

# COMMUNITY VOICES:

## Environmental Hazards of Concern and Priorities for Biomonitoring California



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Impact Assessment Inc. (IAI) completed this report for the California Environmental Contaminant Biomonitoring Program (also known as Biomonitoring California), codified at Health and Safety Code section 105440 et seq. Biomonitoring California is implemented by the California Department of Public Health (CDPH) as lead agency, the Office of Environmental Health Hazard Assessment (OEHHA), and the Department of Toxic Substances Control (DTSC). CDPH set up a California Multiple Awards Schedule (CMAS) contract (CMAS #16-PO-00632) with IAI to carry out the work described in this report. IAI collaborated with Biomonitoring California to design and conduct surveys and interviews with environmental justice (EJ) organizations, and other organizations that serve communities disproportionately impacted by environmental hazards. OEHHA funded a service order (#17-1314) with IAI to prepare this report.

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## Background

[Biomonitoring California](#) received one-time state funding in fiscal year 2016-2017 to support environmental justice (EJ) activities. A portion of these funds was used to contract with Impact Assessment, Inc. (IAI) to engage with EJ organizations and other groups that work with communities disproportionately impacted by environmental hazards. In collaboration with Biomonitoring California staff, IAI carried out surveys, group listening sessions, and one-on-one interviews with representatives from EJ, community, and Tribal organizations across the state from January to June, 2017. The primary goals of this effort were to hear from communities about important local and regional environmental hazards; help identify priorities for Biomonitoring California; and build stronger relationships with community organizations.

## Engaging Organizations

IAI began by creating a list of EJ organizations, which included community groups that focus on environmental health, and Tribes in California. Through an online survey and individual and group listening sessions, IAI identified additional EJ organizations and gathered information about all the groups. It was important to have representation from each of the eight designated regions in the [California Regional Exposure \(CARE\) Study](#) (Figure 1). Many of the groups had worked with Biomonitoring California or IAI in the past. A total of 46 organizations completed the survey and/or participated in a listening session.

The survey asked organizations about the environmental issues they address, populations they serve, and approaches they use to connect with community members. This was an initial step in learning about the organizations' priorities and environmental hazards of concern. The survey results, along with contact information, were captured in a database that was provided to Biomonitoring California, to enable the Program to contact the organizations about specific projects that could impact their communities and to share other relevant information.

Next, IAI recruited participants for listening sessions and hosted meetings across the state. At least one listening session was held in each of the eight CARE Study regions. The format of these sessions varied. Some were one-on-one phone calls or interviews, and others were large group sessions with up to fifteen participants. Some organizations had multiple staff members participate in the listening sessions. While we met with people from every region, some regions had much better representation than others due to the number of organizations known to IAI in a region and availability of organization staff to attend listening sessions.



Figure 1. Eight CARE Study regions (as of 2017<sup>1</sup>).

<sup>1</sup> The CARE Study regions were revised in 2018. Marin County was moved from the North Coast to the San Francisco Bay Area; Mono County was moved from the Gold Country to the Inland Valley.

All participating organizations within each region are listed in the [Appendix](#); we consulted with a total of 60 individuals from 46 organizations.

During the interviews and listening sessions, we had in-depth discussions with attendees about specific environmental hazards of concern in their communities, and how biomonitoring projects could support efforts to promote community health and improve local environmental policies. For those unfamiliar with Biomonitoring California, the sessions provided an opportunity to learn about Program studies, including the types of chemicals being measured, and the benefits and limitations of biomonitoring.

## What We Learned From the Organizations

Below we summarize the main environmental hazards of concern and considerations for biomonitoring expressed by EJ, community, and Tribal organizations in the

eight regions. These groups have extensive experience working on environmental, chemical, and health concerns in their communities. Given the small number of people with whom we could consult, the information provided should not be considered an exhaustive list of concerns faced by California communities. Regardless, these conversations identified many environmental hazards of shared concern, as well as useful strategies for building trust and establishing partnerships in communities disproportionately burdened with environmental hazards.

## Hazards, Chemicals, and Health Concerns

People shared their concerns about environmental hazards by talking about exposure pathways, such as air and drinking water; sources of pollution and environmental hazards in their communities; specific chemicals of concern; and health issues faced by their communities. Some issues were mentioned by interviewees from across the state, while others were more locally relevant. This section highlights some of the key concerns raised; for a detailed list, refer to the Appendix.

