



## MANAGEMENT OF USED ANTIFREEZE

North Dakota Department of Environmental Quality

Division of Waste Management

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The North Dakota Department of Environmental Quality recognizes the potential hazards to human health and the environment from the indiscriminate disposal of used antifreeze. The Division of Waste Management in conjunction with the Divisions of Water Quality and Municipal Facilities has developed this outline to assist industry in the proper management of used antifreeze.

**What is Used Antifreeze?** Antifreeze actually serves another function of allowing for higher temperatures without boiling, therefore also being an antiboil agent. Antifreeze is the liquid coolant contained in engine radiators. Used antifreeze is generated when it is removed. Used antifreeze may be disposed, but some businesses are opting to recycle the used antifreeze rather than dispose of it.

There are two formulations of antifreeze which are based on either ethylene glycol or propylene glycol. Ethylene glycol is toxic to humans and animals, even in small amounts. Children, pets and wildlife may be attracted by its sweet odor and taste. Propylene glycol, in contrast, is relatively nonionic.

In the environment, both ethylene glycol and propylene glycol can mix completely with water and can soak into soil. It can break down; however, both formulations have an oxygen demand meaning less oxygen is available to other life forms and this can result in the death of aquatic life and microorganisms.

**How to Manage Used Antifreeze.** The Department recommends that used antifreeze be stored in containers that are clearly marked or labeled with the words "used antifreeze." From this point on, it is up to the generator to decide on how to best manage the used antifreeze. There are three options: reuse, recycle or dispose.

The Department encourages reuse and recycling of used antifreeze whenever possible. Used antifreeze may be reused by removing the suspended solids through filtration, and then placing the filtered antifreeze back into the vehicle's cooling system. This may require adding fresh antifreeze, water and/or additives in order to meet manufacturer specifications.

Recycling of used antifreeze may take on several different methods. These methods range from filtration to distillation or reverse osmosis filtering. The addition of additives may be necessary to bring the antifreeze within specifications.

Never discharge any antifreeze into streams or other surface waters, storm sewer systems, septic systems, or onto the ground. When changing your antifreeze, any spills should be collected and the remainder diluted with large amounts of water. Antifreeze places a very large oxygen demand on water. This means that the dissolved oxygen in the water is used up as the chemicals in antifreeze are broken down naturally. The removal of the dissolved oxygen causes plants, fish and other aquatic species to die from lack of oxygen. The antifreeze chemicals may also be directly toxic to some species.

Septic systems are not designed to handle this type of waste. Some microorganisms in the septic system are not able to breakdown or tolerate the antifreeze and will die. This causes problems by reducing the effectiveness of the treatment process since killing off the microorganisms does not allow treatment to occur. The used antifreeze may travel into the drainfield and impact groundwater sources. Solids from untreated wastes may be carried into the drainfield and cause plugging of the soil pores, reducing the lifespan of the septic system. Disposal into surface or ground water is a violation of both federal and state rules and regulations.

If reusing/recycling used antifreeze is not practical, discharging to a publicly owned treatment works (POTW) is an option with approval by the local POTW authority. The Department allows municipalities to accept disposal of used antifreeze provided such disposal does not upset the treatment process or violate local pretreatment requirements. If large amounts are involved, the POTW may instruct the generator to release the used antifreeze slowly over a period of several days. This is because the high oxygen demand of antifreeze may also inhibit or kill the bacteria needed for wastewater treatment to occur. Local pretreatment requirements may regulate the discharge of certain chemicals that are not adequately reduced or removed through the conventional wastewater treatment methods.