



# PETTALK

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## 'Tis the Season for Antifreeze....and its Toxicities!!!

### *Why Antifreeze?*

With cold weather upon us, many people will "winterize" their automobiles which often includes changing out and adding new antifreeze. Antifreeze, recognizable as a neon green liquid, is about 95% ethylene glycol (EG). This chemical is extremely toxic to people and animals and the bad news is, animals really like the taste of it. A puddle of antifreeze on the garage floor looks like tempting pile of sweet liquid to a dog. Cats don't tend to drink it unless no other water source is available but if they walk through it and then lick their paws, this amount is enough to be toxic!

### *What Happens if My Pet Ingests Antifreeze?*

If you know, or even suspect that your pet has lapped up some antifreeze, take them to your veterinarian immediately! The sooner you can get them to your vet the better their outcome is likely to be. That being said, it also matters about how much they have ingested. The more ethylene glycol they have ingested and the longer it takes to get them to a vet, the worse the outcome will be. Antifreeze is extremely toxic causing kidney failure that is often fatal in just a few days.

Your veterinarian will diagnose antifreeze poisoning by taking a complete history from you the owner, conducting a full physical exam, and by running blood and urine tests although some of these tests become negative by the time kidney failure develops. Antifreeze poisoning should be considered in any free-

roaming pet with consistent signs, especially pets that may be kept indoors in the garage either at night or when it's cold outside.



### *What does Ethylene Glycol toxicity look like?*

If you aren't sure if your pet has lapped up any antifreeze, you want to be aware of the following signs and symptoms of ethylene glycol poisoning and know that they occur in phases. In the first phase, the EG in antifreeze makes your dog or cat depressed, stagger, and have muscle weakness; essentially they appear drunk. They may also drink lots of water, urinate large amounts and vomit. In phase two the pet may appear to feel better and have only a fast heart rate and fast breathing then phase three creeps in and your pet will get much worse as their kidneys fail. Signs of kidney failure include depression, vomiting, seizures, and coma. If they continue to pass urine it will decrease to a very small amount.

### *Is there Treatment for Ethylene Glycol Poisoning?*

Treatment for antifreeze poisoning needs to be started as quickly as possible in order to be effective. The

earlier treatment is started, the greater their chances of survival. Treatment methods depend on when the pet is presented to the veterinarian. If the pet is seen within an hour of ingesting antifreeze, vomiting may be induced to remove any antifreeze still in the stomach and if seen within 1-2 hours, activated charcoal is sometimes placed in the stomach to bind EG in the intestine but if the EG has already been absorbed this method won't be successful. Antifreeze itself is not very toxic, but when ethylene glycol is broken down by the liver into toxic components, this is what causes the damage. If your pet is presented to a veterinarian immediately up to a few hours after drinking antifreeze, a medication called Anizol-Vet<sup>®</sup> (fomepizole) is given that impairs the liver from converting EG into toxic products, allowing the unconverted antifreeze to pass in the urine. These drugs are useful only when given early and are not effective after the pet is already showing signs of kidney damage. You may also notice

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that when fomepizole isn't available at your veterinarian's hospital, that your dog or cat may be given a specially compounded IV of 20% ethanol that works like fomepizole to stop EG metabolism. When prepared properly by a veterinary pharmacist, this is quite safe and the pharmacist will be happy to answer any questions that you have regarding this off-label treatment.

### ***What is the Prognosis for Antifreeze Poisoning?***

Since very small amounts of antifreeze can be fatal, once kidney failure develops, most animals will likely die. If a cat walks through a puddle of antifreeze and then licks its paws, it can ingest enough antifreeze to cause death while about 3-5 tablespoons can kill a medium sized dog. Animals who present to a veterinarian in kidney failure due to antifreeze poisoning can occasionally be saved with aggressive treatment. Some specialty veterinary practices offer dialysis which can be used to remove waste products that are not being removed by the diseased kidneys in an effort to keep the pet alive to give the kidneys a chance to repair. Whether the kidneys will repair themselves or not depends on how severely they are injured. Unfortunately the damage to the kidneys caused by EG is usually very severe and irreversible.



### ***Are There Ways to Prevent Accidental Ingestion?***

Antifreeze poisoning commonly occurs in spring and fall when car owners replace the old antifreeze with fresh antifreeze in their car radiators.

However, poisoning can happen anytime, particularly when a car's radiator boils over or when a hose leaks, releasing the antifreeze. Take care to keep both new and used antifreeze in a sealed container, out of reach of pets. Clean up any spills of antifreeze on driveways and other hard surfaces. Dogs and cats find antifreeze quite tasty and if they find antifreeze they'll drink it. As mentioned earlier, animals at high risk for poisoning are those who are allowed to roam freely in their neighborhoods and/or who are confined in garages often without being provided adequate fresh drinking water. So when they gain access to improperly stored and spilled/leaked antifreeze, they will most likely lick it off the garage floor for its sweet taste especially if they are thirsty. If you must to confine your pet to your garage, make sure antifreeze containers are well secured and your animal has plenty of fresh water. Remember, both cats and dog are attracted to the smell and taste of ethylene glycol. Therefore, if you change antifreeze in the driveway, make certain to collect all of the waste coolant and properly dispose of it at a nearby Service Station and don't pour it out on the ground. Also, never leave a bucket of coolant unattended, even for a brief moment. Remember, too, that your car can leak coolant at any time so if you see a puddle of greenish-colored liquid in your driveway, flush the area with plenty of water and don't delay fixing the leak! Another method of quick clean-up is to spread cat litter on the spill, clean it up with rags (which are to be thrown away at once), and then rinse thoroughly with water.

### ***\*Interesting Facts\****

- Another source of antifreeze is found inside the decorative "snow globes" as the liquid in these displays contain 2% antifreeze and are quite toxic!
- Never induce vomiting in your own pet, even if you know how, please get your pet to your veterinarian at

once!!!

- Do not give your own pet charcoal!! Please drive your pet to the veterinarian ASAP!!
- Always purchase antifreeze that has a childproof cap
- Consider using the newer, less toxic antifreeze product made with propylene glycol though large amounts of this can still be poisonous
- Newer propylene glycol-based antifreeze does cost a little more but is worth it if your animal is kept in or near the garage and may have accidental exposure.



*This article was written & submitted by:*

*Jessica Gaskins, PharmD  
North Carolina State University  
College of Veterinary Medicine,  
Veterinary Pharmacy Resident*