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ANTIFREEZE POISONING

ANTIFREEZE POISONING (ETHYLENE GLYCOL TOXICITY)

Antifreeze is 95% Ethylene Glycol (EG). EG is widely employed as a solvent in the paint and plastics industries. Use of EG as antifreeze is a common cause of accidental ingestion by pets when automobile radiators are drained onto the ground or into containers that are easily accessible for pets to drink from.

Animals will voluntarily drink the fluid because it has a pleasant, sweet taste and causes a warm sensation to the tongue and esophagus. EG toxicity varies with species, but cats are extremely sensitive. EG is rapidly absorbed from the gastrointestinal tract and distributed to all body tissues. The minimal lethal dose is 4.2 to 6.6mL/kg in dogs and 1.5mL/kg in cats, which equals about 3.5 oz in a 50 lb dog, or only slightly more than a teaspoon in the average cat.

METABOLISM OF EG (HOW IT AFFECTS THE BODY)

The primary organs affected by EG are the liver and kidneys. EG toxicity is a major cause of acute renal (kidney) failure in dogs and cats. EG produces central nervous system depression and an appearance of intoxication. Nausea, vomiting, loss of appetite, excessive water intake and frequent urination resulting in dehydration can often occur during the early stages of intoxication. The liver changes the ethylene glycol into a different compound which forms crystals in the kidneys themselves, leading to serious damage and kidney failure in the later stages of intoxication.

The mortality rate is high with EG ingestion. Successful treatment of the patient hinges on a rapid diagnosis and early institution of therapy.

If EG ingestion is not observed but suspected, a laboratory test may be performed to verify ingestion prior to instituting any treatment, but is only accurate within a certain period of time after ingestion. Other blood and urine testing may be recommended and can lead to a tentative diagnosis of EG intoxication.

TREATMENT

Because EG is rapidly absorbed from the gastrointestinal tract, decontamination is only useful in very recent ingestions, typically within 30 minutes. After that time, it is of little use, as the EG has already entered the blood stream, and may be dangerous to the pet.

In all cases, intravenous fluids therapy is instituted to increase renal (kidney) excretion of EG, treat the dehydration that develops, and help prevent further kidney damage. Intravenous administration of ethanol is given to interfere with the metabolism of EG, allowing the liver and

kidneys additional time to remove it from the system. Additional treatments may be recommended depending on the clinical signs seen in that specific patient.

Treatment for several days to a week in the hospital is usually required, and even with successful treatment, an animal may still have permanent kidney damage that may require long term treatment. Treatment is most successful in the early stages of exposure.