

Biomonitoring: Is body burden relevant to public health?

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Abstract

Biomonitoring is the study of the presence and concentration of chemicals in humans usually by the measurement of blood, urine or breath (exhaled air). Properly conducted, these data provide a picture of the amount of a chemical or agent actually absorbed into the body for a specific period of time. This review provides a history of biomonitoring, as well as the limitations and potential benefits of these studies. Examples of the proper and possibly improper use of biomonitoring and the impact made on our society are provided. Reasons for having comprehensive national biomonitoring programs are summarized, along with the societal benefits and risks. A brief discussion of the history of the NHANES program and select results from the 2005 Report are presented. By 2010, it has been predicted that the Centers for Disease Control (CDC) will be monitoring nearly 1000 chemicals in persons from all regions of the nation. The measurement of chemicals and biomarkers has revolutionized the field of exposure assessment. Overall, we recommend an approach of careful interpretation, understanding that the data obtained are useful for establishing baseline information about exposure, rather than equating detection with risk. We present suggestions for contextualizing biomonitoring results in order to provide the public with the tools to distinguish genuine health risks from trivial ones.

Keywords: Biomonitoring; Exposure assessment; Risk assessment; Biomarker