Biomonitoring
A Best Practices Report
for State Legislators
BIOMONITORING

A BEST PRACTICES REPORT FOR STATE LEGISLATORS

By

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INTRODUCTION

People are exposed to chemicals in the air, water, soil and dust and in their food and consumer products. These chemicals or their metabolites can be found in human hair, bones, blood, urine, serum, saliva and breast milk. Biomonitoring detects and measures trace concentrations of chemicals that actually are present in these human fluids and tissues.

Well-known examples of biomonitoring include blood lead testing in children and measuring alcohol on people’s breath. Today, it is possible to reliably measure more than 300 chemicals in people.

By indicating exactly the chemicals present in peoples’ bodies and at what levels, biomonitoring provides a scientific foundation upon which sound policy decisions can be built. Biomonitoring provides health departments with the tools to investigate clusters of illnesses such as cancer or birth defects. It also can play a critical role in responding to terrorism or public health emergencies involving chemicals by identifying the chemical agents and determining which people were exposed.

Biomonitoring can help legislators answer key public health questions, including:

- Do pesticides pose a risk to constituents who farm, live near farms or eat certain types of foods?
- Are elevated drinking water contaminants accumulating in your residents?
- Have the state’s no-smoking policies effectively reduced tobacco smoke exposure in non-smokers?
- Do increased levels of mercury, dioxin or polychlorinated biphenyls (PCBs) in game fish threaten a community’s health?
- In the event of a terrorist or suspected terrorist attack, did the attackers use chemical or radiological weapons? Who was exposed and who needs medical treatment?

For several decades, the Centers for Disease Control and Prevention’s (CDC) Environmental Health Laboratory has used biomonitoring to provide critical information about the U.S. pop-
ulation's exposure to hundreds of environmental chemicals. Through its National Biomon-
toring Program, CDC’s Environmental Health Laboratory assesses the U.S. population’s exposure
to environmental chemicals. It collaborates on more than 50 studies each year to examine
vulnerable populations, such as newborns, children, pregnant women, and population groups
or communities known or likely to have higher exposures. To assess the U.S. population’s expo-
sure to chemicals, CDC measures chemicals or their metabolites in the blood and urine from
participants in the National Health and Nutrition Examination Survey (NHANES). This ac-
tually is a series of surveys on the health status, health-related behaviors and nutrition of the
U.S. population. The survey, which is nationally representative of the U.S. population, became
a continuous survey in 1999 with two-year survey cycles. Each two-year sample tests approxi-
mately 2,400 people. The data are analyzed separately by age, sex and race/ethnicity groups.
2001–2002 and 2003–2004. CDC scientists publish significant biomonitoring survey find-
ings in peer-reviewed publications, then periodically publish a summary report, the National
Report on Human Exposure to Environmental Chemicals.

The current NHANES survey design does not allow state-by-state or city-by-city calculation
of exposure estimates. For example, CDC cannot extract a subset of data and examine levels
of blood lead that represent a state population. To produce such data, states need to be able
to conduct biomonitoring assessments statewide or in communities or groups where chemical
exposure is a concern. State biomonitoring programs can produce state- or community-specific
exposure data that can be compared to results in CDC’s exposure report. Such comparisons
will show whether a person or a group has an unusually high exposure compared to the entire
U.S. population.

The Association of Public Health Laboratories currently is working to develop a National
Biomonitoring Network that would provide the infrastructure needed to produce this state-
specific biomonitoring data. The goals of the network are to investigate potential human expos-
sures and associated environmental diseases and to develop and enhance environmental health
policies to minimize health risks, based on human exposure and toxicology information.

Several state legislatures have adopted legislation aimed at boosting biomonitoring activities.
California and Minnesota have initiated state biomonitoring programs to assess residents’ po-
tential exposure to chemicals present in their communities. In 2007, the Illinois General As-
sembly enacted legislation to study the best way to establish a permanent statewide biomoni-
toring program. Other states have considered temporary projects or programs or those that
target individual chemicals or populations. (NCSL’s Environmental Health Legislation Data-
of proposed state biomonitoring legislation.)
Establishing biomonitoring programs raises sensitive medical, ethical and cultural issues. Ensuring that the proper methodology is used to collect samples and analyze them reduces false positives and false negatives. Keeping medical test results confidential, advising participants who may have identified significant health risks through participation in a study, communicating findings to communities and the general public in a culturally sensitive and accurate manner, and appropriately using and analyzing data collected from the program are important considerations for legislatures as they craft biomonitoring policy.

This report reviews state biomonitoring policies to identify important program elements and discuss options for how the elements can be addressed in state legislation. Appendix A contains select legislative definitions. Appendix B contains Minnesota’s enacted legislation establishing the Healthy Minnesotans Biomonitoring Program. Appendix C contains California’s enacted legislation establishing the California Environmental Contaminant Biomonitoring Program. Appendix D contains Illinois’s enacted legislation authorizing the Illinois Biomonitoring Feasibility Study. Appendix E contains copies of select biomonitoring legislation from other states.

**BUILDING STATE BIOMONITORING CAPACITY**

Although the federal government has supported collection of biomonitoring data in communities nationwide, it is imperative to build state-level biomonitoring capacity. Because they are representative only of the general U.S. population, CDC’s biomonitoring data do not provide overall information of chemical exposures in any one state. Furthermore, federal biomonitoring data cannot monitor all potential environmental exposures in each state.

With adequate state-level biomonitoring capacity and capability, states can:

- Focus on contaminants that are prevalent or emerging in the state or local communities, targeting scarce resources to critical need areas;
- Develop a comprehensive understanding of exposure levels among state residents; and
- Identify and track exposure trends that affect specific communities.

State legislatures can help build state biomonitoring capacity by establishing statewide programs or pilot projects and providing state public health laboratories with the personnel, resources and equipment necessary to conduct biomonitoring investigations.
Biomonitoring Policy Elements

Policymakers who want to craft state legislation to promote biomonitoring programs can borrow from a number of proposals considered or adopted in other states. Major elements of biomonitoring programs include the type of program; the program focus; the program design; protocols and guidelines; community participation and outreach; partnerships; and the use of biomonitoring data. Careful consideration of these elements when crafting legislation can lead to a meaningful, measurable and manageable biomonitoring program.

Types of Programs

Biomonitoring programs can take many forms. Primary models for biomonitoring programs include the surveillance-based model, the community response-based model and the investigator-initiated model. State biomonitoring programs can be established based on one of these models or on a combination.

Surveillance-based model

The surveillance-based model of biomonitoring programs targets specific chemicals, at-risk populations or geographic communities. Surveillance-based biomonitoring programs can be used to track trends in population exposure either statewide or community-wide. Surveillance-based programs also can be useful for identifying highly exposed communities, estimating a statewide baseline exposure for certain chemicals, comparing exposure levels among various communities in the state, evaluating the effectiveness of public health policies designed to reduce chemical exposures (such as bans on industrial chemicals or chemicals in consumer products), and prioritizing future research or policy interventions.

Community response model

The community response model establishes a reactive biomonitoring program that responds to community-specific concerns about chemical exposure in a population. The community response model can be used to investigate chemical exposures in people who are concerned about local chemical releases or occurrences.

A community response-based model also could be used to respond to emergencies that involve chemicals. When elemental mercury was released in a Massachusetts middle school in 2008, for example, state public health officials used biomonitoring to identify those exposed. Emergency response staff and toxicologists at the Massachusetts Bureau of Environmental Health worked with laboratories to test 30 students and staff for exposure to mercury, a heavy metal linked to impaired development and other neurological effects. In addition to identifying those who needed special medical treatment, biomonitoring also helped allay the fears of those who thought they were exposed but were not.
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Investigator- or laboratory-initiated research

The investigator- or laboratory-initiated research model enables public and private investigators to initiate biomonitoring projects to answer specific research questions. This model can be used to test a hypothesis that includes collection of human specimens in order to better understand a chemical’s composition and potential for human exposure or effects.

Program Focus

Biomonitoring activities can be focused on specific target populations, communities or chemical exposures. Often, legislation will identify individual chemicals or communities for study. Alternatively, legislatures can call for an expert advisory panel to decide which communities or chemicals will be the focus of biomonitoring projects.

Target populations and communities

Infants and children, pregnant women and employees working in occupations with a high risk for chemical exposure are common targets for biomonitoring studies. Communities with known chemical occurrences also are often studied to determine the extent to which known chemical elements are entering the bodies of community members.

The following examples illustrate biomonitoring projects that target specific populations.

- Lake Superior Biomonitoring Study measures mercury levels in blood spot samples taken from newborns who were born to women in the Lake Superior basin. The study aims to establish a baseline range of mercury exposure for newborns in the study area.

- The Riverside Prenatal Biomonitoring Study measures select chemicals that may affect fetal development in pregnant women who obtain prenatal care at University of Minnesota medical clinics in Minneapolis. In addition to determining the range and distribution of exposures in this target population, the study also examines differences in exposure based on race and ethnicity.

- The Virginia Fertilizer Exposure Study at the Virginia Commonwealth University, in conjunction with the Virginia Division of Consolidated Laboratory Services, examined urine sample from professional turf applicators to determine their exposure to 13 commonly-used fertilizer products.

Rhode Island Cord Blood Study

In 2002, Rhode Island launched the Biomonitoring Cord Blood Study to establish a baseline of exposure to several heavy metals in pregnant women at the time of birth by testing umbilical cord blood. The state’s aging housing stock and high levels of seafood consumption raised concerns that heavy metals such as lead and mercury were adversely affecting prenatal development among some of the state’s citizens. The Rhode Island State Health Laboratory tested more than 500 umbilical cord blood samples from women. The results showed no detectable levels of lead or cadmium, but did indicate that black women had high levels of mercury compared to women of other racial groups. Study results currently are being reviewed for publication.
Factors to consider when crafting legislation that targets certain populations include whether the target population is transient; whether the population monitored represents a larger population; and whether the target population reflects the age, economic, racial and ethnic composition of the state.

