

Health Consultation

Exposure Assessment
Yttri/Wozow Property
Snohomish County, Washington

December 4, 2007

Prepared by

**The Washington State Department of Health
Under a Cooperative Agreement with the
Agency for Toxic Substances and Disease Registry**



Foreword

The Washington State Department of Health (DOH) has prepared this health consultation in cooperation with the Agency for Toxic Substances and Disease Registry (ATSDR). ATSDR is part of the U.S. Department of Health and Human Services and is the principal federal public health agency responsible for health issues related to hazardous waste. This health consultation was prepared in accordance with methodologies and guidelines developed by ATSDR.

The purpose of this health consultation is to identify and prevent harmful human health effects resulting from exposure to hazardous substances in the environment. Health consultations focus on specific health issues so that DOH can respond to requests from concerned residents or agencies for health information on hazardous substances. DOH evaluates sampling data collected from a hazardous waste site, determines whether exposures have occurred or could occur, reports any potential harmful effects, and recommends actions to protect public health. The findings in this report are relevant to conditions at the site during the time of this health consultation, and should not necessarily be relied upon if site conditions or land use changes in the future.

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Glossary

Acute	Occurring over a short time [compare with chronic].
Agency for Toxic Substances and Disease Registry (ATSDR)	The principal federal public health agency involved with hazardous waste issues, responsible for preventing or reducing the harmful effects of exposure to hazardous substances on human health and quality of life. ATSDR is part of the U.S. Department of Health and Human Services.
Aquifer	An underground formation composed of materials such as sand, soil, or gravel that can store and/or supply groundwater to wells and springs.
Chronic	Occurring over a long time (more than 1 year) [compare with acute].
Comparison value	Calculated concentration of a substance in air, water, food, or soil that is unlikely to cause harmful (adverse) health effects in exposed people. The CV is used as a screening level during the public health assessment process. Substances found in amounts greater than their CVs might be selected for further evaluation in the public health assessment process.
Contaminant	A substance that is either present in an environment where it does not belong or is present at levels that might cause harmful (adverse) health effects.
Exposure	Contact with a substance by swallowing, breathing, or touching the skin or eyes. Exposure may be short-term [acute exposure], of intermediate duration, or long-term [chronic exposure].
Groundwater	Water beneath the earth's surface in the spaces between soil particles and between rock surfaces [compare with surface water].
Ingestion	The act of swallowing something through eating, drinking, or mouthing objects. A hazardous substance can enter the body this way [see route of exposure].
Ingestion rate	The amount of an environmental medium that could be ingested typically on a daily basis. Units for IR are usually liter/day for water, and mg/day for soil.
Inhalation	The act of breathing. A hazardous substance can enter the body this way [see route of exposure].
Inorganic	Compounds composed of mineral materials, including elemental salts and metals such as iron, aluminum, mercury, and zinc.

Model Toxics Control Act (MTCA)	The hazardous waste cleanup law for Washington State.
Monitoring wells	Special wells drilled at locations on or off a hazardous waste site so water can be sampled at selected depths and studied to determine the movement of groundwater and the amount, distribution, and type of contaminant.
No apparent public health hazard	A category used in ATSDR's public health assessments for sites where human exposure to contaminated media might be occurring, might have occurred in the past, or might occur in the future, but where the exposure is not expected to cause any harmful health effects.
Organic	Compounds composed of carbon, including materials such as solvents, oils, and pesticides that are not easily dissolved in water.
Route of exposure	The way people come into contact with a hazardous substance. Three routes of exposure are breathing [inhalation], eating or drinking [ingestion], or contact with the skin [dermal contact].
Volatile organic compound (VOC)	Organic compounds that evaporate readily into the air. VOCs include substances such as benzene, toluene, methylene chloride, and methyl chloroform.

Summary and Statement of Issues

This health consultation report summarizes the Washington Department of Health (DOH) findings regarding possible health risks posed by the Yttri/Wozow property, a partially developed residential property located in Snohomish County, Washington. The property (also known as US DOJ DEA Yttri Wozow Property) is listed on the Washington Department of Ecology (Ecology) Confirmed and Suspected Contaminated Sites List.(1)

At Ecology's request, DOH began evaluating possible health risks associated with the Yttri/Wozow property in February 2005. Ecology had been contacted by Snohomish County after one of its building inspectors observed a petroleum sheen near the foundation of a single family residence being built on the property.(2) Because of this observation and the past history of this property, Ecology was concerned that it might pose a health risk to future residents. DOH conducts health consultations in cooperation with the Agency for Toxic Substance and Disease Registry (ATSDR).

