

Antifreeze Ingestions: Ethylene Glycol and Methanol Serum Levels

Ethylene glycol (EG) and methanol (MeOH) poisoning can lead to life-threatening anion gap metabolic acidosis, renal failure or loss of vision. Fortunately, the antidote fomepizole (Antizol®), with or without hemodialysis, has greatly reduced morbidity and mortality.

The decision to hemodialyze the EG or MeOH-poisoned patient often hinges on serum levels. For most hospitals, these levels are not done in-house, but are performed at reference laboratories in Baltimore or Virginia on a 24/7 basis with very quick turnaround times of 4-6 hours. These quick turnaround times only occur if the order is sent **“STAT”** (terms such as “Urgent” are insufficient), the specimen is labeled **“STAT”** (again “Urgent” is insufficient) **and a “STAT” courier is mobilized by your hospital chemistry lab.** Unfortunately, the specimen is frequently presumed “routine” if not labeled properly, leading to delays and increased morbidity. Of note, EG and MeOH levels are performed at different sites. They will be reported back to you at different times.

The technique currently used to measure both EG or MeOH is gas chromatography. MeOH levels are usually reported in mg/dL. EG levels are usually reported in mcg/mL. Divide the EG level (in mcg/mL) by a factor 10 to convert to mg/dL, the more traditional unit of measurement.

Calculation of the osmolal gap has been used to confirm the ingestion of a toxic alcohol when serum levels are delayed but is fraught with multiple inaccuracies and has poor positive and negative predictive value. Direct measurements of EG and MeOH are considered the standard of care.

Call the Maryland Poison Center for help with the diagnosis and treatment of suspected ethylene glycol and methanol poisonings: **1-800-222-1222.**

DID YOU KNOW THAT...there are antifreeze products labeled as “non-toxic” that contain propylene glycol?

Some antifreeze, de-icer and engine coolant products contain **propylene glycol** instead of ethylene glycol or methanol. Propylene glycol is considered relatively non-toxic following acute ingestion and is even approved to be used as a food additive. Although propylene glycol is unlikely to cause toxicity in acute unintentional ingestions, the ingestion of massive amounts and chronic daily ingestions have caused lactic acidosis, stupor, and seizures.



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If you do not wish to receive faxes or emails from the Maryland Poison Center, call 410.706.7604 or circle your fax number and fax this back to 410.706.7184. Supported by Maryland Department of Health and Mental Hygiene