

M E M O R A N D U M

TO: P. Howard Flanders, Indirect Section Chief
FROM: John J. Akielaszek, Env. Engineer JJA
RE: Disposal of Propylene Glycol, Ethylene Glycol, and Polyethylene Glycol in Septic Systems
DATE: May 19, 1992

As requested, I met with John Miller of the Hazardous Waste Division to discuss the disposal of propylene glycol, ethylene glycol, and polyethylene glycol in septic systems.

John indicated that propylene glycol was non-toxic and is used as a food additive. It apparently retards molds and fungi. He was unaware of any toxic effects on bacteria in septic systems. It is not listed in the Groundwater Protection Rule and Strategy.

Ethylene glycol is listed in Table 1 of the Groundwater Protection Rule and Strategy. Ingestion of this compound is harmful to humans and causes kidney damage. The Hazardous Waste Division has set a 700 mg/l concentration level as the level at which this substance is considered hazardous and cannot be discharged to groundwater. John indicated that this level, which is 100x the primary drinking water standard of 7 mg/l, is easily exceeded.

The calculations from Tansitor Electronics, Inc. indicate a concentration of 36 mg/l would be discharged to the septic system. Because this concentration is in excess of the Enforcement Standard of 7 mg/l, the company would have to demonstrate compliance with the Preventative Action Limit and Enforcement Standard at the appropriate groundwater locations prior to approval of this discharge.

Polyethylene glycol (PEG) occurs in various molecular weights. Generally, toxicity of this compound decreases with increasing degree of polymerization (i.e. size). Some of these PEG compounds are permissible additives to foods. At the higher end of the molecular weight scale these compounds are also called Carbowax and very large doses are required to kill animals.

Tansitor Electronics did supply Material Data Safety Sheets on PEG 400. The information appears to indicate that at very low concentrations the material can be biodegraded in a biological wastewater system. John Miller believes that these PEG compounds will not break down into ethylene glycol; therefore, they probably represent a safer alternative to groundwater disposal than ethylene glycol.