**Target chemicals**

Biomonitoring projects also can focus on specific chemical exposures. In communities where known chemical spills or exposures have occurred, biomonitoring often is used to identify potential exposure in order to determine the possible public health threat.

Several factors can be considered when deciding whether a specific chemical is an appropriate target of a biomonitoring study.

- Degree of potential exposure. Was the chemical exposure brief or in such small amounts that measuring its occurrence in people will be difficult or impossible?

- Exposure potential. Is the target chemical prevalent in the state or community in which the biomonitoring study will occur?

- Known or suspected health effects. Are known health effects associated with the target chemical? Is the target chemical toxic or a carcinogen?

- Ability to detect and analyze the chemical. Are appropriate laboratory methods available to measure the chemical with a high degree of confidence? Does the state have the equipment and trained staff to test the chemical? Does the target chemical disappear quickly from the body after exposure, making detection less likely?

**Target potential disease clusters**

Biomonitoring studies also are conducted to investigate disease clusters that may have a chemical link. In a Churchill County, Nev. community, for example, where 15 cases of childhood leukemia had been diagnosed between 1997 and 2002, the CDC and the Nevada State Health Division used biomonitoring to determine that people in the area had higher levels of some metals, including tungsten and arsenic, in their urine. The results showed no difference in the amount of metals in families of children with leukemia and families in which no children had leukemia. However, the biomonitoring study led to further investigations that revealed a gene variance among children with leukemia that could affect their ability to detoxify chemicals.
Program Design

A state agency usually is given the lead to establish and administer biomonitoring programs established in state legislation. In California, for example, the State Department of Public Health was established as the lead entity for the biomonitoring program. In Minnesota, the Department of Health was given primary authority over the biomonitoring program.

Advisory panels

States also can use scientific advisory panels to help with program design and implementation. Panels can represent not only a wide range of science and public health expertise, but also the interests of environmental advocacy groups, industry, the affected communities and other stakeholders.

Such panels have been used in California and Minnesota. California legislation called for the Department of Public Health to establish a Scientific Guidance Panel “…composed of nine members, whose expertise shall encompass the disciplines of public health, epidemiology, biostatistics, environmental medicine, risk analysis, exposure assessment, developmental biology, laboratory sciences, bioethics, maternal and child health with a specialty in breastfeeding, and toxicology.”

Minnesota legislation established an eight-member Environmental Health Tracking and Biomonitoring Advisory Panel. The legislation called for members to have “…backgrounds or training in designing, implementing, and interpreting health tracking and biomonitoring studies or in related fields of science, including epidemiology, biostatistics, environmental health laboratory sciences, occupational health, industrial hygiene, toxicology, and public health…” The Minnesota advisory panel must make recommendations to the Department of Health on “priorities for biomonitoring that are based on sound science and practice, and that will advance the state of public health in Minnesota” as well as “specific communities and geographic areas on which to focus [biomonitoring efforts for]…specific chemicals to study under the biomonitoring program” and “other aspects of the design, implementation and evaluation of the…biomonitoring system.”

Protocols and Guidelines

Data collection

An important aspect of any state biomonitoring programs is its data collection guidelines. Data should be collected in an ethical, culturally sensitive and participatory manner. Several considerations can be addressed by data collection guidelines.

- Confidentiality. Ensuring the confidentiality of the test results and other health data collected during the biomonitoring program is important to protecting program participants’ privacy.
• Informed consent. Informed consent ensures that program participants fully understand the study and any risks that may be associated with their participation. Informed consent can require participants be given a statement that the study involves research; an explanation of the purposes of the research and the expected duration of participation; a description of the procedures; a description of any reasonably foreseeable risks or discomforts; a description of any benefits to the participant or to others that may reasonably be expected from the research; and an explanation of whom to contact for answers to pertinent questions about the research.

Voluntary participation. Participation in the California and Minnesota biomonitoring programs is on a strictly voluntary basis.\(^5\) States can establish incentive programs to increase voluntary participation in biomonitoring studies.

One way to ensure appropriate data collection is reliance on established national methods. Minnesota’s biomonitoring legislation required the Department of Health to “…be guided by protocols and guidelines developed by the Centers for Disease Control and Prevention and the National Biomonitoring Program.” It also requires reliance on the informed consent protocols established by the National Institutes of Health.\(^6\) The California legislation required the state program to “…incorporate, as appropriate, the methods utilized by the federal Centers for Disease Control and Prevention for the studies known collectively as the National Report on Human Exposure to Environmental Chemicals.”\(^7\)

Community Participation and Outreach

Community participation and outreach is a critical component of many biomonitoring programs that rely on public participation in the studies and can be guided by input from the community. Legislation can guide how communities participate in the programs and how program results are communicated to the participants.

One way states have ensured community participation is through public participation in program formation and implementation. California requires that activities of the advisory panel and implementation of the program “…provide opportunities for public participation and community capacity building with meaningful stakeholder input.” The legislation also requires the state to develop a strategy and plan that will ensure public participation in the biomonitoring program. Public participation is defined in California’s legislation to include, but not be limited to, conducting stakeholder meetings and workshops to solicit input and feedback.\(^8\)

Minnesota’s legislation provided that Department of Health develop “…a method for informing affected communities and local governments representing those communities concerning
biomonitoring activities and for receiving comments from citizens concerning those activities.9

States can also ensure that communities are kept informed of biomonitoring activities. California requires that “…informational materials and outreach activities directed to program participants and communities shall…be culturally appropriate and translated as needed.”10 Minnesota requires that program participants “…be provided with information and fact sheets about the program’s activities and its findings.” Biomonitoring projects in Minnesota have included numerous strategies, among them sending project information home with school children in the project area; posting flyers at neighborhood parks and libraries; submitting articles to community newspapers; enlisting the assistance of neighborhood organizations; holding community meetings; and meeting with medical providers, public health officials and advocacy groups.11

The California legislation also made efforts to protect communities that participated in biomonitoring studies. Specifically, the legislation provides that “…no governmental agency or private person or entity shall discriminate against a person or community based upon the biomonitoring results.”12

**Partnerships**

In addition to use of an official advisory panel, legislatures can encourage less formal partnerships to strengthen biomonitoring programs and leverage existing resources. Common partners include the following.

- **Academic institutions.** Many schools and universities collect clinical specimens through existing research that can be used in biomonitoring projects. In addition, research departments can be used to continue existing biomonitoring projects or initiate new research based on biomonitoring project results.

- **Federal government partners.** The Centers for Disease Control and Prevention, which conducts biomonitoring studies and has developed biomonitoring program guidelines, can be a useful source for state officials who are conducting biomonitoring. CDC has provided funding to states to conduct biomonitoring studies and also works with state laboratories to ensure the use of quality methods and procedures. The U.S. Environmental Protection Agency’s (EPA) Science to Achieve Results program (STAR) funds research grants and graduate fellowships in numerous environmental science and engineering disciplines. The program has funded a number of state biomonitoring studies. EPA has partnered with the National Institute for Environmental Health Sciences (NIEHS) to create the Centers for Children’s Environmental...
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Health and Disease Prevention Research Center, an initiative that uses biomonitoring studies to investigate possible disease-related chemical exposures in infants and children. NIEHS also supports biomonitoring research through its Superfund Basic Research Program. The National Institutes of Health has developed protocols and guidelines that can be used in setting standards for biomonitoring program participation.

- **Industry.** Industry can provide valuable information about what chemicals are present in the state or community and can share known data about these chemicals.

- **Physicians and health care providers.** Health care workers often are able to provide input on project design and help communities and project participants interpret and understand project findings.

- **Non-governmental organizations.** Groups such as the Association of Public Health Laboratories, the Association of State and Territorial Health Officials, the Council of State and Territorial Epidemiologists and the American Association of Poison Control Centers have numerous resources that can be useful to state officials who are conducting biomonitoring programs.

**Leveraging Existing Resources**

States can use existing state resources and programs to strengthen biomonitoring efforts and reduce costs. Many state laboratories responsible for chemical terrorism analysis and response have both trained personnel and laboratory equipment for detecting and measuring chemical exposures. States have been able to use these resources to conduct biomonitoring activities. Rhode Island, for example, used its state chemical terrorism response laboratory equipment in a pilot biomonitoring study that tested the umbilical cord blood of mothers for heavy metals such as lead, mercury and cadmium.

Environmental public health tracking networks also are a resource for biomonitoring programs. Tracking networks collect and analyze information about environmental hazards, exposures to those hazards and related effects on public health. Biomonitoring is an essential tool to provide tracking networks with data about environmental exposures. States can use resources to enhance both the tracking network and biomonitoring activities. Pennsylvania, for example, has used CDC grant funding to support an epidemiology research associate in the state’s Bureau of Epidemiology. The associate coordinates tracking and biomonitoring activities and investigates heavy metal exposure in citizens who live near coal-burning power plants.

**Collaboration Among States**

The Rocky Mountain Biomonitoring Consortium is a regional laboratory-based biomonitoring program among six states: Arizona, Colorado, Montana, New Mexico, Utah and Wyoming. Formed in 2002 through a CDC grant, the goals of the consortium are to:

- Develop laboratory capacity to monitor human exposures to environmental chemicals;
- Determine the number of people in the region exposed to environmental chemicals and the degree of their exposure; and
- Increase the capacity of participating states and local health departments to deliver environmental health services to help prevent disease resulting from exposure to toxic substances.

Although the consortium no longer receives federal funding, it is continuing biomonitoring activities using state funding and resources.
Use of Biomonitoring Data

Use of data collected during biomonitoring studies can be critical to the overall success of a project. Biomonitoring data can be used to improve the health of communities and inform public policy relating to health, consumer product safety and chemical management. Biomonitoring data should, however, be distributed in an ethical and culturally sensitive manner, especially when findings are uncertain or when information is scarce.

