Evaluating Private Well Sampling Results: Q & A

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CT Department of Public Health

The purpose of this fact sheet is to provide information on private well sampling being conducted near the University of Connecticut Landfill. If you have further questions, please contact the agencies listed below.

What is the Purpose of the Private Residential Well Sampling Currently Being Done?

The private residential well sampling is being done to determine if there are any current health risks associated with using water from these wells. The well sampling was initiated in response to citizens'

How Are Water Sample Results Reported?

The laboratory reports sampling results in micrograms of a substance per liter of water (ug/L) or milligrams of a substance per liter of water (mg/L). The units of ug/L is the same as parts per billion (ppb), and units of mg/L equal parts per million (ppm). One ppb is comparable to one kernel of corn in a filled grain silo, 16 feet in diameter. One ppm is comparable to one drop of gasoline in a tank full of gas in a full-size car.

If Contamination Is Found In Sampling Results, How Do We Determine If There Is A Health Risk Or Not?

Health based standards and action levels have been established. These standards and action levels represent the concentration of a specific contaminant below which adverse health risks are not likely. Results of private well sampling are compared to these health based numbers to determine if the water is safe to drink.

How Are Action Levels And Standards For Drinking Water Set?

The EPA establishes a standard called a maximum contaminant level (MCL). MCLs are protective of public health. They are set so that the levels will not be harmful ***and*** they have safety margins built in to protect sensitive populations.

The EPA and the CT Department of Public Health use a process called "risk assessment" to set drinking water quality standards. This process estimates levels of chemical exposure that will not cause adverse health effects and then factors in extra margins of safety. These standards usually assume that people drink water from the same source for about 30 or 70 years .

A Short Glossary of Water Terms

Action Level: The level of a contaminant in water which, if exceeded, triggers treatment or other requirements by regulatory agencies.

Acute Health Effect: An immediate (i.e. within hours or days) effect that may result from exposure to certain drinking water contaminants.

Aquifer: A natural underground layer, often of sand or gravel, that contains water.

Chronic Health Effect: The possible result of exposure over many years to a drinking water contaminant at levels above its Maximum Contaminant Level (MCL).

Inorganic Contaminants: Mineral-based compounds such as metals, nitrates, and asbestos. These contaminants are naturally-occurring in some water, but can also get into water through farming, chemical manufacturing, and other human activities. EPA has set legal limits on 15 inorganic contaminants.

Leachate: Water that percolates or drains through a landfill carrying pollutants from the waste.

Maximum Contaminant Level (MCL): The highest level of a contaminant that EPA allows in drinking water. MCLs ensure that drinking water does not pose either a short-term or long-term health risk. EPA sets MCLs at levels that are economically and technologically feasible.

Organic Contaminants: Carbon-based chemicals, such as solvents and pesticides, which can get into water through runoff from cropland or discharge from factories. EPA has set legal limits on 56 organic contaminants.

Semi-VOCs: A group of chemicals similar to VOCs (below) which, among other things, do not evaporate so quickly. Examples include petroleum hydrocarbons, such as kerosene and heating oil, and polychlorinated biphenols (PCBs).

Turbidity: The cloudy appearance of water caused by the presence of tiny particles. High levels of turbidity may interfere with proper water treatment and monitoring.

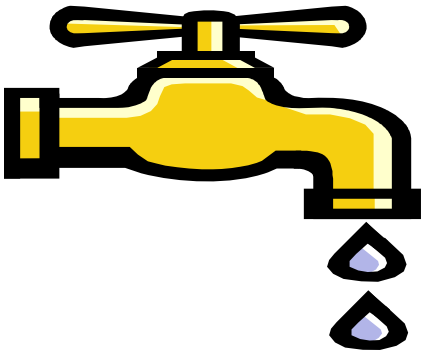
VOCs: Volatile Organic Compounds: Highly evaporative chemicals found in cleaning fluids, paints and petroleum products.

Is Long Term Exposure Taken Into Consideration? How?

Yes. When establishing standards and action levels, risk assessors take into account long-term exposure for either thirty or seventy years. Seventy years is assumed in instances where there is evidence that the contaminant causes cancer; otherwise, thirty years is as-

Should Drinking Water Be Completely Free of Contaminants?

Almost all drinking water contains some contaminants. Some of these occur naturally in the environment and some of them occur because of human activity. Some contaminants result from the chlorination process or the types of plumbing used in homes and businesses. At low levels, these substances and contaminants do not affect our health. In fact, some of the naturally occurring substances may even improve the taste of the water and may have nutritional values at low levels.



If Multiple Contaminants Are Identified In The Same Well, How Is The Health Risk Evaluated?

It is not likely that exposure to one contaminant makes an individual more susceptible to toxic effects from another because different contaminants interact with the body in different ways. Each compound is unique in the way in interacts with the body's physical make-up, and in the way it is absorbed and distributed. Because of this, toxicologists find it difficult to justify "adding up" exposures to multiple contaminants when assessing potential health risks. On a case-by-case basis, the CTDPH will look at wells with multiple contaminants that have similar chemical structures or similar toxic effects. This information can be considered in a qualitative way in evaluating the safety of drinking water.

What Does It Mean When A Result Comes Back As "Non-Detect?

If a compound is listed as a "non-detect" (ND), it means that chemists looked for that particular compound but could not measure the concentration. Either the compound is not present, or the concentration is lower than the instrumentation is capable of measuring. In almost all cases, the

What Are Laboratory Contaminants? Why Do They Show Up in Some Samples And Not In Others?

Laboratory contaminants are compounds unintentionally added to the water after it is sampled. Dirty equipment or glassware is a common cause of this. Because contamination is a mistake, it is important to re-sample if chemists suspect that the compound is a laboratory contaminant.

For More Information:

Protecting Your Ground Water Supply

Periodically inspect exposed parts of the well for problems such as:

- cracked, corroded, or damaged well casing
- broken or missing well cap
- settling and cracking of surface seals.

* Slope the area around the well to drain surface runoff away from the well.

* Install a well cap or sanitary seal to prevent unauthorized use of, or entry into, the well.

* Disinfect drinking water wells at least once per year with bleach or hypochlorite granules, according to the manufacturers directions.

* Have the well tested once a year for coliform bacteria, nitrates, and other constituents of concern.

* Keep accurate records of any well maintenance, such as disinfection or sediment removal, that may require the use of chemicals in the well.

* Hire a certified well driller for any new well construction, modification, or abandonment and closure.

* Avoid mixing or using pesticides, fertilizers, herbicides, degreasers, fuels, and other pollutants near the well.

* Do not dispose of wastes in dry wells or in abandoned wells.

* Do not cut off the well casing below the land surface.

* Pump and inspect septic systems as often as recommended by your local health department.

* Never dispose of hazardous materials in a septic system.