



Beginning to Discover the Causes of Childhood Leukemia



CDC's investigation took scientists to Fallon, a city in Churchill County.

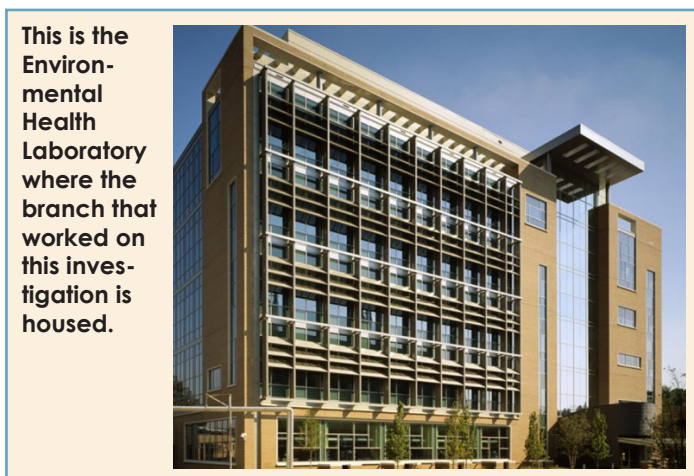
From 1997 to 2001, doctors in Churchill County, Nevada, found that 15 children had leukemia. This number was higher than usual. CDC worked with the Nevada State Health Division to identify possible environmental exposures in the community that might be contributing to the increased number of children who were sick.

CDC found that people who lived in Churchill County had higher amounts of two chemicals—tungsten and arsenic—in their blood and urine than the U.S. population. The higher amounts were found in both in children with and without leukemia. Because it is not likely that the chemicals alone caused leukemia, CDC conducted more tests to find out whether genes played a role in causing the disease. Scientists compared the genes of families whose children had leukemia with the genes of families whose children did not have leukemia to determine if there were any differences. Usually these gene variations cause no harm, but sometimes they can increase a person's risk of getting a disease.

After studying many genes, CDC scientists found a variation in a gene called SUOX. This gene tells the body how to make special proteins called sulfite oxidase enzymes. These enzymes work to change a harmful substance into a safer form in the body. All

of the children with leukemia had this SUOX gene variation, and 40% of the children who did not have leukemia had that same variation. This means that even if the variation in the SUOX gene adds to the risk for leukemia, there must also be other factors involved. More research is needed to find out how SUOX gene variations affect people who have them, and what genetic, environmental, and other factors contribute to the illness. This study is an important first step in answering the difficult questions about childhood leukemia.

CDC's work in Churchill County, Nevada, is just one example of how scientists at CDC's Environmental Health Laboratory use advanced science and innovative techniques to help change and improve environmental public health. By preventing disease from exposure to toxic chemicals in the environment; responding to terrorism and public health emergencies involving chemicals; and advancing laboratory methods to diagnose and prevent disease, the laboratory has improved people's health across the nation and around the world.



For more information about CDC at Work, please contact us at (202) 245-0600 or go to <http://www.cdc.gov/washington/>.

