

City of Algona - Preliminary Evaluation of Exposures to Surface Water in Chicago Ave Ditch and Government Canal

Fact Sheet, April 2013



The Washington State Department of Health analyzed results of surface water samples taken from the ditch located at Chicago Avenue and Government Canal. The City of Algona asked us if chemicals found in the ditch water would have health impacts for children or city workers. The Chicago Avenue ditch does have contaminated water – our analysis shows the current levels are not likely to cause health problems for people who come into contact with it. For the full report, see www.doh.wa.gov/consults.

Background

Chemicals spilled on the ground at the Boeing plant in Auburn in the past made their way to the groundwater. The chemicals in the shallow groundwater are flowing under and beyond the plant in Auburn. More tests are being done to find how far the contamination has spread. Recently, Boeing found the shallow plume of chemicals below the residential area of northern Algona.

This plume contains trichloroethylene (TCE) and breakdown products such as cis-1,2-dichloroethylene (DCE) and vinyl chloride. Lower levels of tetrachloroethylene, called perchloroethylene (PCE), is also present. Because this groundwater is not used as a drinking water source, the public's drinking water is not at risk from the contamination.

For more information about the Department of Ecology's testing and investigation, contact them at <https://fortress.wa.gov/ecy/gsp/Sitepage.aspx?csid=5049>.

Chicago Avenue Ditch and Government Canal

In June 2012, Boeing's contractor collected samples from the Chicago Avenue ditch at 11th Avenue N. and Government Canal (next to railroad tracks) at 1st Avenue N. In September 2012, the contractor took more samples from the Chicago Avenue ditch. The September locations included intersections where the ditch meets 7th, 9th, 11th, and 12th avenues. Results showed:

- No contaminants in Government Canal or the Chicago Avenue ditch at 7th Avenue. Therefore, exposure is not a concern in this area.
- Some PCE, TCE, DCE, and vinyl chloride was found in the Chicago Avenue ditch at 9th Avenue and North. The Department of Health looked at the potential exposures to children and city workers at these locations.

Exposure Evaluation

Exposure to chemicals in the ditch could happen by touching or accidentally swallowing the water and breathing-in vapors coming from the water. Our estimate of the health impact was based on the possibility of exposures from touching and/or accidentally ingesting water while wading in the ditch. Because air testing within the ditch was not done, we estimated the potential inhalation exposure using a method called a "shower model." This model measures how much exposure people might have if the water from the Chicago Avenue ditch was used for showering and people breathed in the vapors from the hot water.

Children: Kids up to two years old should never be in the ditch because of the potential drowning hazard. Older children (3 to 15 years old) might occasionally wade in the ditch and get water on their feet, legs, and hands. The amount of time children are in contact with ditch water may change throughout the year. We looked at two possible scenarios:

- 1) Children entering the ditch briefly and getting wet for 15 minutes, once a day, three days a week (150 days per year).
- 2) Children playing in the ditch for an average of 30 minutes on any given day during the summer or on a weekend (50 days a year).

Conclusion: Based on limited sampling, touching, and accidentally ingesting Chicago Avenue ditch water would result in low-level exposure to PCE, TCE, DCE, and vinyl chloride. This exposure is not expected to result in harmful health effects to children. The amount of exposure through breathing is also not likely to cause harmful effects. This conclusion is only for the ditches and should not be used for standing water in backyards or elsewhere. Parents may want to urge children not to go in the ditch to be certain that no exposure happens.

Workers: Algona Public Works personnel come in contact with water while performing maintenance on the ditch. Workers wear gloves, boots, long sleeve shirts, and heavy work pants when working in ditches. Contact with water is expected to happen occasionally on hands, legs, and feet. Water may splash onto a worker's face. City workers estimate that on average they enter the Chicago Avenue ditch two days a week and get wet four times a day while working in the ditch. We looked at two scenarios:

- 1) Workers entering the ditch three days a week, four times a day for 15 minutes.
- 2) Workers entering the ditch once a week for four hours.

Conclusion: Based on limited sampling, touching, and accidentally ingesting Chicago Avenue ditch water results in exposure to PCE, TCE, DCE, and vinyl chloride. This exposure is not expected to result in harmful health effects to city workers. The amount of exposure through breathing is also not likely to cause harmful effects. Continued monitoring of the Chicago Avenue ditch is necessary to confirm that harmful exposures do not occur. This conclusion is only for the ditches and should not be used for standing water in backyards or elsewhere.

Other Health Concerns: Ditches are not safe places to play, especially for young children. Water levels in ditches may be a drowning hazard for young children. There is always the possibility of contamination unrelated to the Boeing plant (such as fecal contamination from animals and birds, storm water overflow, residential waste). Mud in the ditch north of 11th Avenue is quite deep and may present a hazard to children who could get stuck.

Recommendations

Contaminant levels in the ditch could change over time.

- Parents should prevent children's access to the Chicago Avenue ditch north of 8th Avenue.
- Workers should wear protective clothing when performing duties in the ditch. This should include waterproof gloves and waders.

Boeing should:

- Continue to sample surface water in ditches in Algona. This will help us understand if concentrations change at different times of the year. It will also help understand the extent of contamination and the interaction between the groundwater and surface water.
- Continue to search for the source of the contaminants entering into the Chicago Avenue ditch in order to stop any continued release.
- Sample backyard surface water as needed to determine the interaction between groundwater and surface water.
- Measure volatile organic chemical levels in the air of Algona and within the Chicago Avenue ditch as part of the vapor intrusion assessment. This will confirm that vapors do not pose a health threat.