Safe Drinking Water

There is concern that the fracturing fluid injected into the ground to extract gas could contaminate drinking water supplies with toxic chemicals.

In its **draft Supplemental Generic Environmental Impact Statement** (dSGEIS), the New York Department of Environmental Conservation (DEC) lists the 258 chemicals it has approved for use in hydraulic fracturing fluid (Table 5-6). As each gas company has its own proprietary formula, not all the chemicals on the list will be used in a single well. The ratio of chemical additives in the fracking fluid to water and sand is about 1 to 200.

Chesapeake Energy, one of the largest gas drilling companies, has published its own list online, documenting 15 chemicals in its fracturing fluid, along with their common industrial uses, with the implication that they are all harmless. Three are even listed for use in food products: guar gum, citric acid and potassium chloride.

However, a different picture emerges when viewed from a strictly scientific perspective. Of the 258 chemicals listed in DEC's table, 43 (16%), are also listed in the *Pocket Guide to Chemical Hazards*, published by the National Institute of Occupational Safety and Health.

Five of the 43 chemicals from the NIOSH list are included in the chart below, with exposure limits and potential health problems resulting from ingesting, breathing, or coming into physical contact with them.

Exposure limits indicate how much of each chemical is needed to cause illness, usually expressed in parts per million (ppm), rather than parts per hundred, as in undiluted fracking fluids.

The recommended first aid after over-exposure is to seek medical attention. Even products listed as safe in Chesapeake's list – like glutaraldehyde, petroleum distillates, ethylene glycol, and isopropanol – all carry warning labels.

Chemical Name (CAS #)	Exposure limits	Potential Health Problems
Acrylamide 79-06-1	0.03mg/m^3	Skin and eye irritation; causes numbness, muscle weakness; reproductive effects; potential occupational carcinogen.
2-Butoxyethanol 11-76-2	5ppm	Irritation to skin, eyes, nose and throat; blood in the urine; headache; vomiting; depression of central nervous system.
Benzene 71-43-2	0.1ppm	Dermatitis; dizziness; respiratory system irritation; nausea; bone marrow depression; potential occupational carcinogen.
Ethylene Glycol	786mg/kg	Harmful if swallowed. Unlike other poisons, this tastes sweet, causing consumption at toxic and lethal levels. Affects the central nervous system, heart and kidneys.
Glutaraldehyde 111-30-8	0.2ppm	Residue from this chemical is the leading cause of asthma in health care workers. Eye and skin irritation; nausea;
Propargyl alcohol 107-19-7	1ppm	Irritation to the skin and mucous membranes; central nervous system depression.
Toluene 108-88-3	150ppm	Weakness; confusion; insomnia; muscle fatigue; dermatitis; liver and kidney damage.