Background

The Yttri/Wozow property, which is approximately two acres, is located at 9218 171st Avenue SE in unincorporated Snohomish County. An illegal drug (methamphetamine) lab reportedly operated at the property during the early 1990s.(3) In the mid- to late 1990s, Ecology and the Snohomish County Health District (SCHD) investigated various reports of contaminant releases to soil and water at the Yttri/Wozow property. During those investigations, Ecology and SCHD observed numerous vehicles (e.g., approximately 25 cars were observed in April 1994); containers of paint, solvents, resin material, and various types of petroleum (e.g., oil and grease); batteries; appliances; and other debris stored on the site. Some areas of petroleum staining and spilled paint on surface soils were also observed. Only very limited environmental sampling was conducted during these investigations. Several volatile chemicals (e.g., toluene, ethylbenzene, xylenes, acetone, and methyl ethyl ketone) were detected in a soil sample where some paints had been spilled. This contaminated soil was reportedly removed. However, only one sample was analyzed to confirm this. Evidence of petroleum releases was also observed in surface soils but no testing was conducted to determine the levels of contaminants.

In the late 1990s, vehicles and other debris were discovered buried at the site. Some of the waste debris was reportedly excavated by Snohomish County and the former property owner. Petroleum, including gasoline, was observed during the excavation work.(4) Only a few photographs appear to be available that documented the Snohomish County excavation work. No documentation appears to be available regarding the excavation work conducted by the former property owner. A cargo container containing drug paraphernalia and methamphetamine precursors was reported to be buried at the site. However, it does not appear that it was ever found.(5)

In February 2005, the current property owner/developer, B&R Homes, began constructing a single family home on the property. That home will be served by a public water system. Consequently, exposure to groundwater contaminants at this property via drinking water is not a

concern. Volatile chemicals in groundwater, however, can pose an inhalation risk in some cases. Soil contamination can also pose a health risk if levels are high enough.

During a routine building inspection associated with this new home, a Snohomish County Planning and Development Services (SCPDS) building inspector reportedly observed a petroleum sheen in soil near the building foundation. The building inspector was reportedly informed by a foundation contractor that odors were evident during the foundation excavation. These observations were reported to Ecology. Additionally, SCHD observed significant evidence of buried wastes, which included a container of an unknown chemical in the southwest portion of the property in February 2005.(6) This observation suggested that buried waste remained at the site, which could be a source of physical and chemical hazards. The Washington Department of Labor and Industry (L&I) subsequently shut down the project because of all these findings and concerns about possible worker exposure.

Since February 2005, DOH (at Ecology's request), has reviewed investigation documents, conducted a property visit with the Snohomish County Planning Department, identified possible exposure pathways, completed two health consultation reports, evaluated a number of work plans, and met twice with Ecology and B&R Homes and its consultants, the RETEC Group. DOH also provided comments and recommendations to Ecology regarding various work plans and reports associated with the site so adequate site information was collected to make a health determination.

Environmental Investigation

A few soil, surface water, and groundwater samples were collected by various agencies, including Ecology, in the 1990s. This data, although providing some historic information, is no longer useful for assessing health risks because property conditions have been altered. As a result, this environmental investigation summary focuses on the investigation work conducted by the current property owner in May 2006 and June/July 2007. This work included a two-part site investigation as well as a geophysical survey. The initial investigation work was completed in May 2006 when 13 test pits and three geoprobes were excavated to evaluate soil quality on the property. Groundwater samples were also collected at the geoprobe locations to evaluate groundwater quality. A creek sediment sample was also collected and tested in May 2006.(7) In November 2006, the property owner conducted a geophysical survey to determine if buried materials remained at the site.(8) Twenty additional test pits were excavated and sampled in June 2007 based on the geophysical survey findings. Some additional testing was conducted in July 2007.(9)

Soil

Thirty-three tests pits were excavated and logged at the property to characterize the soil. Soil samples were collected from 25 of the 33 test pits. RETEC reports that the site is immediately underlain by 2 to 6 feet of weathered till and fill. A dense, unweathered till underlies this unit. The thickness of the till unit at the property is unknown but RETEC estimates it is hundreds of feet thick.(7)

Thirteen test pits were excavated in May 2006 during the first part of the investigation. Most of these test pits were located in areas where contamination had previously been observed in the 1990s. This investigation decision was contrary to an Ecology and DOH recommendation to the property owner to either conduct a geophysical survey or excavate test pits in a systematic grid pattern across the property given the uncertainty about where objects might have been buried.