In every region, people were concerned about exposures to chemicals through air and drinking water; food and traffic were also frequently raised. People were worried about chemicals in household goods, including plastics (San Diego and North Coast), cleaning products (Gold County and San Francisco Bay), and cosmetics (Los Angeles). Local industries that pollute the environment were named in every region, with the most common concerns being transportation (e.g., trucking, cargo trains) and agriculture. Other industrial hazards discussed included oil and gas production, auto body shops, and nail salons. Wildfire smoke was a concern in Los Angeles and Gold Country, and smoke associated with agricultural burning was raised in the Inland Valley.

Table 1 summarizes chemicals of concern mentioned by interviewees. Pesticides were raised as an issue in every region, with chlorpyrifos named specifically in four regions (Central Coast, Central Valley, North Coast, and Gold Country). Lead was raised as an issue in all regions; specific exposure sources that were named included paint in older homes, drinking water, and industrial sources like the Exide plant in Los Angeles. Chemicals associated with diesel exhaust were identified as a significant concern in urban regions of San Diego, San Francisco Bay, Gold Country, and Los Angeles, as well as in the Inland Valley, which includes border crossings and inland ports (i.e., a location directly connected by road or rail to a seaport).

Mercury was named as a concern in five regions, often in relation to fish consumption. Arsenic was raised as an issue in five regions, and hexavalent chromium was mentioned in four regions, with drinking water named as a source for both of these metals. PCBs in fish, soil, and other sources were

identified as a hazard in four regions. Chemicals associated with fracking were also brought up in three regions. Refer to Table 1 for additional chemicals discussed in various regions.

Table 1. Chemicals of concern by region in order of most frequently mentioned.

	North Coast	San Francisco Bay	Gold Country	Central Valley	Central Coast	Inland Valley	Los Angeles	San Diego
Pesticides	•	•	•	•	•	•	•	•
Lead	•	•	•	•	•	•	•	•
Arsenic		•	•	•	•	•		
Mercury	•	•	•				•	•
Diesel exhaust chemicals		•	•			•	•	•
Plasticizers and/or BPA-type chemicals <sup>1</sup>	•	•	•				•	•
Hexavalent chromium	•			•	•			•
Polychlorinated biphenyls (PCBs)		•		•		•		•
Fracking chemicals			•	•			•	
Nitrates			•	•	•			

<sup>1</sup> Including bisphenol A (BPA), BPF, and BPS

Interviewees also talked about health outcomes they believed were linked to pollutants in their communities. Asthma was a common concern, raised in all regions except North Coast and Central Coast. Cancer was raised as an issue by people in all but three regions (Gold Country, Central Valley, and Los Angeles). Other health concerns included liver disease, allergies, and birth defects, with less common references to reproductive problems, mental health issues, skin diseases, Valley Fever, and autoimmune conditions.

## Considerations For Biomonitoring

Across all regions, there was interest in receiving materials and information from Biomonitoring California, such as newsletters, summaries of study

findings, and specific results that could be used to support local public health efforts. A number of people expressed distrust of government agencies and emphasized that Biomonitoring California should take steps to build community partnerships as part of any future collaborations. This could include working with community leaders to design studies, and finding ways to support public health action if a study indicated the need for policy change. For example, Tribal leaders in the North Coast region requested that the California Rural Indian Health Board be involved in reviewing study design and recruitment strategies involving Native Americans. Some organizations shared positive experiences they had collaborating on biomonitoring studies, such as the [Asian/Pacific Islander Community Exposures \(ACE\) Project](#).

Some organizations offered to actively contribute to strengthening relationships, by bringing community leaders together to collaborate with Biomonitoring California; playing an active role in future research studies; and serving as liaisons with study participants.

## Recommendations

IAI identified the following recommendations for Biomonitoring California, drawing from common themes that emerged in multiple regions, as well as specific suggestions shared during group sessions and one-on-one interviews.

- **Consult the database of EJ organizations, community groups, and Tribes**

Biomonitoring California can use the database developed by IAI to maintain contact with interested groups and identify potential community partners for the CARE Study.