Assessing public policy
Biomonitoring can be used to assess the efficacy of public health policies by comparing exposure data before and after policy implementation. For example, biomonitoring was used to examine differences in sources and levels of environmental tobacco smoke exposure among hospitality workers in New York before and after passage of the state’s Clean Indoor Air Act, which banned smoking in most public places. By measuring cotinine—a metabolite of nicotine—in urine samples, researchers were able to document measurable reductions in environmental tobacco smoke exposure among hospitality workers following implementation of the state’s smoking ban.13 Such studies can give important insight to legislators who are deciding whether to implement or continue a public health program or policy.

Communicating to program participants
The manner in which individual results are shared with program participants raises important issues. The California legislation requires the state to give “the complete results” to individual participants who request the information. Any results provided to participants are subject to Institutional Review Board protocols and guidelines, however. When a significant health risk is identified in the results, “…program staff experienced in communicating biomonitoring results shall consult with the individual and recommend follow up steps, as appropriate.”14

Minnesota also uses an institutional review board for each project to ensure that participants’ rights are protected as they would be in research studies.15

Biomonitoring program information and results must be communicated in a sensitive manner to ensure that unfounded concerns about chemicals and health threats are not raised. To guard against this concern, for example, the Minnesota legislation included the following provision: “Priority shall be given to the development of materials specifically designed to ensure that parents are informed about all of the benefits of breastfeeding so that the program does not result in an unjustified fear of toxins [sic]. The materials shall communicate relevant scientific findings; data on the accumulation of pollutants to community health; and the required responses by local, state, and other governmental entities in regulating toxicant exposures.”16
Data sharing
An important aspect of many state biomonitoring programs is the ability to share data among agencies involved in the study. The Minnesota legislation required the Department of Health to establish a process for laboratories to follow to analyze specimens and report findings. California also requires biomonitoring results be shared with the state’s public health tracking networks, where available.

Laboratory Infrastructure

Adequate laboratory infrastructure is critically important to the success of any biomonitoring program. Laboratories that conduct biomonitoring research often need specialized equipment that is sensitive enough to identify and quantify chemicals in small specimens at low levels. Procedures for collecting, preserving, storing and transporting specimens and methods for detecting chemicals in those specimens must be followed to ensure accurate data. For many chemicals, detection methods must be developed and validated. Information technology systems are required for accurate data reporting and sharing.

A trained workforce also is vital to successful biomonitoring. Field workers who gather specimens and laboratory personnel who analyze samples need to be educated and trained. Proficiency testing is necessary to ensure methods are correctly followed and specimens are accurately analyzed.

Unfortunately, many state public health laboratories currently lack the capacity or capability to conduct biomonitoring research. In many areas, increased investment in laboratory equipment and personnel will be necessary to ensure successful implementation of a state biomonitoring program.
CONCLUSION

By indicating exactly the chemicals present in peoples’ bodies and at what levels, biomonitoring is an effective tool to trace chemical exposures in a state or community. Policy-makers can use biomonitoring information to identify at-risk communities, target resources to areas of need, and assess whether existing public health programs are effectively reducing citizens’ chemical exposures.

National biomonitoring studies conducted by the CDC do not provide information on chemical exposures in any one state or track all chemical exposures in a state. State-level biomonitoring programs can provide a picture of a state’s overall chemical exposure and focus on specific chemicals or communities of concern.

A number of policy options exist for state legislators who are crafting biomonitoring policies. These include:

• Program design and focus;
• Protocols for data collection and use;
• Community participation and outreach;
• Partnerships with outside agencies and organizations; and
• Determining how to leverage existing resources and strengthen needed laboratory infrastructure.

Consideration of these options will contribute to an effective and efficient biomonitoring program that reduces chemical exposures and promotes public health.
APPENDIX A.
SELECT LEGISLATIVE DEFINITIONS

“Biomonitoring”
“...means the process by which chemicals and their metabolites are identified and measured within a biospecimen.” 2007 Minn. Laws, Chap. 57; Minn. Stat. §144.995(c) and 2006 Cal. Stats., Chap. 599; Cal. Health & Safety Code §105440(a)(2).

“...means identifying and assessing the concentration of toxic chemicals and their metabolites in an individual’s body to determine the accumulation of pollutants in the individual.” Indiana House Bill 1473 (Sess. 2007).

“Biospecimen”
“[S]pecimen means a sample of a substance that is part of or present in the human body, including blood, bone, umbilical cord blood, meconium, fat, hair, milk, saliva, and urine.” Indiana House Bill 1473 (Sess. 2007).

“Biospecimen’ means a sample of human fluid, serum, or tissue that is reasonably available as a medium to measure the presence and concentration of chemicals or their metabolites in a human body.” 2007 Minn. Laws, Chap. 57; Minn. Stat. §144.995(d).

“Community”
“‘Community’ means geographically or nongeographically based populations that may participate in the community-based biomonitoring program. A “nongeographical community” includes, but is not limited to, populations that may share a common chemical exposure through similar occupations, populations experiencing a common health outcome that may be linked to chemical exposures, or populations that may experience similar chemical exposures because of comparable consumption, lifestyle, product use, or subpopulations that share ethnicity, age, or gender.” 2007 Minn. Laws, Chap. 57; Minn. Stat. §144.995(f) and 2006 Cal. Stats., Chap. 599; Cal. Health & Safety Code §105440(4).

“Designated Chemicals”
“‘Designated chemicals’ means those chemicals that are known to, or strongly suspected of, adversely impacting human health or development, based upon scientific, peer-reviewed animal, human, or in vitro studies, and consist of only those substances including chemical families or metabolites that are included in the federal Centers for Disease Control and Prevention studies that are known collectively as the National Reports on Human Exposure to Environmental Chemicals program and any substances as specified pursuant to subdivision (c) of Section 105449.” 2006 Cal. Stats., Chap. 599; Cal. Health & Safety Code §105440.

“Environmental Hazard”
“‘Environmental hazard’ means a chemical or other substance for which scientific, peer-reviewed studies of humans, animals, or cells have demonstrated that the chemical is known or reasonably anticipated to adversely impact human health.” 2007 Minn. Laws, Chap. 57; Minn. Stat. §144.995(i).
APPENDIX B. HEALTHY MINNESOTANS BIOMONITORING PROGRAM

2007 Minn. Laws, Chap. 57
The following is an excerpt from 2007 Minn. Laws, Chap. 57, the general appropriations bill for environment, natural resources, energy and commerce for FY 2008.

Sec. 143. [144.995] DEFINITIONS; ENVIRONMENTAL HEALTH TRACKING AND BIOMONITORING.

(a) For purposes of sections 144.995 to 144.998, the terms in this section have the meanings given.
(b) “Advisory panel” means the Environmental Health Tracking and Biomonitoring Advisory Panel established under section 144.998.
(c) “Biomonitoring” means the process by which chemicals and their metabolites are identified and measured within a biospecimen.
(d) “Biospecimen” means a sample of human fluid, serum, or tissue that is reasonably available as a medium to measure the presence and concentration of chemicals or their metabolites in a human body.
(e) “Commissioner” means the commissioner of the Department of Health.
(f) “Community” means geographically or nongeographically based populations that may participate in the biomonitoring program. A “nongeographical community” includes, but is not limited to, populations that may share a common chemical exposure through similar occupations, populations experiencing a common health outcome that may be linked to chemical exposures, populations that may experience similar chemical exposures because of comparable consumption, lifestyle, product use, and subpopulations that share ethnicity, age, or gender.
(g) “Department” means the Department of Health.
(h) “Designated chemicals” means those chemicals that are known to, or strongly suspected of, adversely impacting human health or development, based upon scientific, peer-reviewed animal, human, or in vitro studies, and baseline human exposure data, and consists of chemical families or metabolites that are included in the federal Centers for Disease Control and Prevention studies that are known collectively as the National Reports on Human Exposure to Environmental Chemicals Program and any substances specified by the commissioner after receiving recommendations under section 144.998, subdivision 3, clause (6).
(i) “Environmental hazard” means a chemical or other substance for which scientific, peer-reviewed studies of humans, animals, or cells have demonstrated that the chemical is known or reasonably anticipated to adversely impact human health.
(j) “Environmental health tracking” means collection, integration, analysis, and dissemination of data on human exposures to chemicals in the environment and on diseases potentially caused or aggravated by those chemicals.

Sec. 144. [144.996] ENVIRONMENTAL HEALTH TRACKING; BIOMONITORING.

Subdivision 1. Environmental health tracking. In cooperation with the commissioner of the Pollution Control Agency, the commissioner shall establish an environmental health tracking program to:

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coordinate data collection with the Pollution Control Agency, Department of Agriculture, University of Minnesota, and any other relevant state agency and work to promote the sharing of and access to health and environmental databases to develop an environmental health tracking system for Minnesota, consistent with applicable data practices laws;

(2) facilitate the dissemination of aggregate public health tracking data to the public and researchers in accessible format;

(3) develop a strategic plan that includes a mission statement, the identification of core priorities for research and epidemiologic surveillance, and the identification of internal and external stakeholders, and a work plan describing future program development and addressing issues having to do with compatibility with the Centers for Disease Control and Prevention’s National Environmental Public Health Tracking Program;

(4) develop written data sharing agreements as needed with the Pollution Control Agency, Department of Agriculture, and other relevant state agencies and organizations, and develop additional procedures as needed to protect individual privacy;

(5) organize, analyze, and interpret available data, in order to:

(i) characterize statewide and localized trends and geographic patterns of population-based measures of chronic diseases including, but not limited to, cancer, respiratory diseases, reproductive problems, birth defects, neurologic diseases, and developmental disorders;

(ii) characterize statewide and localized trends and geographic patterns in the occurrence of environmental hazards and exposures;

(iii) assess the feasibility of integrating disease rate data with indicators of exposure to the selected environmental hazards such as biomonitoring data, and other health and environmental data;

(iv) incorporate newly collected and existing health tracking and biomonitoring data into efforts to identify communities with elevated rates of chronic disease, higher likelihood of exposure to environmental hazards, or both;

(v) analyze occurrence of environmental hazards, exposures, and diseases with relation to socioeconomic status, race, and ethnicity;

(vi) develop and implement targeted plans to conduct more intensive health tracking and biomonitoring among communities; and

(vii) work with the Pollution Control Agency, the Department of Agriculture, and other relevant state agency personnel and organizations to develop, implement, and evaluate preventive measures to reduce elevated rates of diseases and exposures identified through activities performed under sections 144.995 to 144.998; and

(6) submit a biennial report to the chairs and ranking members of the committees with jurisdiction over environment and health by January 15, beginning January 15, 2009, on the status of environmental health tracking activities and related research programs, with recommendations for a comprehensive environmental public health tracking program.

