Antifreeze is a synthetic (man-made) chemical added to the water in a car’s radiator to prevent freezing in cold weather. Many antifreeze products are made with ethylene glycol -- a clear, colorless liquid with a sweet taste. Colored dyes (usually green but sometimes blue or orange) are added to antifreeze to help identify the liquid and to help trace the source of leaks.

**WHY IS ANTIFREEZE DANGEROUS?**

Ethylene glycol is a type of alcohol, and can cause intoxication. However, once swallowed it is metabolized (changed) in the body into several other highly toxic compounds which can cause serious harm and even death. Symptoms of ethylene glycol poisoning may include nausea, vomiting, dizziness, breathing problems, dangerous changes in heart rhythm, and injury to the kidneys and other organs. Antifreeze poisoning can be survivable if treatment is started soon after ingestion. But symptoms often take many hours to develop, which means victims may suffer from a delay in seeking treatment. Meanwhile, damage is being done.

**HOW DOES ANTIFREEZE POISONING HAPPEN?**

Children, pets, and wildlife are attracted to antifreeze because ethylene glycol smells and tastes sweet. Antifreeze may be abused by people who are seeking a substitute for ethanol alcohol, the type of alcohol found in beverages such as beer, wine, or liquor. Ethylene glycol is also sometimes swallowed by people who are trying to harm themselves.

**WHAT IF WE MADE ANTIFREEZE TASTE BAD? WOULD THAT HELP?**

In December 2012, the Humane Society Legislative Fund and the Consumer Specialty Products Association announced an agreement to voluntarily add a bitter-tasting chemical to antifreeze manufactured for sale for the consumer market in all 50 states and the District of Columbia. The substance used is *denatonium benzoate*, commonly called Bitrex®. Bitrex® can also be found in many other products; including some cosmetics, cleaning products, and pesticides; as a means to prevent poisoning. The thinking behind its use is that if someone tried to swallow a product containing Bitrex®, they would spit it out because of the extremely bitter taste. Unfortunately, this does not always happen and poisonings still occur.

One 2015 study¹ compared the cases of children who swallowed antifreeze both before and after the Bitrex®-containing products were introduced to U.S. markets. Researchers determined there was no
difference in the frequency of childhood antifreeze ingestions, nor in the amount of product swallowed per case. There was also no difference in the medical outcome of the children who swallowed antifreeze with or without Bitrex®.

“Unfortunately, young children have unpredictable reactions to bad tastes or smells,” says Kristin Wenger, Education Coordinator for the Blue Ridge Poison Center. “Parents frequently share stories with me of disgusting things their child ate. Some of these stories are pretty funny, but some are frightening and have resulted in harm to the child. Bottom line: don’t assume that a child will naturally avoid or spit out any product that contains Bitrex®.”

Researchers also examined whether the addition of Bitrex® had an effect on those who intentionally drank it for reasons of abuse or self harm. After Bitrex®-containing products were introduced to U.S. markets, there was no change in the number of people who attempted suicide by drinking antifreeze. There was also no difference in the amount that they swallowed, what kinds of medical treatment they needed, or medical outcome.

In conclusion, Bitrex® does not seem to be a strong deterrent in cases of accidental or intentional ingestion. It still may prevent some people from swallowing a product like antifreeze (or swallowing large amounts), but alone it is not enough to prevent poisoning.

HOW CAN ANTIFREEZE POISONING BE PREVENTED?

Use antifreeze with Bitrex® when you can. But these additional precautions should be taken to protect others:

- Clean up antifreeze spills immediately.
- Check the ground beneath your car's engine regularly for leaks. A green or blue liquid may indicate antifreeze.
- Store antifreeze in clearly marked containers up high, out the sight and reach of children.
- When you replace antifreeze, or if you flush your radiator, remember to take the used antifreeze to your local auto repair or radiator shop where it can be disposed of properly or recycled. Never flush it down the drain or dump it into a driveway, roadside, or waterway. (Not only is that dangerous to people, pets, and wildlife-- it is illegal).
- If you suspect that someone has ingested any amount of antifreeze, contact the Blue Ridge Poison Center immediately. Do not wait for symptoms to develop. Call 1-800-222-1222, 24-hours a day, any day of the year.