Introduction to biomonitoring

What is biomonitoring?

Biomonitoring is the measurement of chemicals in human biological samples, such as blood and urine. It is uniquely able to identify and quantify chemical exposures in a population.

Biomonitoring can help track the types and amounts of chemicals that get into people from all sources combined. It can provide an overall measure of exposure to certain chemicals found in air, water, soil, dust, food, and consumer products. One example of biomonitoring is the widespread testing of children's blood for lead.

Chemical exposures in daily life

Every day, people are exposed to **thousands of chemicals**. These exposures can happen anywhere, including at home or work, and can come from food, drinking water, personal care products, and other everyday items. These chemicals may be natural, such as **lead** and **arsenic**, or synthetic, like **perfluoroalkyl and polyfluoroalkyl substances (PFASs)**, and have been associated with harmful effects, including cancer, respiratory disease, birth defects, and decreased fertility.

Understanding exposure sources

Biomonitoring measures chemicals in biological samples to find out how much exposure people have had, but it does not tell us how or where they were exposed to those chemicals.

We use surveys that ask participants about what they eat and drink; the products they use; and where they live, work, and play to try to understand how they might have been exposed to the chemicals we found in their samples.

Biomonitoring supports public health

The health impacts of chemical exposures are felt across California, especially in communities already affected by poverty, stress, and other factors. Infants and children are especially vulnerable to exposures because of their sensitive stage of development and behaviors like frequent hand-to-mouth activity. Reducing chemical exposures over the course of our lives is an essential component of disease prevention, and biomonitoring is critical to this effort.

By measuring chemicals in many people across the state and over time, we can learn whether some populations are more exposed to chemicals than others, and how chemical exposures are changing. Data from biomonitoring studies can also help researchers understand how exposures might affect health. This data can inform policies to reduce chemical exposures in California and protect our health and the environment.

More about biomonitoring

What can biomonitoring do?

- It can show which chemicals are in a person's body, and at what levels
- When we measure the same chemicals in many people over a long period of time, it can tell us:
  - Who is more exposed to those chemicals
  - How chemical exposures change over time
- It can help identify ways to reduce people's exposures

On its own, biomonitoring tells us a lot about chemical exposures. Together with health and environmental data, biomonitoring can help determine how exposures affect people's health and identify ways to reduce exposures.

What can't biomonitoring do?

- It cannot measure all the chemicals a person has been exposed to
- It cannot tell us how much of a chemical is harmful, except for some metals; see this report for more details: The California Regional Exposure (CARE) Study, 2018 - 2020
- It cannot tell you if your health will be impacted
- It cannot identify the exact source(s) of a person's chemical exposures

About Biomonitoring California

The California Environmental Contaminant Biomonitoring Program, also known as Biomonitoring California, was established through legislation in 2006 by Senate Bill 1379 (Perata and Ortiz, Chapter 599, Statutes of 2006) and codified in Health & Safety Code Sections 105440 et seq.

Biomonitoring California's principal goals are to:

- Monitor levels and establish trends of specific environmental chemicals in representative statewide samples of Californians
- Help assess the effectiveness of existing public health and environmental programs in reducing chemical exposures
- Conduct community-focused studies

Biomonitoring California is one of a small number of state biomonitoring programs in the United States. These programs were developed recognizing that each state has unique histories, demographics, and industries, all of which may impact exposures. Data from these programs complement the data collected by the National Health and Nutrition Examination Survey program of the Centers for Disease Control and Prevention (CDC).

BIOMONITORING CALIFORNIA
MEASURING CHEMICALS IN CALIFORNIANS