Subd. 2. Biomonitoring. The commissioner shall:

(1) conduct biomonitoring of communities on a voluntary basis by collecting and analyzing biospecimens, as appropriate, to assess environmental exposures to designated chemicals;

(2) conduct biomonitoring of pregnant women and minors on a voluntary basis, when scientifically appropriate;

(3) communicate findings to the public, and plan ensuing stages of biomonitoring and disease tracking work to further develop and refine the integrated analysis;

(4) share analytical results with the advisory panel and work with the panel to interpret results, communicate findings to the public, and plan ensuing stages of biomoni-
Subd. 3. Health data. Data collected under the biomonitoring program are health data under section 13.3805.

Sec. 145. [144.997] BIOMONITORING PILOT PROGRAM.

Subdivision 1. Pilot program. With advice from the advisory panel, and after the program guidelines in subdivision 4 are developed, the commissioner shall implement a biomonitoring pilot program. The program shall collect one biospecimen from each of the voluntary participants. The biospecimen selected must be the biospecimen that most accurately represents body concentration of the chemical of interest. Each biospecimen from the voluntary participants must be analyzed for one type or class of related chemicals.

The commissioner shall determine the chemical or class of chemicals to which community members were most likely exposed. The program shall collect and assess biospecimens in accordance with the following:

(1) 30 voluntary participants from each of three communities that the commissioner identifies as likely to have been exposed to a designated chemical;
(2) 100 voluntary participants from each of two communities:
   (i) that the commissioner identifies as likely to have been exposed to arsenic; and
   (ii) that the commissioner identifies as likely to have been exposed to mercury; and
(3) 100 voluntary participants from each of two communities that the commissioner identifies as likely to have been exposed to perfluorinated chemicals, including perfluorobutanoic acid.

Subd. 2. Base program. (a) By January 15, 2008, the commissioner shall submit a report on the results of the biomonitoring pilot program to the chairs and ranking members of the committees with jurisdiction over health and environment.
(b) Following the conclusion of the pilot program, the commissioner shall:
   (1) work with the advisory panel to assess the usefulness of continuing biomonitoring among members of communities assessed during the pilot program and to identify other communities and other designated chemicals to be assessed via biomonitoring;
   (2) work with the advisory panel to assess the pilot program, including but not limited to the validity and accuracy of the analytical measurements and adequacy of the guidelines and protocols;
   (3) communicate the results of the pilot program to the public; and
   (4) after consideration of the findings and recommendations in clauses (1) and (2), and within the appropriations available, develop and implement a base program.

Subd. 3. Participation. (a) Participation in the biomonitoring program by providing biospecimens is voluntary and requires written, informed consent. Minors may participate in the program if a written consent is signed by the minor’s parent or legal guardian. The written consent must include the information required to be provided under this subdivision to all voluntary participants.
(b) All participants shall be evaluated for the presence of the designated chemical of interest.
as a component of the biomonitoring process. Participants shall be provided with information and fact sheets about the program’s activities and its findings. Individual participants shall, if requested, receive their complete results. Any results provided to participants shall be subject to the Department of Health Institutional Review Board protocols and guidelines. When either physiological or chemical data obtained from a participant indicate a significant known health risk, program staff experienced in communicating biomonitoring results shall consult with the individual and recommend follow-up steps, as appropriate. Program administrators shall receive training in administering the program in an ethical, culturally sensitive, participatory, and community-based manner.

Subd. 4. Program guidelines. (a) The commissioner, in consultation with the advisory panel, shall develop:

1. protocols or program guidelines that address the science and practice of biomonitoring to be utilized and procedures for changing those protocols to incorporate new and more accurate or efficient technologies as they become available. The commissioner and the advisory panel shall be guided by protocols and guidelines developed by the Centers for Disease Control and Prevention and the National Biomonitoring Program;

2. guidelines for ensuring the privacy of information; informed consent; follow-up counseling and support; and communicating findings to participants, communities, and the general public. The informed consent used for the program must meet the informed consent protocols developed by the National Institutes of Health;

3. educational and outreach materials that are culturally appropriate for dissemination to program participants and communities. Priority shall be given to the development of materials specifically designed to ensure that parents are informed about all of the benefits of breastfeeding so that the program does not result in an unjustified fear of toxins in breast milk, which might inadvertently lead parents to avoid breastfeeding. The materials shall communicate relevant scientific findings; data on the accumulation of pollutants to community health; and the required responses by local, state, and other governmental entities in regulating toxicant exposures;

4. a training program that is culturally sensitive specifically for health care providers, health educators, and other program administrators;

5. a designation process for state and private laboratories that are qualified to analyze biospecimens and report the findings; and

6. a method for informing affected communities and local governments representing those communities concerning biomonitoring activities and for receiving comments from citizens concerning those activities.

(b) The commissioner may enter into contractual agreements with health clinics, community-based organizations, or experts in a particular field to perform any of the activities described under this section.

Sec. 146. [144.998] ENVIRONMENTAL HEALTH TRACKING AND BIOMONITORING ADVISORY PANEL.

Subdivision 1. Creation. The commissioner shall establish the Environmental Health Tracking and Biomonitoring Advisory Panel. The commissioner shall appoint, from the panel’s membership, a chair. The panel shall meet as often as it deems necessary but, at a minimum,
on a quarterly basis. Members of the panel shall serve without compensation but shall be reimbursed for travel and other necessary expenses incurred through performance of their duties. Members appointed by the commissioner are appointed for a three-year term and may be reappointed. Legislative appointees serve at the pleasure of the appointing authority.

Subd. 2. Members. (a) The commissioner shall appoint eight members, none of whom may be lobbyists registered under chapter 10A, who have backgrounds or training in designing, implementing, and interpreting health tracking and biomonitoring studies or in related fields of science, including epidemiology, biostatistics, environmental health, laboratory sciences, occupational health, industrial hygiene, toxicology, and public health, including:

(1) at least two scientists representative of each of the following:
   (i) nongovernmental organizations with a focus on environmental health, environmental justice, children's health, or on specific chronic diseases; and
   (ii) statewide business organizations; and

(2) at least one scientist who is a representative of the University of Minnesota.

(b) Two citizen panel members meeting the scientific qualifications in paragraph (a) shall be appointed, one by the speaker of the house and one by the senate majority leader.

(c) In addition, one representative each shall be appointed by the commissioners of the Pollution Control Agency and the Department of Agriculture, and by the commissioner of health to represent the department’s Health Promotion and Chronic Disease Division.

Subd. 3. Duties. The advisory panel shall make recommendations to the commissioner and the legislature on:

(1) priorities for health tracking;
(2) priorities for biomonitoring that are based on sound science and practice, and that will advance the state of public health in Minnesota;
(3) specific chronic diseases to study under the environmental health tracking system;
(4) specific environmental hazard exposures to study under the environmental health tracking system, with the agreement of at least nine of the advisory panel members;
(5) specific communities and geographic areas on which to focus environmental health tracking and biomonitoring efforts;
(6) specific chemicals to study under the biomonitoring program, with the agreement of at least nine of the advisory panel members; in making these recommendations, the panel may consider the following criteria:

   (i) the degree of potential exposure to the public or specific subgroups, including, but not limited to, occupational;
   (ii) the likelihood of a chemical being a carcinogen or toxicant based on peer-reviewed health data, the chemical structure, or the toxicology of chemically related compounds;
   (iii) the limits of laboratory detection for the chemical, including the ability to detect the chemical at low enough levels that could be expected in the general population;
   (iv) exposure or potential exposure to the public or specific subgroups;
   (v) the known or suspected health effects resulting from the same level of exposure based on peer-reviewed scientific studies;
   (vi) the need to assess the efficacy of public health actions to reduce exposure to a chemical;
   (vii) the availability of a biomonitoring analytical method with adequate accuracy,
precision, sensitivity, specificity, and speed;
(viii) the availability of adequate biospecimen samples; or
(ix) other criteria that the panel may agree to; and
(7) other aspects of the design, implementation, and evaluation of the environmental health
tracking and biomonitoring system, including, but not limited to:
(i) identifying possible community partners and sources of additional public or
private funding;
(ii) developing outreach and educational methods and materials; and
(iii) disseminating environmental health tracking and biomonitoring findings to
the public.

Subd. 4. Liability. No member of the panel shall be held civilly or criminally liable for an act
or omission by that person if the act or omission was in good faith and within the scope of the
member’s responsibilities under sections 144.995 to 144.998.
APPENDIX C. CALIFORNIA ENVIRONMENTAL CONTAMINANT BIOMONITORING PROGRAM

2006 Cal. Stats., Chap. 599

An act to add Chapter 8 (commencing with Section 105440) to Part 5 of Division 103 of the Health and Safety Code, relating to public health.

LEGISLATIVE COUNSEL’S DIGEST

SB 1379, Perata  Biomonitoring.

