DEPARTMENT OF ECOLOGY
State of Washington

North Whatcom groundwater update

Bellingham Field Office, Toxics Cleanup Program October 2011

Pesticide concentrations decreasing in groundwater near Lynden

The Washington Department of Ecology (Ecology) is making available a 2007 study on pesticide contamination in well water in northwest Whatcom County. The report updates a 1998 study. You are receiving this mailer because your home or business is located within the affected area.

The two studies looked at the extent, the source and the potential health risks of groundwater contamination in the Bertrand Creek area. Groundwater in this area is part of the Sumas-Blaine aquifer. The 1998 study also looked at an area northeast of Lynden called the Meadowdale area.

The primary pesticides studied were ethylene dibromide (EDB) and 1,2,-dichloropropane (1,2-DCP). EDB was banned by the U.S. Environmental Protection Agency (EPA), and 1,2-DCP is no longer used. Both chemicals persist in the environment, and both can be harmful to human health.

Ecology's studies found these pesticides in well water at low concentrations, and showed they are continuing to degrade. However, the contaminated well water still should not be consumed, used for bathing or inhaled as steam. Homes where well water contains these pesticides above the allowable drinking water standard were hooked up to a waterline from the city of Lynden starting in 2001. To the best of Ecology's knowledge, contaminated water is not used for drinking or other domestic purposes.

Extent of contamination

In 1998, Ecology studied whether EDB and 1,2-DCP were in groundwater in the Sumas-Blaine aquifer in the Bertrand Creek area and Meadowdale area. The study also looked at the extent to which contamination got into private domestic wells.

The 2007 study re-sampled some wells in the Bertrand Creek area, and sampled additional wells outside the original test area to see if groundwater contamination patterns had changed. The 2007 study indicates that, since the 1998 report was written, pesticides in area groundwater continue to be where they are expected, in low concentrations, and continue to degrade.

Read the 2007 study report

EDB and 1,2-DCP in Domestic Groundwater Supplies, Follow-Up Investigation, Bertrand Creek Area (Whatcom County)
www.ecy.wa.gov//biblio/1103050.html

Questions about your well?

Call Mary O'Herron, Ecology cleanup site manager, at 360-715-5224, or email her at:
mary.oherron@ecy.wa.gov

- If your well was part of this study, and you have not received a letter from Ecology notifying you of the results.
- If you're wondering if the well on your property – or a well near your home – has ever been tested.
- If you weren't part of this study and are interested in finding out how to have your well tested at your own expense.

Questions about drinking water safety?

Call Laurette Rasmussen, Whatcom County Health and Human Services, at 360-676-6724 ex. 50848, or email lrasmussen@co.whatcom.wa.us

Special accommodations

If you need this document in a format for the visually impaired, call Mary O'Herron at 360-715-5224.

Persons with hearing loss, call 711 for Washington Relay Service.

Persons with a speech disability, call 877-833-6341.

Individual homeowners involved in the 2007 study have been notified of the results. Ecology is now making the report available to the greater Whatcom County community to help you better understand the nature and extent of the contamination, trends over time, possible effects, and where to get additional information if you have questions or concerns.

EDB and 1,2-DCP no longer in use

EDB had been used since the 1920s to reduce lead deposits in gasoline-powered engines. It also was widely used as a pesticide and soil fumigant on strawberries, raspberries and seed potatoes.

EDB was first identified in area groundwater in the mid-1980s. EPA banned EDB nationwide in 1983 when it was determined to be a "probable human carcinogen."

Once EDB gets into groundwater, it takes about 30 years to degrade to the point that it no longer presents environmental or human health risks.

Like EDB, 1,2-DCP was used in soil fumigants during the 1980s and early 1990s. Its use was discontinued in 1991.

Features of the study area

The 1998 and 2007 studies focused on portions of the 150-square-mile Sumas-Blaine aquifer. The aquifer extends into British Columbia and provides a source of drinking water for about 100,000 people in Whatcom County and Canada. The aquifer also supports an important agricultural industry in Washington state.

The area's physical features make it susceptible to groundwater contamination: The water table is fairly shallow and the soil is sandy. Contaminants can easily enter the groundwater and move through the soils.

See the study area map on page 3 of this fact sheet.

Purpose and findings of 1998 study

Several agencies have studied pesticide contamination in groundwater in this area of Whatcom County starting in 1984. The purpose of the 1998 Ecology study was to determine the extent of remaining EDB-contaminated groundwater in this portion of the Sumas-Blaine aquifer.

Ecology's 1998 study tested 123 private domestic wells in the Bertrand Creek and Meadowdale areas, near Lynden. The tests were done only where landowners volunteered to participate.

Once Ecology confirmed the presence of EDB, it worked with federal, state and local partners to address health concerns.

In the process of looking for EDB, the study also identified 1,2-DCP in area groundwater.

The 1998 report is available online at www.ecy.wa.gov/biblio/99601.html

Ecology acts to protect health

From the mid-1980s through 2000, Ecology provided residents in the affected area with bottled drinking water.