Six of the 13 test pits contained debris or disturbed soils. Five of these test pits were located in the northwestern portion of the property, west and southwest of the foundation for the new home. This was one of the areas where the geophysical survey later identified a number of possible buried objects in November 2006. The geophysical survey also identified a number of other potential buried objects near the house location and along the west side of the property. The sixth test pit was excavated near the southwest corner of the foundation.

One soil sample was collected from 12 of the 13 test pits. A soil sample was also collected from each of the geoprobes and a sediment sample was collected from the creek. All of the test pit and probe samples were tested for gasoline, diesel, and oil range petroleum hydrocarbons. The test pit located next to the foundation was tested for petroleum only. Two test pits that were reported to contain debris and one probe location were also tested for volatile organic compounds (VOCs), polycyclic aromatic hydrocarbons (PAHs), and metals. Two other test pits were tested for petroleum, VOCs, and PAHs only. Another test pit sample was tested for petroleum and metals only, and one geoprobe location was tested for petroleum and VOCs only. The drain field sample was tested for petroleum only, although it is a location where chemicals other than petroleum could have been disposed. However, based on the entire test results obtained from the property, this scenario does not seem likely.

No petroleum was detected above the Model Toxic Control Act (MTCA) Method A cleanup levels. However, many of the test pits and probe locations contained low levels of diesel and oil range hydrocarbons. Gasoline was not detected in any soil samples. The test pit with the highest levels of petroleum contained a few VOCs but the levels were below MTCA Method A and/or Method B cleanup levels and contained no detectable levels of PAHs. A few samples had elevated detection limits for VOCs so it is possible that some low levels of VOCs might exceed MTCA cleanup levels. However, it is not expected that these levels would be of significant concern. One other sample with elevated levels of petroleum contained a few VOCs but again none above the MTCA cleanup levels. PAHs were found in one of the three tested samples but the levels were all below the MTCA cleanup levels. Metals were found in all samples. However, none of them exceeded the MTCA cleanup levels.

Although good information was obtained from the May 2006 work, there was still uncertainty about possible buried objects at the property that might pose a risk to human health and the environment. To begin addressing this uncertainty, RETEC conducted a geophysical survey in November 2006, which was evaluated by an Ecology geophysicist. The geophysical survey identified a number of areas near the future home and along the west side of the property where buried objects were likely to exist. These findings provided the basis for the additional investigation work conducted in June 2007.

Twenty additional test pits were excavated in June 2007. This work was observed by an Ecology staff scientist. Some debris, including metal, wood, rubber, and fabric were reported to be found in almost every test pit. Buried batteries were found approximately 75 feet west of the southwest foundation corner. It is reported that all of this debris was excavated, stockpiled, and later removed from the property.

Samples collected from 13 of the 20 test pits were submitted to an analytical laboratory for testing. Nine samples collected from five test pits were analyzed to determine if gasoline through oil range petroleum hydrocarbons (NWTPH-HCID) were present. Three of the five samples were collected adjacent to the existing foundation. Only a small amount of gasoline (<120 mg/kg) was detected in one surface soil sample (ATP-9), which was located approximately 55 feet west of the existing foundation. That sample was further analyzed for gasoline, diesel, and oil. Diesel and oil range petroleum hydrocarbons were found but were below MTCA Method A cleanup levels.

VOCs were tested in soil samples taken from five test pits excavated in June 2007. Two of those VOC samples were collected next to the foundation. Only a few low levels of VOCs were found in the tested samples and only methylene chloride (a common laboratory contaminant) was found in the samples collected next to the foundation. However, all the detected VOC levels were below the MTCA Method A and/or Method B cleanup levels. PAH samples from five test pits, including three test pits next to the foundation, were tested and no PAHs were detected. Metals were found in all tested samples but only one sample contained lead that exceeded the MTCA Method A cleanup level. Lead was found above the cleanup level in test pit ATP-7 where buried batteries were found. The lead contaminated soil was reportedly removed. Re-test results indicate that the lead levels at location ATP-7 were reduced below the MTCA lead cleanup levels.