- **Use community-based participatory methods in biomonitoring studies**

Interviewees, especially Tribal leaders, emphasized the importance of involving community members in all phases of a study including design of research questions; selection of chemicals to be measured; methods for collecting samples; and locations to be targeted. For example, to design a pesticide biomonitoring project, work with communities that track spraying locations and have identified the impacted areas.

- **Measure more chemicals across the state**

Interviewees were pleased to learn about the CARE Study, and several groups requested that one or more chemicals be added to the study to address their region-specific concerns.



- **Design studies that can lead to policies that reduce chemical exposures**

Listening session participants were aware of studies that recommend individual behavior changes as a way to reduce exposures, such as choosing alternative personal care products, or avoiding certain types of foods. However, EJ organizations and other groups expressed more support for studies that can influence broad policy change. Biomonitoring California's [East Bay Diesel Exposure Project](#) was named as one example of a study that can support policy change to reduce harmful chemical exposures. Some groups advocated that state regulators and policy makers be consulted in designing biomonitoring studies, to help ensure that the studies focus on addressing real-world problems.

- **Be aware of how biomonitoring results could influence litigation in some communities**

EJ groups and their community members may be involved in litigation over permitting, pollution sources, and environmental contamination, and some we consulted with were concerned that biomonitoring results could be misleading. Listening session participants recommended that the Program evaluate the potential for a biomonitoring study to affect the outcome of pending cases.

- **Consider synergistic effects of chemicals**

Many pollution sources are present in all communities, exposing residents to a mix of chemicals. A biomonitoring study might indicate relatively low exposures to single chemicals measured in residents' blood or urine, but some of those surveyed want the Program to consider and describe the potential impacts of simultaneous exposures to multiple chemicals.

- **Reach out to EJ organizations and work to build trust with their communities**

Listening session participants offered to help introduce new biomonitoring projects to their communities and play an active, ongoing role in study design and completion. This will be especially important in communities that have had conflicts with State agencies in the past about environmental health issues.

- **Provide education and resources to build capacity in EJ and community organizations as partners in biomonitoring studies**

To effectively partner with Biomonitoring California, some organizations emphasized that their staff would need to be adequately trained to describe

and answer questions about the study goals, the chemicals being measured, and what residents should do if their levels are high.

- **Broadly share results of previous biomonitoring studies and their value**

Many participants were unfamiliar with Biomonitoring California's previous projects and study results. When we shared the [Biomonitoring Matters](#) community newsletter and talked about completed studies, people wanted to learn more. It is essential that the Program seek ways to more broadly publicize biomonitoring study findings and their relevance to communities across the state. This includes demonstrating how biomonitoring studies have already advanced policies to protect public health.

## Looking to the Future

The survey, group listening sessions, and one-on-one interviews revealed community concerns about important environmental hazards across the state, and pointed to key recommendations for engaging with communities before, during, and after biomonitoring studies. This effort also helped inform EJ organizations and community and Tribal leaders about Biomonitoring California's projects and findings. With this increased awareness, many listening session attendees want to stay engaged with the Program and help ensure that their communities benefit from future biomonitoring projects.

## Appendix: Overview of Group Listening Sessions and Interviews — Region, Participating Organizations, and Environmental Concerns

CARE Study Region <sup>1</sup>	Counties Included	Organizations (number of individuals)	Environmental and Specific Chemical Concerns Shared
Central Coast	Monterey, Santa Barbara, San Luis Obispo, Santa Cruz, and Ventura	<ul style="list-style-type: none"> <li>• Environmental Justice Coalition for Water (EJCW) (2)</li> <li>• Safe Ag, Safe Schools (1)</li> </ul>	<ul style="list-style-type: none"> <li>• Agriculture/pesticides (chlorpyrifos, chloropicrin, Telone, 1,2,3-trichloropropane)</li> <li>• Groundwater (nitrates, arsenic, hexavalent chromium, lead, cadmium)</li> <li>• Drinking water in schools (lead)</li> </ul>
Central Valley	Fresno, Kern, Kings, Madera, Mariposa, Merced, San Benito, Stanislaus, and Tulare	<ul style="list-style-type: none"> <li>• UC Berkeley (UCB) School of Public Health (2 UCB researchers who collaborate with Central California Asthma Coalition)</li> <li>• Greenaction for Health and Environmental Justice (1; this individual also provided input on SF Bay region)</li> <li>• People for Clean and Air and Water of Kettleman City (1)</li> <li>• Center for Race, Poverty &amp; the Environment (1)</li> </ul>	<ul style="list-style-type: none"> <li>• Agriculture/pesticides (chlorpyrifos, 1,2,3-trichloropropane)</li> <li>• Drinking water (arsenic, nitrates, hexavalent chromium, PCBs)</li> <li>• Hazardous waste facilities in Kettleman City and Buttonwillow</li> <li>• Dairies (methane)</li> <li>• Incinerator in Crow's Landing</li> <li>• Fracking chemicals</li> <li>• Synergistic effects of multiple chemicals</li> <li>• Exposures in schools</li> </ul>