Based on the 1998 study, Ecology continued to provide bottled water to the affected households. It also installed special showerheads to prevent pesticide exposure from inhaling water vapor.

In 2000 and 2001, Ecology developed a program through which qualifying residents could hook up to the city of Lynden's municipal water supply if their wells contained any amount of EDB, or contained 1,2-DCP above acceptable limits.

Although information on nitrates and coliform bacteria in groundwater was collected during the studies, the presence of these contaminants did not qualify residences to hook up to the waterline.

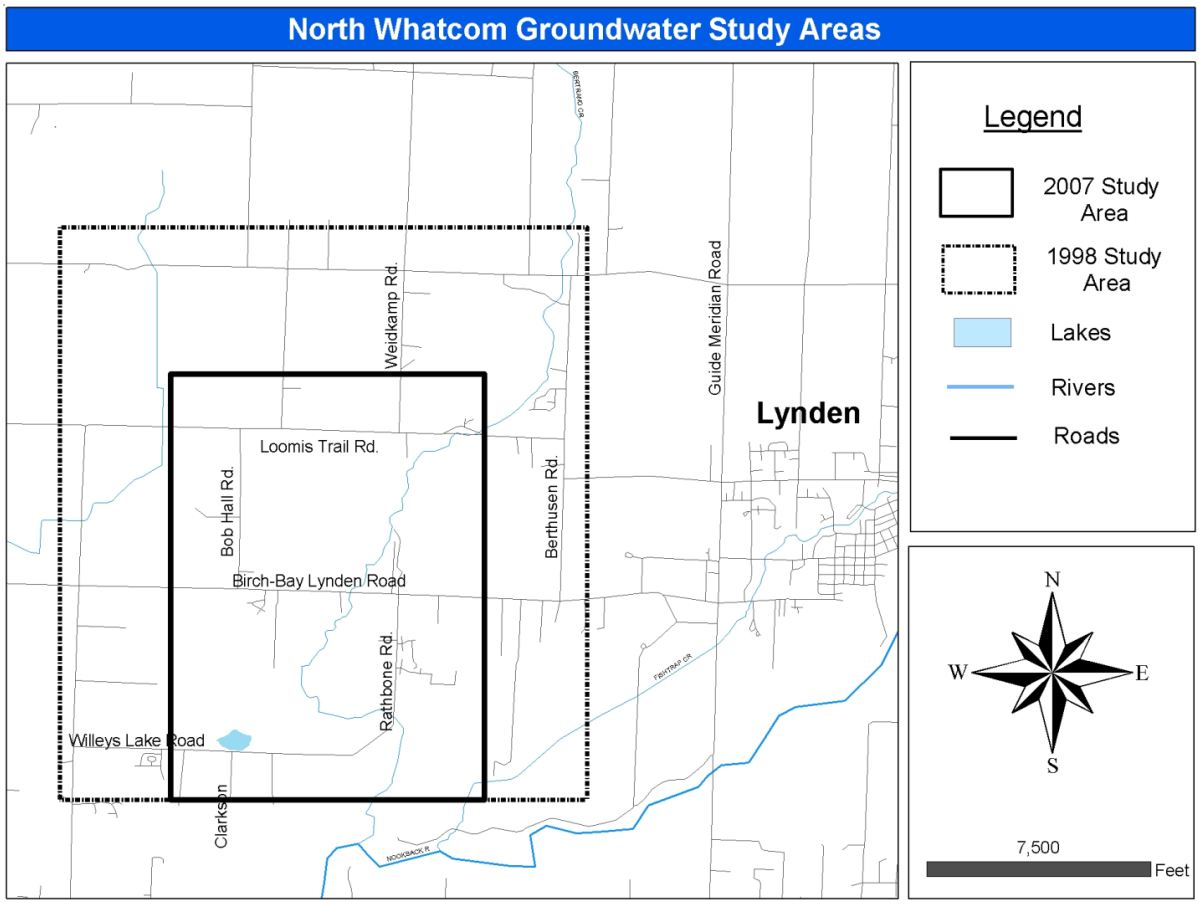
Summary of recent information

A total of 32 wells were sampled in the 2007 study.

Because of the small sampling area, it is difficult to draw conclusions about how the contamination may be moving in the groundwater.

EDB concentrations have declined dramatically, but six wells tested in 2007 exceeded the drinking water standard. 1,2-DCP concentrations generally were lower in the 2007 study than in previous studies, but one tested well still had concentrations above the drinking water standard.

Pesticides in concentrations above the drinking water standard in the 2007 study either were banned decades ago (EDB) or are being phased out and used rarely (1,2-DCP). They are slowly degrading to safe levels.



