



Mount Sinai *Children's Environmental Health Center*

Protecting Children Against Environmental Threats to Health

Chemical Biomonitoring Fact Sheet

March 2010

What is biomonitoring?

Biomonitoring programs measure concentrations of chemicals (biomarkers) in human urine, blood, and breast milk. Biomonitoring studies being performed at the Center for Disease Control and Prevention exam the levels of over 200 chemicals in Americans. This program, called *The National Report on Human Exposure to Environmental Chemicals*, is part of the larger National Health and Nutrition Examination Survey (<http://www.cdc.gov/exposurereport/index.html>).

The survey has been providing information about background concentrations of environmental chemicals of concern since 1999; blood and urine samples are collected from about 2,400 people in the U.S. every two years and each time new chemicals are added to the list.

What is the purpose of biomonitoring for chemicals in blood or urine?

Using the latest technology, it is now possible to measure both naturally occurring and manmade chemicals in our bodies. Studies that measure chemicals in our bodies are intended to develop background information on various chemicals in the environment. They help to establish a baseline of data for the general population so that we can follow trends over time.

Why don't we routinely perform blood or urine tests to check for levels of toxic chemicals in children or pregnant women?

The presence of the chemical or its byproducts does not necessarily reveal the source of the exposure, the route of the exposure, or, depending on the chemical, whether the level is associated with health effects. When the potential exists to identify the source of exposure as, for example, with lead, it makes sense to test for that specific chemical. There is now sufficient human data from occupational and other studies on lead (conducted over the past 30 years) that allow us to identify the levels at which adverse health effects can be expected.

In the case of dioxins, PCBs, and flame retardants, there can be multiple, widespread sources of exposure that are more difficult to pinpoint. Moreover, while we can determine the level of the chemical or its byproducts in blood or urine, we cannot accurately predict what level is associated with health effects. Complicating the issue is the fact that the biomarkers we are measuring may be short-lived in the blood or urine, as is the case for BPA and phthalates; therefore, a test may provide a snapshot of exposure at one moment and may or may not reflect the average levels over time.

What about chemicals being found in breast milk?

While it is true that many of the chemicals to which mothers have been exposed will be detectable in breast milk, considerable research confirms that breastfeeding still offers advantages over formula for many reasons, including the immunological support it provides for infants.

Will such testing ever become routine?

With work being conducted at our center and others around the world, we are beginning to identify levels that might be worthy of attention. However, the results of biomonitoring data by themselves are not informative in helping consumers understand their individual health risk, which is why we don't recommend routine testing.

Where can I get more information?

For more information, contact the Mount Sinai Pediatric Environmental Health Specialty Unit, Mount Sinai Medical Center, 1 Gustave L. Levy Place, Box 1512, New York, NY 10029. Phone:1-866-265-6201. Fax:212-241-4309. Visit us online at: www.mssm.edu/cpm/pehsu/ You may also contact your local health or environmental department or regional EPA office.