CARE Study Region <sup>1</sup>	Counties Included	Organizations (number of individuals)	Environmental and Specific Chemical Concerns Shared
Gold Country	Alpine, Amador, Calaveras, El Dorado, Mono, Nevada, Placer Sacramento, San Joaquin, Sierra, Solano, Sutter, Tuolumne, Yolo and Yuba	<ul style="list-style-type: none"> <li>• The Environmental Justice Coalition for Water (1)</li> <li>• UC Davis Center for Regional Change (1)</li> <li>• Environmental Health Sciences Center at UC Davis (1)</li> <li>• Community Collaborative of Tahoe Truckee (1)</li> </ul>	<ul style="list-style-type: none"> <li>• Agriculture/pesticides (chlorpyrifos, organophosphates, neonicotinoids)</li> <li>• Contamination from large animal lots</li> <li>• Wildfire smoke</li> <li>• Diesel and car exhaust</li> <li>• Cleaning products</li> <li>• Water (arsenic, nitrates, antibiotics, pesticides)</li> <li>• Fracking chemicals</li> <li>• Animal lots</li> <li>• Septic contamination</li> <li>• Silver nanoparticles</li> <li>• Uranium</li> <li>• Boron</li> </ul>
Inland Valley	Imperial, Inyo, Riverside, and San Bernardino	<ul style="list-style-type: none"> <li>• Comite Civico del Valle, Inc. (1)</li> <li>• Center for Community Action and Environmental Justice (2)</li> </ul>	<ul style="list-style-type: none"> <li>• Inland ports (diesel chemicals)</li> <li>• Railyards</li> <li>• Agriculture/pesticides</li> <li>• Santa Ana River</li> <li>• Riverside Agricultural Park (PCBs)</li> <li>• Wildomar area</li> <li>• Salton Sea (polysulfide dust, arsenic)</li> <li>• Feedlots</li> <li>• Agriculture burning</li> <li>• Calexico/Mexicali border</li> <li>• Water (perchlorate, PCBs)</li> </ul>