Existing law establishes various programs for the protection of the public from exposure to toxins, including, but not limited to, the Childhood Lead Poisoning Prevention Act, administered by the State Department of Health Services, which imposes a fee upon manufacturers or persons who are responsible for lead contamination and applies the proceeds of the fee to reduction or elimination of the harm caused by the lead contamination.

This bill would require the department in collaboration with the California Environmental Protection Agency to establish the California Environmental Contaminant Biomonitoring Program to monitor the presence and concentration of designated chemicals, as defined, in Californians.

This bill would require the department and the agency to establish a Scientific Guidance Panel to assist the department and the agency. The bill would require the department to provide public access to information, and to report to the Legislature and the public.

THE PEOPLE OF THE STATE OF CALIFORNIA DO ENACT AS FOLLOWS:

SECTION 1. The Legislature finds and declares all of the following:
(a) An estimated 100,000 chemicals are registered for use today in the United States. Another 2,000 chemicals are added each year. Some toxicological screening data exists for only 7 to 10 percent of these chemicals. More than 90 percent of these chemicals have never been tested for their effects on human health. Large numbers of these chemicals are found in cosmetics, personal care products, pesticides, food dyes, cleaning products, fuels, and plastics. Because of their ubiquity in modern life, Californians are commonly exposed to multiple chemicals every day. Many of these chemicals persist in the environment, and accumulate and remain in body fat, and have been shown to be toxic.
(b) Biomonitoring studies have scientifically demonstrated that human exposure to a multitude of chemicals is widespread. The federal Centers for Disease Control and Prevention has documented the presence of 148 environmental chemicals in the blood and urine of Americans of all ages and races.
(c) Biomonitoring studies will provide data that will help California scientists, researchers, public health personnel, and community members explore linkages between chemical exposures and health.
(d) Biomonitoring data supports public health by establishing trends in chemical exposures, validating modeling and survey methods, supporting epidemiological studies, identify-
ing highly exposed communities, addressing the data gaps between chemical exposures and specific health outcomes, informing health responses to unanticipated emergency exposures, assessing the effectiveness of current regulations, and helping to set priorities for reform.

(e) In September 2001, the Legislature passed Senate Bill 702 (Chapter 538, Statutes of 2001), making California the first state in the nation to begin planning a statewide environmental health tracking network for chronic diseases and environmental hazards and exposures. To help implement the program, the Senate Bill 702 Expert Working Group has recommended the establishment of a statewide biomonitoring program.

(f) In September 2003, the Legislature passed Assembly Bill 1360 (Chapter 664, Statutes of 2003), that requires the development and use in California of a comprehensive system of environmental measurements known as environmental indicators. The basis for the bill was the April 2002 report, “Environmental Protection Indicators for California,” by the California Environmental Protection Agency and the Resources Agency. This report identifies biomonitoring as part of an overall system of environmental indicators that California should develop to guide policy and budgetary decisions.

(g) The Legislature, therefore, finds and declares that the establishment of a statewide biomonitoring program will assist in the evaluation of the presence of toxic chemicals in a representative sample of Californians, establish trends in the levels of these chemicals in Californians’ bodies over time, and assess effectiveness of public health efforts and regulatory programs to decrease exposures of Californians to specific chemical contaminants. A statewide and community-based biomonitoring program will expand biomedical, epidemiological, and behavioral public health research. California, an established leader in health promotion, health policy, and health care delivery and response, should encourage and fund this research, which will contribute to the health and well-being of millions of people.

SEC. 2. Chapter 8 (commencing with Section 105440) is added to Part 5 of Division 103 of the Health and Safety Code, to read:

CHAPTER 8. California Environmental Contaminant Biomonitoring Program

Article 1. General

105440. (a) This chapter shall be known, and may be cited, as the California Environmental Contaminant Biomonitoring Program.

(b) For the purposes of this chapter, the following terms have the following meanings:

(1) “Agency” means the California Environmental Protection Agency.

(2) “Biomonitoring” means the process by which chemicals and their metabolites are identified and measured within different biological specimens.

(3) “Biological specimen” means a sample taken from a biophysical substance, that is reasonably available within a human body, for use as a medium to measure the presence and concentration of toxic chemicals.

(4) “Community” means geographically or nongeographically based populations that may participate in the community-based biomonitoring program. A “nongeographical community” includes, but is not limited to, populations that may share a common chemical exposure through similar occupations, populations experiencing a common health outcome that may be linked to chemical exposures, or populations that may experience similar chemical exposures because of comparable consumption, lifestyle, product use, or subpopulations that share ethnicity, age, or gender.

(5) “Department” means the State Department of Health Services.
(6) “Designated chemicals” means those chemicals that are known to, or strongly suspected of, adversely impacting human health or development, based upon scientific, peer-reviewed animal, human, or in vitro studies, and consist of only those substances including chemical families or metabolites that are included in the federal Centers for Disease Control and Prevention studies that are known collectively as the National Reports on Human Exposure to Environmental Chemicals program and any substances as specified pursuant to subdivision (c) of Section 105449.

(7) “Director” means the Director of Health Services.

(8) “DTSC” means the Department of Toxic Substances Control within the agency.

(9) “Office” means the Office of Environmental Health Hazard Assessment within the agency.

(10) “Panel” means the Scientific Guidance Panel established pursuant to Article 2 (commencing with Section 105448).

(11) “Program” or “biomonitoring program” means the California Environmental Contaminant Biomonitoring Program, which shall be established and operated by the department, in collaboration with the agency, the office, and DTSC.

(12) “Secretary” means the Secretary of the California Environmental Protection Agency.

105441. The department, in collaboration with the agency, shall establish the California Environmental Contaminant Biomonitoring Program. The department is the lead entity for the program unless otherwise specified in this chapter. The program shall utilize biological specimens, as appropriate, to identify designated chemicals that are present in the bodies of Californians. Biomonitoring shall utilize scientifically based statewide surveys. Additional community-based surveys shall be contingent on funding and shall be statistically valid and scientifically based. Biomonitoring shall take place on a strictly voluntary and confidential basis. Results reported pursuant to this chapter shall not disclose individual confidential information of participants. Appropriate biological specimens shall be used to monitor and assess the presence and concentration of designated chemicals. Biological specimens shall be analyzed by laboratories operated by the department, DTSC, or their contractors.

105443. (a) All participants shall be evaluated for the presence of designated chemicals as a component of the biomonitoring process. Participants shall be provided with information and fact sheets about the program’s activities and its findings. Individual participants may request and shall receive their complete results. Any results provided to participants shall be subject to the Institutional Review Board protocols and guidelines. When either physiological or chemical data obtained from a participant indicate a significant known health risk, program staff experienced in communicating biomonitoring results shall consult with the individual and recommend followup steps, as appropriate. Program administrators shall receive training in administering the program in an ethical, culturally sensitive, participatory, and community-based manner.

(b) Individuals selected to participate in the biomonitoring program shall reflect the age, economic, racial, and ethnic composition of the state. Other selection criteria may be applied, as appropriate, for studies of specific populations.

(c) Informational materials and outreach activities directed to program participants and communities shall, to the extent possible, be culturally appropriate and translated as needed. Educational materials shall be adapted to the biological specimens being used.

105444. (a) The program shall develop guidelines and model protocols that address the science and practice of biomonitoring to implement this chapter, including, but not limited to,
study design, subject recruitment, and data collection and management, and that accomplish all of the following:

1. Ensure confidentiality and informed consent.
2. Communicate findings to participants, communities, and the general public.
3. Emphasize all aspects of the program in a culturally sensitive manner.
4. Serve as a guide for other biomonitoring programs supported by state funds.

(b) The program shall incorporate, as appropriate, the methods utilized by the federal Centers for Disease Control and Prevention for the studies known collectively as the National Report on Human Exposure to Environmental Chemicals.

(c) The program shall be implemented in collaboration with the California Environmental Health Tracking Program and the environmental indicators system maintained by the office pursuant to Section 71081 of the Public Resources Code.

(d) The department, office, and DTSC shall collaborate on the development of fact sheets and other informational and outreach materials for the biomonitoring program.

(e) The department, in collaboration with the office and DTSC, shall conduct statistical and epidemiological analyses of the biomonitoring results.

(f) Personal information as defined in Section 1798.3 of the Civil Code, shall not be shared without the written and informed consent of the individual to whom it pertains.

(g) No governmental agency or private person or entity shall discriminate against a person or community based upon the biomonitoring results.

Article 2. The Scientific Guidance Panel

105448. (a) In implementing the program, the department and the agency shall establish a Scientific Guidance Panel. The panel shall be composed of nine members, whose expertise shall encompass the disciplines of public health, epidemiology, biostatistics, environmental medicine, risk analysis, exposure assessment, developmental biology, laboratory sciences, bioethics, maternal and child health with a specialty in breastfeeding, and toxicology.

(b) The Governor shall appoint five members to the panel, the Senate Committee on Rules shall appoint two members, and the Speaker of the Assembly shall appoint two members. The appointments shall be made after soliciting recommendations of the Office of the President of the University of California.

(c) All members shall be appointed to the panel by September 1, 2007. Members shall be appointed for three-year terms, except that, with respect to the initial appointees each appointing power shall appoint one member for a one-year term and one member for a two-year term. Members may be reappointed for additional terms without limitation.

(d) The panel shall meet as often as it deems necessary, with consideration of available resources, but at a minimum, three times per year. The office shall be responsible for staffing and administration of the panel.

(e) The panel meetings shall be open to the public and be subject to the Bagley-Keene Open Meetings Act (Article 9 (commencing with Section 11120) of Part 1 of Division 3 of Title 2 of the Government Code).

(f) Members of the panel shall be reimbursed for travel and other necessary expenses incurred in the performance of their duties under this chapter, but shall not receive a salary or compensation.

105449. (a) The panel shall provide scientific peer review and make recommendations regarding the design and implementation of the program, including specific recommendations for chemicals that are priorities for biomonitoring in California, as specified in subdivisions (b)
and (c), with the program retaining final decisionmaking authority.

