Exposure Investigation
August 2011 Urine Sampling Results
Summary Fact Sheet

What was tested and how was it tested?
Staff from the federal Agency for Toxic Substances and Disease Registry (ATSDR) and Oregon Health Authority (OHA) collected 66 urine samples from 38 households between Aug. 30 and Aug. 31, 2011. This sample collection was intended to provide a baseline assessment of exposure in the community, and was conducted during the time of year when herbicide use is generally considered to be at its lowest level. Results from two participants were excluded from the report due to their age and the inability to compare their results to a nationally representative study.

Samples were collected from participants at their homes, frozen on dry ice, and shipped overnight to the laboratory at the National Center for Environmental Health (NCEH) at the Centers for Disease Control and Prevention (CDC) headquarters in Atlanta, Ga. The NCEH lab analyzed the samples for 2,4-D and atrazine, along with atrazine breakdown products.

Why only 2,4,-D and atrazine?
Of the 11 herbicides used on forest lands in the area, 2,4,-D and atrazine are the only two for which laboratory methods have been developed to detect their presence in urine.

What were the basic results of the urine testing?
Atrazine:

- None of the participants had atrazine or any of its breakdown products in their urine samples.

2,4-D:

- Five of the participants did not have any 2,4,D detected in their urine samples.
- Six participants had levels of 2,4-D that ATSDR considers elevated, as compared to the levels found in the general U.S. population, as reported by NHANES[1].
- The results ranged from undetectable to 37.33 micrograms per gram (µg/g) of creatinine[2].
- The average level was 0.4 µg/g.

What is NHANES?
The National Health and Nutrition Examination Survey (NHANES) is a nationwide health survey that involves the collection of biological information (for example, blood pressure, urine, blood, weight, height) to establish a general sense for the health status of the U.S. population. Biomonitoring is the collection and testing of biological specimens (for example, blood, urine, hair) to monitor the country's health status. NHANES is an annual survey that reports on many health indicators, including the results of 212 chemicals measured in the blood or urine of thousands of participants across the United States. NHANES findings show that chemical exposures are widespread among Americans.

The NHANES results for 2,4-D show that 95 percent of the U.S. population has levels of 2,4-D in their urine that are below 1.08 µg/g.

[1] National Health and Nutrition Examination Survey (NHANES) 4th National Report on Human Exposure to Environmental Chemicals http://www.cdc.gov/exposurereport/.
[2] All 2,4-D urine concentrations are creatinine-adjusted and are expressed as micrograms of 2,4-D per gram of creatinine (µg/g).

Do the results indicate there is a health risk in our community?
All of the results from the August 2011 urine sampling are well below the reference value for 2,4-D. The reference value for 2,4-D is more than 1,000 times less than the lowest dose shown to cause harmful health effects in animals. The comparison value for 2,4-D in urine is called the Biomonitoring Equivalent (BE), which is 300 µg/g of creatinine for long-term, or chronic, exposures. That level is more than eight times higher than the highest level found in the August urine sample results.

ATSDR acknowledges there are uncertainties in the science of toxicology, and that people have unique susceptibilities to chemicals. However, the reference value is considered to be protective of the most sensitive individuals, including children. Existing science indicates that, at the low levels reported in this first round of sampling, health problems are not expected.

What is going to happen now?
OHA will collect urine samples from residents immediately after a nearby forest land application of 2,4-D and atrazine. This will help to determine whether people are being exposed from that source, as opposed to other more common sources, such as weed killers that can be purchased from garden stores.

OHA is now preparing to collect urine samples from residents in the spring, both before and within 24 hours after a nearby application of pesticides.

Can I participate in the investigation?
To find out more, or to sign up as a potential volunteer, please contact Karen Bishop at karen.bishop@state.or.us, or call 1-877-290-6767.

More information about 2,4-D:
2,4-D is a herbicide widely used to kill broadleaf plants. It is applied to farm and forest lands by professional applicators, but it is also an active ingredient in many common herbicides available to the public at lawn and garden stores. For a complete list of products containing 2,4-D that are registered in Oregon, click here, or call 1-877-290-6767 to have this information sent to you.

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