Findings from the 2007 study

Historical uses	Potential health effects	2007 findings in the Bertrand Creek area
Ethylene dibromide (EDB)		
In the 1920s EDB was used primarily as an additive in gasoline. It was also used as a solvent in other industrial processes. Additionally it was used as a pesticide, specifically as a soil fumigant for nematode infestation of crops. EDB was used on a variety of crops in Whatcom County, including raspberries, strawberries, blueberries and seed potatoes from 1940-1983, when it was banned by EPA.	EPA established a drinking water standard for EDB at 0.05 parts per billion (ppb). According to the EPA, some people who drink water containing EDB in excess of the drinking water standard over many years could experience problems with liver, stomach, reproductive system, or kidneys, and may have an increased risk of cancer.*	EDB concentrations in groundwater have declined dramatically. The highest concentrations seen in this area was 6.17 ppb in 1991, compared with the maximum value observed in 2007 of 0.27 ppb. EDB is degrading at a rate consistent with study projections from 16 years ago. EDB remains a contaminant of concern for users of private domestic wells in the Sumas-Blaine aquifer. However, homes and businesses in the affected area that are known to have EDB in their well water do not use the water for domestic purposes. They are hooked up to a waterline that delivers water from the city of Lynden.
1,2,-dichloropropane (1,2-DCP)		
1,2-DCP was used in making lead-free gasoline and for coating paper. 1,2-DCP was introduced as a soil fumigant alternative to EDB when EDB was banned. Use of 1,2-DCP has gradually declined since its production was discontinued in 1991.	EPA established a drinking water standard for 1,2-DCP at 5 ppb. According to the EPA, some people who drink water containing 1,2-DCP in excess of the drinking water standard over many years may have an increased risk of getting cancer.*	Generally, concentrations of 1,2-DCP were lower in the 2007 study than in previous studies, but concentrations in one well were above the drinking water standard. The highest concentration seen during the 1998 study was 21.04 ppb, compared with the maximum value in 2007 of 12 ppb. 1,2-DCP remains a contaminant of concern for users of private domestic wells in the Sumas-Blaine aquifer. However, homes and businesses in the affected area that are known to have 1,2-DCP in their well water at levels above half the EPA drinking water standard do not use the water for domestic purposes. They are hooked up to a waterline that delivers water from the city of Lynden.

Historical uses	Potential health effects	2007 findings in the Bertrand Creek area
Dibromochloropropane (DBCP)		
DBCP was primarily used as an insecticide against nematodes for cucumbers, summer squash, cabbage, carrots, and other crops, until it was banned in 1985.	EPA established a drinking water maximum contaminant level for DBCP at 0.2 ppb. According to the EPA, some people who drink water containing DBCP in excess of the drinking water standard over many years could experience reproductive difficulties, and may have an increased risk of getting cancer.*	DBCP detections in groundwater are low, and all wells sampled were below the EPA drinking water standard. DBCP does not appear to present a widespread concern.
1,2,3-trichloropropane (1,2,3-TCP)		
1,2,3-TCP is a pesticide, but it is also used as an industrial solvent, paint remover, and cleaner.	There is no EPA drinking water standard for 1,2,3-TCP, but EPA established a lifetime health advisory of 40 ppb. In a 2010 Fact Sheet, EPA has classified TCP as likely to be carcinogenic to humans.*	1,2,3-TCP detections in groundwater are low, and all wells sampled had 1,2,3-TCP concentrations below the EPA drinking water standard. 1,2,3-TCP does not appear to present a widespread concern.
Nitrate		
Nitrate is an ingredient in many fertilizers. Nitrate also is a byproduct of human and animal wastes.	EPA established a drinking water standard for nitrate of 10 mg/L. Nitrate concentrations above this standard can cause health complications in pregnant women and infants.	Nitrate was found in almost every well sampled. Nitrate levels in 15 of the 32 wells tested were above the drinking water standard. Nitrate remains a contaminant of concern for users of private domestic wells.

* Additional information on these chemicals can be found at EPA's web page at: http://water.epa.gov/drink/contaminants/basicinformation or at the Agency for Toxic Substances and Disease Registry (ATSDR) web page at: http://www.atsdr.cdc.gov/substances/index.asp

WASHINGTON STATE DEPARTMENT OF ECOLOGY

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Información en Español

El Departamento de Ecología está proveyendo un reporte de 2007 que estudió los pozos contaminados con pesticidas en el área noroeste del Condado de Whatcom. El reporte reemplaza un estudio hecho en 1998. Usted está recibiendo este folleto porque su casa o negocio está ubicada dentro del área afectada.

Estudios por Ecología encontraron bajas concentraciones de pesticidas en el agua del pozo y también que ellas están disminuyendo con el paso de tiempo. Sin embargo, no se debe consumir el agua de pozo contaminada, ni usarlo para bañarse o inhalarlo en forma de vapor. Comenzando en 2001, las casas donde el agua de pozo contenían estos pesticidas excediendo la norma permitida para agua potable fueron conectados al sistema municipal de la ciudad de Lynden. Según el mejor conocimiento de Ecología, el agua contaminada no se utiliza para beber u otros usos domésticos.

Si usted tiene preguntas y quisiera hablar con alguien que habla español, o quisiera esta información en otro idioma, por favor llame al Richelle Pérez a 360-407-7528.