

Biomonitoring 101

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Biomonitoring measures the amount of a chemical in your body. The Agency for Toxic Substances and Disease Registry (ATSDR) usually evaluates possible chemical exposure with other scientific methods before using biomonitoring. To help understand what the results mean, ATSDR also asks questions about personal habits and other things like work history.

What is biomonitoring?

- ATSDR scientists use **biomonitoring** to measure how much of a chemical you have been exposed to.
- Lab tests can measure the amount of a chemical (or its **metabolite**) in body tissues or fluids, such as blood or urine.
- Only specialized labs can run biomonitoring tests.
- Biomonitoring cannot test for all chemicals.

What is a **metabolite**?

Once a chemical is in your body, it may break down into a different form. This new form is called a **metabolite**.

How can chemicals get into my body?

- Chemicals can get into your body from the soil and air, as well as from water, dust, food, and consumer products.
- Your body even produces small amounts of some chemicals.

What do scientists know about how chemicals affect my health?

- Scientists know the effects that **some** chemicals have on your health, but they do not know the health effects of **most** of the tens of thousands of chemicals used today.
- Even when scientists have evidence that a chemical may cause a particular health effect, **they often don't know the amount (or level) that can harm human health.**

Do biomonitoring tests measure all chemicals in my body?

- Some chemicals only stay in your body for a few hours, but some stay for a few days or weeks or even for years.
- Testing may not find a chemical in your body even if you were exposed a few days ago.
- Testing might find a chemical in your body that you haven't been exposed to in 10 or more years.

What can scientists learn from biomonitoring test results?

- How much of the chemical is in your body from **all sources** combined.
- For some chemicals, the amount in your body can be compared to amounts in all people in the United States.
- For a few chemicals, biomonitoring levels can be used to determine if exposures are unsafe.

What questions does biomonitoring not (or rarely) answer?

- Will I have health problems?
- Are my health problems from exposure to the chemical?

- How or where was I exposed?

- When or how often was I exposed?
- How long did the exposure last?
- How much of the chemical was I exposed to?
- What was the source of exposure?

What other information do scientists gather when they investigate chemical exposure?

- Environmental testing information
 - Scientists may measure the amount of a chemical in indoor and outdoor air, soil, indoor dust, food, or water.
 - Environmental test information may help scientists understand how the chemical gets into people's bodies, such as in the air they breathe or the food they eat.
- Personal information
Scientists may ask you these questions:
 - What are your activity patterns?
 - Where do you work, live, and play?
 - What is your smoking history?
 - What are your hobbies?
 - Where do you get your drinking water and food?
- Medical information
For example, do you have asthma, kidney disease, or diabetes?

What else should I know about biomonitoring?

- Biomonitoring may not be the best way to answer questions about chemical exposures.
- Scientists use different biomonitoring methods depending on the question they are asking.
- Scientists recommend environmental sampling either before or during biomonitoring.
- Sampling strategies can be complicated and take time.

For more information about ATSDR, visit www.atsdr.cdc.gov.