(b) The panel shall recommend priority chemicals for inclusion in the program using the following criteria:

1. The degree of potential exposure to the public or specific subgroups, including, but not limited to, occupational.
2. The likelihood of a chemical being a carcinogen or toxicant based on peer-reviewed health data, the chemical structure, or the toxicology of chemically related compounds.
3. The limits of laboratory detection for the chemical, including the ability to detect the chemical at low enough levels that could be expected in the general population.
4. Other criteria that the panel may agree to.

(c) The panel may recommend additional designated chemicals not included in the CDC report, for inclusion in the program using the following criteria:

1. Exposure or potential exposure to the public or specific subgroups.
2. The known or suspected health effects resulting from some level of exposure based on peer-reviewed scientific studies.
3. The need to assess the efficacy of public health actions to reduce exposure to a chemical.
4. The availability of a biomonitoring analytical method with adequate accuracy, precision, sensitivity, specificity, and speed.
5. The availability of adequate biospecimen samples.
6. The incremental analytical cost to perform the biomonitoring analysis for the chemical.

105451. (a) As appropriate, the program shall utilize the principles of the agency’s Environmental Justice Strategy and Environmental Justice Action Plan developed pursuant to Sections 71110 to 71113, inclusive, of the Public Resources Code, so that the activities of the panel and the implementation of the program provide opportunities for public participation and community capacity building with meaningful stakeholder input. This strategy and plan shall accord the highest respect and value to every individual and community by developing and conducting public health and environmental protection programs, policies, and activities in a manner that promotes equity and affords fair treatment, accessibility, and protection for all Californians, regardless of race, age, culture, income, or geographic location.

(b) (1) To carry out this section, the program shall develop a strategy and plan that are to be followed in the implementation of the program. This strategy and plan shall be used to establish the framework for integrating public participation in this program. The department may utilize models used by boards, departments, and offices at the agency for community outreach pursuant to this section.

2. Public participation shall include, but need not be limited to, conducting stakeholder meetings and workshops to solicit relevant information, data, suggestions, and feedback for the development and implementation of the program.


105453. Implementation of this chapter shall be contingent on a specific appropriation being provided for this purpose in the annual Budget Act or other measure.

Article 4. Reporting

105459. (a) By January 1, 2010, and every two years thereafter, the department, in collaboration with the agency, the office, and DTSC, shall submit a report to the Legislature containing
the findings of the program, and shall include in the report additional activities and recommendations for improving the program based upon activities and findings to date. Copies of the report shall be made available via appropriate media to the public within 30 calendar days following its submission to the Legislature.

(b) The department shall provide the public access to information which they are required to release pursuant to the California Public Records Act (Chapter 3.5 (commencing with Section 6250) of Division 7 of Title 1 of the Government Code).

(c) The department and the office shall disseminate biomonitoring findings to the general public via appropriate media, including governmental and other Web sites in a manner that is understandable to the average person.

(d) Any health and environmental exposure data made available to the general public shall be provided in a summary format to protect the confidentiality of program participants. The data shall be made available, after appropriate quality assurance and quality control, by July 1, 2010, and at least every two years thereafter.
APPENDIX D. ILLINOIS BIOMONITORING FEASIBILITY STUDY ACT

2007 Ill. Laws, P.A. 95-74
(H.B. 680 Enrolled)

AN ACT concerning public health.

Be it enacted by the People of the State of Illinois, represented in the General Assembly:

Section 1. Short title. This Act may be cited as the Biomonitoring Feasibility Study Act.

Section 5. Findings and purposes.

(a) The General Assembly finds all of the following:

(1) An estimated 100,000 chemicals are on the U.S. Environmental Protection Agency’s Toxic Substances Control Act inventory and thousands are in commerce today in the United States.

(2) These chemicals are regulated by the U.S. Environmental Protection Agency, in accordance with the Toxic Substances Control Act.

(3) With advancements in analytical chemistry, scientists can now detect minute quantities of chemicals in humans.

(4) Biomonitoring is one method for assessing human exposure to chemicals by measuring the chemicals or their breakdown products, known as metabolites, in human tissues or specimens, such as blood and urine. In studies conducted by the U.S. Centers for Disease Control and Prevention (CDC), biomonitoring data has helped to identify chemicals found in the environment and in human tissues, monitor changes in human exposure to those chemicals, and investigate the distribution of exposure among the general population. The CDC has developed standardized and validated analytical methods for measuring substances in humans. The CDC’s National Exposure Report provides statistically valid distribution measurements of chemicals in the U.S. population, including specific age, gender, and ethnic groups. CDC continues to develop new validated methods, and as they do so additional chemicals are being reported.

(b) The purpose of this Act is for the University of Illinois at Chicago (UIC), Great Lakes Center for Occupational and Environmental Safety and Health to conduct an Environmental Contaminant Biomonitoring Feasibility Study (Study) that proposes the best way to establish an Illinois Environmental Contaminant Biomonitoring Program (Program) that will do all of the following:

(1) monitor the presence and concentration of designated chemicals in a representative sample of the population of this State;

(2) produce biomonitoring studies that provide data for scientists, researchers, public health personnel, and community members to explore potential linkages between chemical exposure and health concerns; and

(3) support Illinois public health by establishing trends in chemical exposures, validating modeling and survey methods, supporting epidemiological studies, identifying highly exposed communities, addressing the data gaps between chemical exposures and specific health out-
comes, informing health responses to unanticipated emergency exposures, assessing the effectiveness of current regulations, and setting priorities for research.

Section 10. Definitions. In this Act:
“Agency” means the Illinois Environmental Protection Agency.
“Department” means the Illinois Department of Public Health.
“Panel” means the Scientific Guidance Panel.
“Program” means the Illinois Environmental Contaminant Biomonitoring Program.
“Study” means the Environmental Contaminant Biomonitoring Feasibility Study.

Section 15. Scientific Guidance Panel.
(a) In implementing the Study, the Department and the Agency shall establish a Scientific Guidance Panel. The Directors of the Department and the Agency shall appoint the members of the Panel. The Panel shall be composed of 11 members, whose expertise shall encompass the disciplines of public health, epidemiology, biostatistics, environmental medicine, risk analysis, exposure assessment, developmental biology, laboratory sciences, bioethics, maternal and child health with a specialty in breastfeeding, and toxicology. Members shall be appointed for 2-year terms. Members may be reappointed for additional terms without limitation. Members shall serve until their successors are appointed and have qualified for membership on the Panel. Vacancies shall be filled in the same manner as the original appointments, and any member so appointed shall serve during the remainder of the term for which the vacancy occurred. The Panel shall meet, at a minimum, 3 times per year. The Agency shall be responsible for staffing and administration of the Panel. Members of the Panel shall be reimbursed for travel and other necessary expenses incurred in the performance of their duties under this Act, but shall not receive a salary or compensation.

(b) The Panel shall provide guidance to UIC and make recommendations regarding the design and implementation of the Program. The Panel shall recommend:
(1) scientifically sound Program design, rationale, and procedures for selecting and collecting biological samples and for selecting the populations for biomonitoring, taking into account both ethical issues and issues pertaining to confidentiality of data;
(2) scientifically sound, peer-reviewed procedures for incorporating biomonitoring data into risk assessment guidance, policies and regulations;
(3) procedures to accurately and effectively interpret and communicate biomonitoring results within the context of potential risks to human health; and
(4) a procedure for selecting priority chemicals for inclusion in the Program using sound public health criteria, including all of the following criteria:
(A) The degree of potential exposure to the public or specific subgroups, including, but not limited to, certain occupations.
(B) The likelihood of a chemical being a carcinogen or toxicant based on peer-reviewed health data, its chemical structure, or the toxicology of chemically related compounds.
(C) The availability and the limits of validated laboratory detection for the chemical, including the ability to reliably detect and quantify the chemical at levels low enough to be expected in the general population.
(c) The Panel may recommend additional designated chemicals not included in the National Report on Human Exposure to Environmental Chemicals for inclusion in the Program using all of the following criteria:
(1) Exposure or potential exposure to the public or specific subgroups.
(2) The known or suspected health effects resulting from some level of exposure based on scientifically valid studies.
(3) The need to assess the efficacy of public health actions to reduce exposure to a chemical causally associated with human health effects at environmentally relevant exposure levels.

(4) The availability of a scientifically valid method for accurately and reliably measuring the chemical in human specimens.

Section 20. Study report. Two years after the effective date of this Act, UIC shall release a draft report for public review and comment and for review by the Panel. The draft report shall contain the findings of the Study and shall include in the report recommended activities and estimated costs of establishing the Program. The period for public comment and review by the Panel shall last for 60 days. Within 90 days of the close of the public comment period, the draft report shall be revised, taking into consideration the comments received and the recommendations of the Panel. The final report shall be submitted to the Governor and General Assembly.

Effective Date: 1/1/2008
APPENDIX E.
SELECT STATE BIOMONITORING LEGISLATION

2010 Maryland H.B. 181
Version: Enrolled

A BILL ENTITLED

AN ACT concerning

Department of Health and Mental Hygiene – Biomonitoring Program – Report

FOR the purpose of requiring the Department of Health and Mental Hygiene, in consultation with the Department of the Environment, to conduct a certain study on the feasibility of establishing a biomonitoring program in the State and to make certain recommendations; requiring the Department of Health and Mental Hygiene to make a certain report to certain committees of the General Assembly on or before a certain date; providing for the termination of this Act; and generally relating to a report on the feasibility of establishing a biomonitoring program in the State.

SECTION 1. BE IT ENACTED BY THE GENERAL ASSEMBLY OF MARYLAND, That:

(a) The Department of Health and Mental Hygiene, in consultation with the Department of the Environment, shall study the feasibility of establishing a biomonitoring program in the State to monitor the presence and concentration of designated chemicals in residents of Maryland.

