants found in the leak check tank plus the caustic cleaning agent. As a result, a significant amount of wastewater and sludge is generated when the tanks need to be emptied and refilled with clean water. Dumping these hazardous wastes on the ground results in expensive cleanups, stiff fines, and threats to public health and safety.

## **Mishandling Spills.**

Automotive shops work with leaking and overheated vehicles. Leaving antifreeze spills pooled on the ground not only endangers pets and humans, but pollutes the environment as well.

## **Unknown drain connections.**

A few properties in Abilene have drains that connect to the storm sewer system. Some properties have oil/grit separators or storm-water ponds, and even storm drains inside the shop. Some business operators do not know the purpose of these structures, especially if they existed prior

to their purchase or lease of the property. If you do not know what it is or where it connects, chances are you cannot prevent it from being misused. Some people incorrectly assume that these devices are receptacles for waste disposal. This is not their function.

## **Vehicle repair and waste storage near storm drains or stormwater ponds.**

Chances for an illegal discharge are greatly increased when chemicals are handled (e.g. fluid changes) or stored near interior and exterior drains connected to the storm sewer system. Many businesses in Abilene have drains inside work and storage areas. Storm sewer systems provide a direct path to our creeks and lakes for untreated wastewater containing antifreeze. Costly maintenance, and sampling and disposal of sludge/wastewater is required if antifreeze is spilled or discharges to sewers, storm-water ponds or oil/grit separators.

## **Improper de-icing activities.**

During freezing weather conditions, antifreeze is sometimes used for de-icing of walkways and drives. If not used carefully, de-icing chemicals will discharge to vegetation or a storm drain, polluting the environment.

## **The Solution:**

### **Use the least toxic product available.**

Doing this not only protects the environment and prevents costly cleanups should a spill occur, but it significantly reduces disposal costs as well. Use propylene glycol as a less toxic antifreeze alternative to the more toxic ethylene glycol. Instead of antifreeze, sand can be used to make a slippery surface safer, then swept up for proper disposal.

### **Contain radiator cleaning wastewater for proper disposal.**

Construct a designated containment basin indoors for wastewater collection prior to disposal, or install a “closed loop” recycling unit that has a built in flush booth. Final rinse water, after flushing is completed may be discharged to the sanitary sewer system under certain conditions. Contact the City of Abilene’s Water Department for more information and approval.

### **Reduce, reuse, recycle.**

Reuse antifreeze removed from vehicles whenever possible, otherwise, collect it for recycling by a commercial service. Antifreeze can be characterized as a hazardous material, therefore, recycling prevents costly hazardous waste disposal.

Reuse as much radiator rinse-water and tank wastewater as possible to reduce disposal costs. One way to prolong the life of the radiator repair wastewater is to use a “closed loop” recycling system that can be purchased and installed by a number of service providers. A variety of recycling systems are available, all based

## **Did you know...**

*In a single year, Americans improperly discard over 21 million lbs. of antifreeze.*



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upon the principle of separating reusable water from the solids and oils. Separation is accomplished by using equipment like settling tanks, oil skimmers, and filters. The wastewater is effectively reduced to a much smaller volume (sludge or power). The skimmed oil is collected for recycling. The dried material contains the heavy metal deposits and most likely will require disposal as a hazardous waste. The recycling system effectively reduce the amount of hazardous waste generated, that require costly disposal. Be aware that hazardous materials handled and stored above specific quantities may require a permit through the TCEQ. Their phone number is provided at the end of this fact sheet.

Leak check tank water use can be prolonged by adding a neutralizing agent to adjust the pH from acidic to a neutral level. While prolonging the life of the leak check tank wastewater is ideal, extending it indefinitely is impossible. A recycle system is ideal due to the water savings (wastewater reuse); however, there are other ways to reduce wastes generated at your shop. Waste minimization is also accomplished by evaporating leak check tank wastewater in the boil-out tank when it's time to change out the tank water. Removing used flux from the leak check tank for recycling reduces the amount of hazardous waste generated. The sludge accumulated in the boil-out tank must eventually be disposed of, typically as a hazardous waste by a certified waste hauler. Do not dispose of any wastewater in a storm or sanitary drain, oil/grit separator, stormwater pond, trash container, or on the ground.