CARE Study Region <sup>1</sup>	Counties Included	Organizations (number of individuals)	Environmental and Specific Chemical Concerns Shared
Los Angeles	Los Angeles	<ul style="list-style-type: none"> <li>• Antelope Valley Community Clinic (6)</li> <li>• Black Women for Wellness (1)</li> <li>• Breathe California of Los Angeles County (2)</li> <li>• Coalition for Clean Air (1)</li> <li>• Coalition for Economic Survival (1)</li> <li>• Communities for a Better Environment (1; this individual also provided input on SF Bay region)</li> <li>• Esperanza Community Housing (1)</li> <li>• Pacoima Beautiful (1)</li> </ul>	<ul style="list-style-type: none"> <li>• Port of Los Angeles</li> <li>• Fracking/oil extraction sites and refineries</li> <li>• Exide plant (lead)</li> <li>• Traffic/trucks (polycyclic aromatic hydrocarbons)</li> <li>• Plastics and food wrappers (BPA and its analogues [BPF, BPS])</li> <li>• Edwards Air Force Base</li> <li>• Agriculture/pesticides</li> <li>• Old housing stock (lead)</li> <li>• Wildfires</li> <li>• Cosmetics</li> <li>• Chrome plating facilities</li> <li>• Water (copper, mercury)</li> </ul>
Northern Counties	Butte, Colusa, Del Norte, Glenn, Humboldt, Lake, Lassen, Marin, Mendocino, Modoc, Napa, Plumas, Shasta, Siskiyou, Sonoma, Tehama, and Trinity	<ul style="list-style-type: none"> <li>• Commonweal Biomonitoring Resource Center (1)</li> <li>• Guidiville Rancheria of California (1)</li> <li>• Federated Indians Graton Rancheria (1)</li> <li>• Pinoleville Pomo Nation (1)</li> <li>• Potter Valley Tribe (2)</li> <li>• Hopland Band of Pomo Indians of the Hopland Rancheria (1)</li> <li>• Scotts Valley Band of Pomo Indians (1)</li> <li>• Middletown Rancheria of Pomo Indians (1)</li> <li>• Round Valley Indian Tribes (2)</li> <li>• Robinson Rancheria Pomo Indians (1)</li> <li>• Coyote Valley Band of Pomo Indians (1)</li> <li>• Kashia Band of Pomo Indians of the Stewarts Point Rancheria (1)</li> <li>• Big Valley Band of Pomo Indians (1)</li> </ul>	<ul style="list-style-type: none"> <li>• Agriculture/pesticides (chlorpyrifos, pyrethroids, organophosphates)</li> <li>• Occupational exposures</li> <li>• Wood mills (pentachlorophenol)</li> <li>• PG&amp;E plants</li> <li>• Fish (cyanotoxins, mercury, dioxins, radioactive chemicals)</li> <li>• Endocrine disruptors (BPA)</li> <li>• Lead</li> <li>• Hexavalent chromium</li> </ul>

CARE Study Region <sup>1</sup>	Counties Included	Organizations (number of individuals)	Environmental and Specific Chemical Concerns Shared
San Diego	Orange and San Diego	<ul style="list-style-type: none"> <li>• Environmental Health Coalition (1)</li> <li>• San Diego State University, School of Public Health Environmental Health Department (2)</li> <li>• San Diego State University, Institute of Behavioral and Community Health (1)</li> <li>• Casa Familiar (2)</li> <li>• American Lung Association of California, San Diego and Imperial Counties (1)</li> </ul>	<ul style="list-style-type: none"> <li>• House dust (carcinogens, lead)</li> <li>• Agriculture/pesticides</li> <li>• San Ysidro, Otay Mesa, and Barrio Logan communities (traffic and port air pollutants, ozone)</li> <li>• Plasticizers</li> <li>• Imperial Beach</li> <li>• Drinking water in schools (lead)</li> <li>• Secondhand smoke exposure</li> <li>• Fish (mercury, PCBs)</li> <li>• Hexavalent chromium</li> <li>• Manganese</li> <li>• Cadmium</li> <li>• Auto body and metal plating industry (diisocyanates)</li> </ul>
SF Bay Area	Alameda, Contra Costa, Santa Clara, San Francisco, and San Mateo	<ul style="list-style-type: none"> <li>• APA Family Support Services (2)</li> <li>• Cambodian Community Development Inc. (1)</li> <li>• Lao Seri Association (1)</li> <li>• Vietnamese Family Service Center (1)</li> <li>• Mongolian Family Services (1)</li> <li>• Pilipino Senior Resource Center (1)</li> <li>• Vietnamese Voluntary Foundation, Inc. (1)</li> <li>• Communities for a Better Environment (1; this individual also provided input on Los Angeles)</li> <li>• Literacy for Environmental Justice (1)</li> <li>• Greenaction for Health and Environmental Justice (1; this individual also provided input on Central Valley region)</li> </ul>	<ul style="list-style-type: none"> <li>• Refineries</li> <li>• Diesel and car exhaust</li> <li>• Port of Oakland</li> <li>• Hunters Point Shipyard in San Francisco</li> <li>• PG&amp;E power plant in Bayview (San Francisco)</li> <li>• Fish (mercury)</li> <li>• Cement recycling plant dust</li> <li>• Nail salons</li> <li>• Secondhand smoke</li> <li>• Cleaning products</li> <li>• Water and food contaminants</li> <li>• PCBs</li> </ul>

<sup>1</sup> The regions listed in this Table were based on the CARE Study regions as of 2017; these were revised in 2018. The San Francisco Bay Area region in the CARE Study now includes Sonoma, Napa, Marin, and Solano Counties, and Mono County is now included in the Inland Valley region.