(b) In conducting the study required under subsection (a) of this section, the Department of Health and Mental Hygiene shall:

(1) examine biomonitoring studies conducted by the federal government, in other states, and in other countries;

(2) examine legislative efforts in other states to establish biomonitoring programs;

(3) consider studies on the effectiveness of biomonitoring programs and the impact of those programs on health outcomes and health care costs;

(4) make recommendations regarding the chemicals that would be most beneficial to include in a biomonitoring program in this State; and

(5) make recommendations on the structure of a biomonitoring program for the State, if the Department of Health and Mental Hygiene finds that a biomonitoring program would be feasible.

(c) On or before June 30, 2011, the Department of Health and Mental Hygiene shall report
to the Senate Finance Committee and the House Health and Government Operations Committee, in accordance with § 2–1246 of the State Government Article, on the study required under subsection (a) of this section.

SECTION 2. AND BE IT FURTHER ENACTED, That this Act shall take effect July 1, 2010. It shall remain effective for a period of 1 year and, at the end of June 30, 2011, with no further action required by the General Assembly, this Act shall be abrogated and of no further force and effect.

2007 Indiana H.B. 1473

Version: Introduced

A BILL FOR AN ACT to amend the Indiana Code concerning health.

Be it enacted by the General Assembly of the State of Indiana:

SECTION 1. IC 16-18-2-36.3 IS ADDED TO THE INDIANA CODE AS A NEW SECTION TO READ AS FOLLOWS [EFFECTIVE JULY 1, 2007]: Sec. 36.3. “Biomonitoring”, for purposes of IC 16-41-9.5, has the meaning set forth in IC 16-41-9.5-1.

SECTION 2. IC 16-18-2-336.5 IS ADDED TO THE INDIANA CODE AS A NEW SECTION TO READ AS FOLLOWS [EFFECTIVE JULY 1, 2007]: Sec. 336.5. “Specimen”, for purposes of IC 16-41-9.5, has the meaning set forth in IC 16-41-9.5-2.

SECTION 3. IC 16-41-9.5 IS ADDED TO THE INDIANA CODE AS A NEW CHAPTER TO READ AS FOLLOWS [EFFECTIVE JULY 1, 2007]:

Chapter 9.5. Biomonitoring Program

Sec. 1. As used in this chapter, “biomonitoring” means identifying and assessing the concentration of toxic chemicals and their metabolites in an individual’s body to determine the accumulation of pollutants in the individual.

Sec. 2. As used in this chapter, “specimen” means a sample of a substance that is part of or present in the human body, including blood, bone, umbilical cord blood, meconium, fat, hair, milk, saliva, and urine.

Sec. 3. (a) The state department, with assistance from the department of environmental management and the federal Centers for Disease Control and Prevention, shall establish a biomonitoring program to gather specimens to identify and assess the concentration of toxic chemicals in individuals.

(b) The biomonitoring program must include the gathering of specimens from individuals from certain populations, which may be selected for inclusion in the program based on any or all of the following:

1. Geography.
2. Similar occupations.
3. A common chemical exposure.
(4) A common health outcome that may be linked to chemical exposure.
(5) Possible similar chemical exposures because of comparable consumption, lifestyle, or product preferences.
(6) Other factors determined by the state department.
(c) The state department shall develop a list of toxic chemicals that have been scientifically demonstrated to cause or contribute to an increase in serious illness or death in humans.

Sec. 4. The state department, with assistance from the department of homeland security, the federal Department of Homeland Security, and the federal Centers for Disease Control and Prevention, shall include in the biomonitoring program established under this chapter components that will assist in monitoring for and responding to chemical or biological attacks.

Sec. 5. Individuals who participate in the biomonitoring program established under this chapter must:
(1) volunteer to participate; and
(2) if necessary, receive consultation from the state department or a health care provider, including consultation concerning:
(A) test results;
(B) health care referrals;
(C) appropriate educational materials concerning chemical exposure; and
(D) available state and local resources.

Sec. 6. (a) The biomonitoring advisory panel is established. The panel consists of the following:
(1) Eight (8) members appointed for a three (3) year term by the governor.
(2) The state health commissioner or the commissioner’s designee, who is not a voting member of the panel.
(b) The members appointed under subsection (a)(1) must include individuals who have expertise in public health, environmental science, environmental health, epidemiology, biology, toxicology, and endocrinology. At least three (3) members appointed under subsection (a)(1) must be physicians.
(c) The commissioner or the commissioner’s designee shall serve as chairperson of the panel. The state department and the department of environmental management shall provide staff support for the panel. The panel shall meet at the call of the chairperson, but not less than two (2) times per year.
(d) The panel shall do the following:
(1) Make recommendations concerning the design of the biomonitoring program.
(2) Review program priorities, protocols, reports, and outreach materials, including the following:
   (A) The selection of certain chemicals and communities as priorities for biomonitoring.
   (B) The dissemination of findings and reports to participants, the general assembly, and the public.
(e) A member of the panel appointed under subsection (a)(1) is not entitled to the minimum salary per diem provided by IC 4-10-11-2.1(b) but is entitled to reimbursement for traveling expenses as provided under IC 4-13-1-4 and other expenses actually incurred in connection with the member’s duties as provided in the state policies and procedures established by the Indiana department of administration and approved by the budget agency.
Sec. 7. (a) In January of every odd-numbered year, beginning in 2011, the state department shall submit to the general assembly in an electronic format under IC 5-14-6 a report of its activities in conducting the biomonitoring program under this chapter. The report must include any recommendations of the state department or the biomonitoring advisory panel to improve the program under this chapter.

(b) The state department shall maintain an Internet web site that contains:
   (1) the reports required under subsection (a);
   (2) summaries of all health and toxic chemical exposure data collected under this chapter; and
   (3) an explanation of the biomonitoring program and its purposes.

Sec. 8. Information that is gathered or produced by the biomonitoring program and that could identify an individual is confidential for purposes of IC 5-14-3-4(a)(1) unless the individual consents in writing to the release of the information.

Sec. 9. The state department may adopt rules under IC 4-22-2 to administer this chapter.

SECTION 4. [EFFECTIVE JULY 1, 2007] (a) The governor shall appoint the eight (8) members of the biomonitoring advisory panel under IC 16-41-9.5-6(a), as added by this act, before July 1, 2008. Notwithstanding IC 16-41-9.5-6, as added by this act, the appointments under this SECTION must be as follows:

   (1) Two (2) members whose terms expire July 1, 2009.
   (2) Three (3) members whose terms expire July 1, 2010.
   (3) Three (3) members whose terms expire July 1, 2011.

In making the appointments under this SECTION, the governor shall indicate whether each appointee is appointed under subdivision (1), (2), or (3).

(b) While establishing the biomonitoring program under IC 16-41-9.5, as added by this act, the state department of health shall consider the scientific methods used by the federal Centers for Disease Control and Prevention’s National Reports on Human Exposure to Environmental Chemicals.

(c) This SECTION expires July 1, 2011.

2007 Tennessee S.B. 878
Version: Introduced

AN ACT to amend Tennessee Code Annotated, Title 68, relative to contaminant biomonitoring.

BE IT ENACTED BY THE GENERAL ASSEMBLY OF THE STATE OF TENNESSEE:

SECTION 1. The general assembly finds and declares all of the following:
(a) An estimated one hundred thousand (100,000) chemicals are registered for use today in the United States. Another two thousand (2,000) chemicals are added each year. Some toxicological screening data exists for only seven to ten percent (7-10%) of these chemicals. More than ninety percent (90%) of these chemicals have never been tested for their effects on human health. Large numbers of these chemicals are found in cosmetics, personal care products, pesticides, food dyes, cleaning products, fuels, and plastics. Because of their ubiquity in mod-
ern life, Tennesseans are commonly exposed to multiple chemicals every day. Many of these chemicals persist in the environment, and accumulate and remain in body fat, and have been shown to be toxic.

(b) Biomonitoring studies have scientifically demonstrated that human exposure to a multitude of chemicals is widespread. The federal centers for disease control and prevention has documented the presence of one hundred forty-eight (148) environmental chemicals in the blood and urine of Americans of all ages and races.

(c) Biomonitoring studies will provide data that will help Tennessee scientists, researchers, public health personnel, and community members explore linkages between chemical exposures and health.

(d) Biomonitoring data supports public health by establishing trends in chemical exposures, validating modeling and survey methods, supporting epidemiological studies, identifying highly exposed communities, addressing the data gaps between chemical exposures and specific health outcomes, informing health responses to unanticipated emergency exposures, assessing the effectiveness of current regulations, and helping to set priorities for reform.

(e) The general assembly, therefore, finds and declares that the establishment of a statewide biomonitoring program will assist in the evaluation of the presence of toxic chemicals in a representative sample of Tennesseans, establish trends in the levels of these chemicals in Tennesseans’ bodies over time, and assess effectiveness of public health efforts and regulatory programs to decrease exposures of Tennesseans to specific chemical contaminants. A statewide and community-based biomonitoring program will expand biomedical, epidemiological, and behavioral public health research. Tennessee, an established leader in health promotion, health policy, and health care delivery and response, should encourage and fund this research, which will contribute to the health and well-being of millions of people.

SECTION 2. Tennessee Code Annotated, Title 68, is amended to add the following as a new chapter:

68-___-101.

(a) This chapter shall be known, and may be cited, as the Tennessee Environmental Contaminant Biomonitoring Program.

(b) For the purposes of this chapter, unless the context otherwise requires:

(1) “Biological specimen” means a sample taken from a biophysical substance, that is reasonably available within a human body, for use as a medium to measure the presence and concentration of toxic chemicals;

(2) “Biomonitoring” means the process by which chemicals and their metabolites are identified and measured within different biological specimens;

(3) “Commissioner” means the commissioner of the TDEC.

