



Community Update

Durham Meadows Superfund Site

Durham, Connecticut
March, 2004

United States Environmental
Protection Agency - New England

1 Congress Street, Suite 1100
Boston, MA 02114-2023

1,4 - Dioxane

This fact sheet is designed to provide basic information about 1,4-Dioxane and was developed in coordination with the Connecticut Department of Environmental Protection (CT DEP) and the Connecticut Department of Public Health (CT DPH). The United States Environmental Protection Agency, Region 1 - New England (EPA) is currently conducting a Remedial Investigation and Feasibility Study (RI/FS) for the Durham Meadows Superfund Site. In December 2003 and January 2004, EPA, in conjunction with CT DEP and CT DPH, arranged for EPA's contractor to sample a limited number of residential drinking water wells to supplement RI/FS data previously collected. Sampling results indicated the presence of a newly identified contaminant, 1,4-Dioxane, in some of the wells.

What is 1,4-Dioxane?

1,4-Dioxane is a compound which is used both as a solvent, and as a stabilizer for other chlorinated solvents such as 1,1,1-trichloroethane (TCA) that are used in industrial degreasing operations. It is also present in a variety of paint products, and many commercial cosmetics and toiletries. [1,4-Dioxane is not the same as "dioxin," which is a different type of contaminant.] The ability to detect low concentrations of 1,4-Dioxane has only recently become available. EPA and CT DEP had never sampled for this compound in residential wells in Durham, CT until this recent effort.

What are the potential health effects associated with 1,4-Dioxane?

EPA has classified 1,4-Dioxane as a Probable Human Carcinogen, based on increased nasal and liver tumors in multiple strains of rats, liver tumors in mice, and gall bladder tumors in guinea pigs. These tumors were created by exposures to high doses of 1,4-Dioxane in the animals' drinking water for a significant portion of their life span. Currently there is inadequate human carcinogenicity data on 1,4-Dioxane.

What levels have been detected in drinking water wells in Durham?

The wells at which 1,4-Dioxane was detected in December 2003 and January 2004 are all currently being filtered and monitored under State order. 1,4-Dioxane was detected in untreated water, partially filtered water (between the two filters), and in some cases, in fully treated water (tap water). The highest level of 1,4-Dioxane found in untreated water at a residential well was 26 ppb (parts per billion). The highest level of 1,4-Dioxane found in fully treated water at a residential well was 12 ppb.

Is the water safe to drink?

The Connecticut Department of Public Health (CT DPH) was asked to make a potability determination for the wells containing 1,4-Dioxane at the Durham Meadows Superfund site. The CT DPH review evaluated this chemical's toxic effects, exposure potential, and possible risks to the general population and vulnerable groups (e.g., pregnant women, young children). This evaluation derived an interim drinking water comparison value of 20 ppb, a level that is intended to protect against 1,4-Dioxane's cancer and non-cancer health effects. This means that CT DPH would recommend that residents drink bottled water if the post-filter water sample is above 20 ppb. CT DPH will recommend more monitoring if there are detections which are below 20 ppb.

Based on its review, CT DPH determined that the level of 20 ppb is likely to be many times below the 1,4-Dioxane exposure levels where effects in animals begin to occur. CT DPH believes the 20 ppb level provides a large safety margin given that 1,4-Dioxane is not a mutagen or able to damage DNA.

There is no federal drinking water standard for 1,4-Dioxane. EPA-New England currently uses a risk-based screening concentration of 6.1 ppb for 1,4-Dioxane in drinking water. Using this risk-based level for screening contaminants of potential concern is EPA's conservative approach and preference to account for the cumulative effect of multiple contaminants and the potential of human exposure from various pathways at the site. The risk-based level of 6.1 ppb is an initial screening level above which further action, such as additional monitoring and evaluation is needed.

The information used to develop the risk-based level of 6.1 ppb is based on an older evaluation. EPA recently determined that it was necessary to re-evaluate all available scientific information and studies regarding the potential toxicity of 1,4-Dioxane, and has prioritized this review for the coming year.

Since the 1,4-dioxane levels detected in post-filter drinking water samples from this neighborhood are all below 20 ppb, CT DPH has determined that the water does not present a risk to public health. Additionally, using its protective exposure assumptions, and considering the effectiveness of the carbon filters to remove all other contaminants in the unfiltered water, EPA-New England has determined that the detections of 1,4-Dioxane above 6.1 ppb in drinking water do not warrant immediate action at this time. However, the fact that there are detections above EPA's risk-based screening level of 6.1 ppb indicate that follow-up monitoring is needed on a regular basis. EPA, CT DEP and CT DPH will closely monitor test results in light of current and future risk assessments on this chemical.

Another positive finding is that at all sampled locations, none of the other volatile organic compounds (VOCs) that have been historically found in this neighborhood in untreated water are making their way past the carbon filters into tap water. This indicates that the current system of filtration and monitoring is working to prevent public exposure to this group of VOCs.

What happens next?

EPA is planning to resample wells for 1,4-Dioxane in the spring of 2004. EPA will also sample a number of additional wells in the area for 1,4-Dioxane at that time. EPA will continue to evaluate the presence of 1,4-Dioxane throughout the remainder of the RI/FS process, and will continue to provide updated information about the ongoing evaluation.



Information Repository: Durham Public Library, 7 Maple Avenue, Durham, CT 06422-2112. For assistance locating information in the repository, please call Valerie Harrod at 860-349-9544. Library hours are 10:00 - 9:00 Monday - Thursday, and 10:00 - 5:00 Friday and Saturday.

If you have any questions about the Durham Meadows Superfund Site or would like more information, you may call or write:

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EPA New England website for Durham Meadows
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