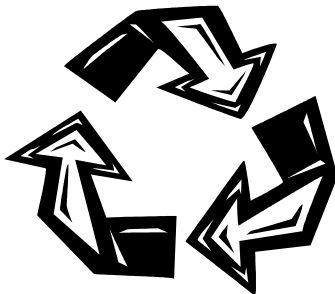
## **Clean up spill properly.**

Prevent antifreeze spills whenever possible. Use drip pans to catch leaking or changed fluids. Repair leaks promptly. Avoid leaving fluid filled drip pans exposed outside to rain and subject to being accidentally dumped over. If spills occur, clean them up immediately with absorbent material (e.g. clay, kitty litter, Oil Dri, sawdust, shop rags, etc.), or with a mop and bucket. Never leave spills unattended or flush them with water. Have a posted site-specific spill contingency giving step-by-step instructions in the event of a release. Have Material Safety Data Sheets (MSDS) for each chemical used at the facility readily available. The chemical manufacturer supplies these documents free of charge. The manufacturer's phone number is usually on the product label.

## **Know your drainage.**

Most exterior and some interior drains connect to our city's storm sewer system. Only clean rainwater may enter our storm sewer system according to Federal law. If you are unsure to which sewer system your drains

*Radiator repair shops  
can reduce disposal  
costs by installing  
"closed loop"  
recycling systems.*



are connected, contact the Stormwater Utility Division, Water Department, or a licensed plumber for a dye trace or other verification method. Knowing where your drains connects help everyone understand why antifreeze wastes must not be dumped into them.

## **Train employees.**

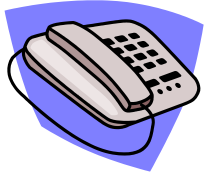
Prevention is the key to eliminating pollution. The best pollution prevention method is training individuals who work with and around antifreeze. Training will save time and money in cleanups, regulatory fines, site restoration, and injuries.

## **The Bottom Line:**

Businesses have found that it costs time and money to prevent water pollution. However, the expense to clean-up spills and restore property is much greater. Cleanup and disposal costs after toxic or hazardous material spills are extremely expensive. Fines and criminal penalties are costly, too.

For example, a Texas radiator repair shop spent thousands of dollars to excavate, containerize, and dispose of lead contaminated soil after employees disposed of leak check tank water on the ground. Additional costs were incurred to restore the property.

Another example of cleanup costs involved two individuals caught flushing antifreeze into the a city's storm drainage system while changing an auto's radiator fluid. The individuals were prosecuted, received fines and a criminal record as a result of their actions. In addition of imposing fines, regulatory agencies can require businesses to implement expensive water monitoring programs or pollution prevention equipment.



For More Information:

**City of Abilene Stormwater Services Division**

555 Walnut Street  
(325) 676-6281

**City of Abilene Environmental Recycling Center**

2209 Oak Street  
(325) 672-2209

**Hazardous Materials Handling and Storage**

City of Abilene Fire Department  
(325) 676-6434

**National Pollutant Discharge Elimination System (NPDES) Permits**

U.S. Environmental Protection Agency (EPA)  
Region 6: (214) 665-7523  
Federal: (202) 564-9545

**Texas Pollutant Discharge Elimination System (TPDES) Permits**

Texas Commission on Environmental Quality (TCEQ)  
Local: (325) 698-9674  
State: (512) 239-4671

**Utility types and locations**

One Call Location Center  
(800) 545-6005 (call 2 working days before you dig)

**Waste Disposal Information**

City of Abilene Solid Waste and Recycling Division  
(325) 676-6053

**Emergency Numbers**

Abilene Fire Department (emergency)	911
City of Abilene 24-hour Hotline	(325) 676-6000
TCEQ Emergency Response Center (24-hour)	(512) 463-7727 or (800) 832-8224