(4) “Community” means geographically or nongeographically-based populations that may participate in the community-based biomonitoring program. A “nongeographical community” includes, but is not limited to, populations that may share a common chemical exposure through similar occupations, populations experiencing a common health outcome that may be linked to chemical exposures, or populations that may experience similar chemical exposures because of comparable consumption, lifestyle, product use, or subpopulations that share ethnicity, age, or gender;

(5) “Department” means the department of health;

(6) “Designated chemicals” means those chemicals that are known to, or are strongly suspected of, adversely impacting human health or development, based upon scientific, peer-reviewed animal, human, or in vitro studies, and consist of only those substances including chemical families or metabolites that are included in the federal
centers for disease control and prevention studies that are known collectively as the national reports on human exposure to environmental chemicals program and any substances as specified pursuant to §68-__-202(c);

(7) “Panel” means the scientific guidance panel established pursuant to part 2 of this chapter;

(8) “Program” or “biomonitoring program” means the Tennessee environmental contaminant biomonitoring program, which shall be established and operated by the department, in collaboration with the TDEC; and

(9) “TDEC” means the Tennessee department of environment and conservation.

68-__-102. The department, in collaboration with the TDEC, shall establish the Tennessee environmental contaminant biomonitoring program. The department is the lead entity for the program, unless otherwise specified in this chapter. The program shall utilize biological specimens, as appropriate, to identify designated chemicals that are present in the bodies of Tennesseans. Biomonitoring shall utilize scientifically based statewide surveys. Additional community-based surveys shall be contingent on funding and shall be statistically valid and scientifically based. Biomonitoring shall take place on a strictly voluntary and confidential basis. Results reported pursuant to this chapter shall not disclose individual confidential information of participants. Appropriate biological specimens shall be used to monitor and assess the presence and concentration of designated chemicals. Biological specimens shall be analyzed by laboratories operated by the department, TDEC, or their contractors.

68-__-103.

(a) All participants shall be evaluated for the presence of designated chemicals as a component of the biomonitoring process. Participants shall be provided with information and fact sheets about the program’s activities and its findings. Individual participants may request and shall receive their complete results. Any results provided to participants shall be subject to the institutional review board protocols and guidelines. When either physiological or chemical data obtained from a participant indicate a significant known health risk, program staff experienced in communicating biomonitoring results shall consult with the individual and recommend follow-up steps, as appropriate. Program administrators shall receive training in administering the program in an ethical, culturally sensitive, participatory, and community-based manner.

(b) Individuals selected to participate in the biomonitoring program shall reflect the age, economic, racial, and ethnic composition of the state. Other selection criteria may be applied, as appropriate, for studies of specific populations.

(c) Informational materials and outreach activities directed to program participants and communities shall, to the extent possible, be culturally appropriate and translated as needed. Educational materials shall be adapted to the biological specimens being used.

68-__-104.

(a) The program shall develop guidelines and model protocols that address the science and practice of biomonitoring to implement this chapter, including, but not limited to, study design, subject recruitment, and data collection and management, and that accomplish all of the following:

(1) Ensure confidentiality and informed consent;

(2) Communicate findings to participants, communities, and the general public;
(3) Emphasize all aspects of the program in a culturally sensitive manner; and

(4) Serve as a guide for other biomonitoring programs supported by state funds.

(b) The program shall incorporate, as appropriate, the methods utilized by the federal centers for disease control and prevention for the studies known collectively as the national report on human exposure to environmental chemicals.

(c) The department and TDEC shall collaborate on the development of fact sheets and other informational and outreach materials for the biomonitoring program.

(d) The department, in collaboration with TDEC, shall conduct statistical and epidemiological analyses of the biomonitoring results.

(e) Personal information shall not be shared without the written and informed consent of the individual to whom it pertains.

(f) No governmental agency or private person or entity shall discriminate against a person or community based upon the biomonitoring results.

68-___-201.

(a) In implementing the program, the department and TDEC shall establish a scientific guidance panel. The panel shall be composed of nine (9) members, whose expertise shall encompass the disciplines of public health, epidemiology, biostatistics, environmental medicine, risk analysis, exposure assessment, developmental biology, laboratory sciences, bioethics, maternal and child health with a specialty in breastfeeding, and toxicology.

(b) The governor shall appoint five (5) members to the panel, the speaker of the senate shall appoint two (2) members, and the speaker of the house of representatives shall appoint two (2) members. The appointments shall be made after soliciting recommendations of the office of the president of the University of Tennessee and the chancellor of the board of regents of the state university and community college system.

(c) All members shall be appointed to the panel by September 1, 2007. Members shall be appointed for three-year terms, except that, with respect to the initial appointees each appointing power shall appoint one (1) member for a one-year term and one (1) member for a two-year term. Members may be reappointed for additional terms without limitation.

(d) The panel shall meet as often as it deems necessary, with consideration of available resources, but at a minimum, three (3) times per year. TDEC shall be responsible for staffing and administration of the panel.

(e) The panel meetings shall be open to the public and be subject to the provisions of title 8, chapter 44.

(f) Members of the panel shall be reimbursed for travel and other necessary expenses incurred in the performance of their duties under this chapter, but shall not receive a salary or compensation. Reimbursement shall be in accordance with the travel regulations promulgated by the commissioner of finance and administration and approved by the attorney general and reporter.

68-___-202.

(a) The panel shall provide scientific peer review and make recommendations regarding the design and implementation of the program, including specific recommendations for chemicals that are priorities for biomonitoring in Tennessee, as specified in subsections (b) and (c), with the program retaining final decision-making authority.

(b) The panel shall recommend priority chemicals for inclusion in the program using the following criteria:
(1) The degree of potential exposure to the public or specific subgroups, including, but not limited to, occupational;
(2) The likelihood of a chemical being a carcinogen or toxicant based on peer-reviewed health data, the chemical structure, or the toxicology of chemically related compounds;
(3) The limits of laboratory detection for the chemical, including the ability to detect the chemical at low enough levels that could be expected in the general population; and
(4) Other criteria to which the panel may agree.
(c) The panel may recommend additional designated chemicals not included in the centers for disease control and prevention report, for inclusion in the program using the following criteria:
(1) Exposure or potential exposure to the public or specific subgroups;
(2) The known or suspected health effects resulting from some level of exposure based on peer-reviewed scientific studies;
(3) The need to assess the efficacy of public health actions to reduce exposure to a chemical;
(4) The availability of a biomonitoring analytical method with adequate accuracy, precision, sensitivity, specificity, and speed;
(5) The availability of adequate biospecimen samples; and
(6) The incremental analytical cost to perform the biomonitoring analysis for the chemical.

68--203.
(a) As appropriate, the program shall utilize the principles of TDEC’s environmental justice program, so that the activities of the panel and the implementation of the program provide opportunities for public participation and community capacity building with meaningful stakeholder input. This strategy and plan shall accord the highest respect and value to every individual and community by developing and conducting public health and environmental protection programs, policies, and activities in a manner that promotes equity and affords fair treatment, accessibility, and protection for all Tennesseans, regardless of race, age, culture, income, or geographic location.
(b) 
(1) To carry out this section, the program shall develop a strategy and plan that are to be followed in the implementation of the program. This strategy and plan shall be used to establish the framework for integrating public participation in this program. The department may utilize models used by boards, other departments, and other agencies for community outreach pursuant to this section.
(2) Public participation shall include, but need not be limited to, conducting stakeholder meetings and workshops to solicit relevant information, data, suggestions, and feedback for the development and implementation of the program.

68--204. Implementation of this chapter shall be contingent on a specific appropriation being provided for this purpose in the annual general appropriations act or other measure.

68--205.
(a) By January 1, 2010, and every two (2) years thereafter, the department, in collaboration with TDEC, shall submit a report to the general assembly containing the findings
of the program, and shall include in the report additional activities and recommendations for improving the program based upon activities and findings to date. Copies of the report shall be made available via appropriate media to the public within thirty (30) calendar days following its submission to the general assembly.

(b) The department shall provide the public access to information which they are required to release pursuant to title 10, chapter 7, part 5.

(c) The department and TDEC shall disseminate biomonitoring findings to the general public via appropriate media, including governmental and other web sites in a manner that is understandable to the average person.

(d) Any health and environmental exposure data made available to the general public shall be provided in a summary format to protect the confidentiality of program participants. The data shall be made available, after appropriate quality assurance and quality control, by July 1, 2010, and at least every two (2) years thereafter.

68-___-206. The commissioner of health is authorized to promulgate rules and regulations to implement the provisions of this act in accordance with the provisions of title 4, chapter 5.

SECTION 3. This act shall take effect July 1, 2007, the public welfare requiring it.
Notes

1. 2006 Cal. Stats., Chap. 599.
2. 2007 Minn. Laws, Chap. 57.
4. 2007 Minn. Laws, Chap. 57; Minn. Stat. §144.998.
6. 2007 Minn. Laws, Chap. 57; Minn. Stat. §144.997(4).
9. 2007 Minn. Laws, Chap. 57; Minn. Stat. §144.997(4).
15. Minnesota Department of Health, Environmental Health Tracking and Biomonitoring Report to the Minnesota Legislature.
16. 2007 Minn. Laws, Chap. 57; Minn. Stat. §144.997.
17. 2007 Minn. Laws, Chap. 57; Minn. Stat. §144.997.
Biomonitoring
A Best Practices Report for State Legislators

Chemicals are everywhere in our environment—in the water we drink, the air we breathe, the foods we consume, and the products we use every day. Biomonitoring is the science of measuring what chemicals make their way into the human body and at what levels. It is an important step in understanding chemical exposures and measuring their potential health effects.

A number of choices must be made by state legislatures that are interested in establishing state-wide or community-based biomonitoring programs. This report outlines these policy options, including program design and focus; protocols for data collection and use; community participation and outreach; partnerships; and determining how to leverage existing resources and strengthen laboratory infrastructure. The report also contains examples of state biomonitoring statutes and legislation, including legislative definitions of key terms.

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