Groundwater

The geoprobe logs indicate that groundwater was found at 15 feet below ground surface (bgs) in a silty gravel unit, which is overlain by clayey, gravelly silt. RETEC also reports that seasonal perched groundwater exists on top of the till unit from two to six feet bgs. Groundwater flow direction at the property is uncertain because no monitoring wells were installed to measure static water levels. However, RETEC suggests that the inferred direction is to the south-southwest based on the topography of the property and the flow direction of the creek.

Groundwater samples were collected from three geoprobes borings installed in the southern half of the property in May 2006 using a peristaltic pump. The rationale for these locations was not provided. It should be noted that peristaltic pumps are generally not appropriate for VOC sampling and can result in an underestimation of VOC concentrations. However, since very little VOCs or gasoline range hydrocarbons were found in soils at the site, this does not appear to be a significant issue.

Groundwater samples were collected from the geoprobes at 15 feet bgs and were tested for gasoline and diesel range petroleum hydrocarbons, volatile organic compounds (VOCs), polycyclic aromatic hydrocarbons (PAHs), and total and dissolved metals. No petroleum, VOCs,

or PAHs were found in any of the groundwater samples. Some metals (total arsenic, chromium, nickel, and lead) were detected in groundwater above the MTCA cleanup levels. RETEC attributes this to turbid groundwater samples.

Discussion

The May 2006 and June/July 2007 environmental investigation addressed a number of data gaps regarding soil and groundwater quality that previously existed for this site. The results obtained during the investigation, which is summarized above, indicate that only low levels of contaminants, below MTCA cleanup levels, currently exist at this property. The MTCA cleanup levels, which are health based levels, are reasonable comparison levels to determine whether there are any chemicals of health concern at this property. Based on the information provided above, it appears no chemicals of concern exist at this property at this time. However, it is possible that debris remains in the subsurface. This could pose a physical hazard (e.g., cuts) if encountered by future residents.

No environmental investigation looks at all soil or groundwater at a property. However, an attempt to obtain a representative subset of samples is an investigation goal. The work done by the property owner appears to meet that goal. However, given the site history, it is possible that some unidentified contamination could remain at this site. If contaminants are discovered or suspected in the future, appropriate steps should be taken to characterize and assess the health risks posed by such contamination.

Children's Health Concerns

The Yttri/Wozow property is a rural, residential property where children potentially could be exposed to site contaminants. Children can be uniquely vulnerable to the hazardous effects of environmental contaminants. When compared to adults, pound for pound of body weight, children drink more water, eat more food, and breathe more air, which can lead to increased exposure to contaminants. Additionally, the fetus is highly sensitive to many chemicals, particularly with respect to potential impacts on childhood development. For these reasons, DOH considers the specific impacts that contaminants might have on children, as well as other sensitive populations. The contaminant levels found on Yttri/Wozow property are not expected to result in health effects for children or adults. Possible remaining debris at this site could, however, pose a physical hazard if encountered.

Conclusions

The levels of contaminants found at the Yttri/Wozow property in May 2006 and June/July 2007 are not expected to make people sick (i.e., no apparent public health hazard). However, it is likely debris remains in the subsurface. This debris could pose a physical hazard if encountered during landscaping or other excavation work.

Recommendations

Although the contaminants found at this property pose no apparent public health hazard, DOH recommends that the current property owner/developer provide perspective purchasers with this health consultation report so they are aware of the site history and understand that some unidentified contamination and debris might be found at the site during landscaping or other excavation work that could pose a health risk.

Public Health Action Plan

DOH will provide copies of this health consultation report to the property owner, Ecology, L&I, and Snohomish County and place it on its web page.

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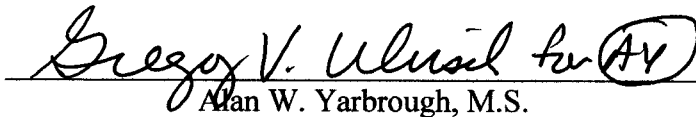
Certification

This Yttri-Wozow Property Environmental Assessment was prepared by the Washington State Department of Health under a cooperative agreement with the federal Agency for Toxic Substances and Disease Registry (ATSDR). It was completed in accordance with approved methodology and procedures existing at the time the assessment was initiated. Editorial review was completed by the Cooperative Agreement partner.



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The Division of Health Assessment and Consultation (DHAC) ATSDR, has reviewed this exposure assessment and concurs with the findings.



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