



Input on Selecting Chemicals to Biomonitor

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Contaminant Biomonitoring
Program

Overview

- Public input
- State public health and environmental programs input

For each of these:

- Process used to solicit input
- Results
 - Participation
 - Preferences of criteria presented
 - Other suggestions of approaches

Public Input on Criteria for Selecting Chemicals to Biomonitor

- Developed possible criteria
- Discussed criteria at public workshops and teleconferences, presented in the survey
- Asked participants and survey respondents to consider their preferences
- Solicited suggestions of other issues to consider in selecting priority chemicals



Possible **new** criteria

1. Widely used throughout California
2. Help government decide how well environmental laws are working
3. New emerging chemicals or chemicals now becoming widely used
4. Exposure in the workplace

Possible **new** criteria

5. Studied nationally
6. Not studied nationally
7. State-specific activities or regulations that may lead to higher exposures in California
 - such as farming, oil refining, stricter flammability standards

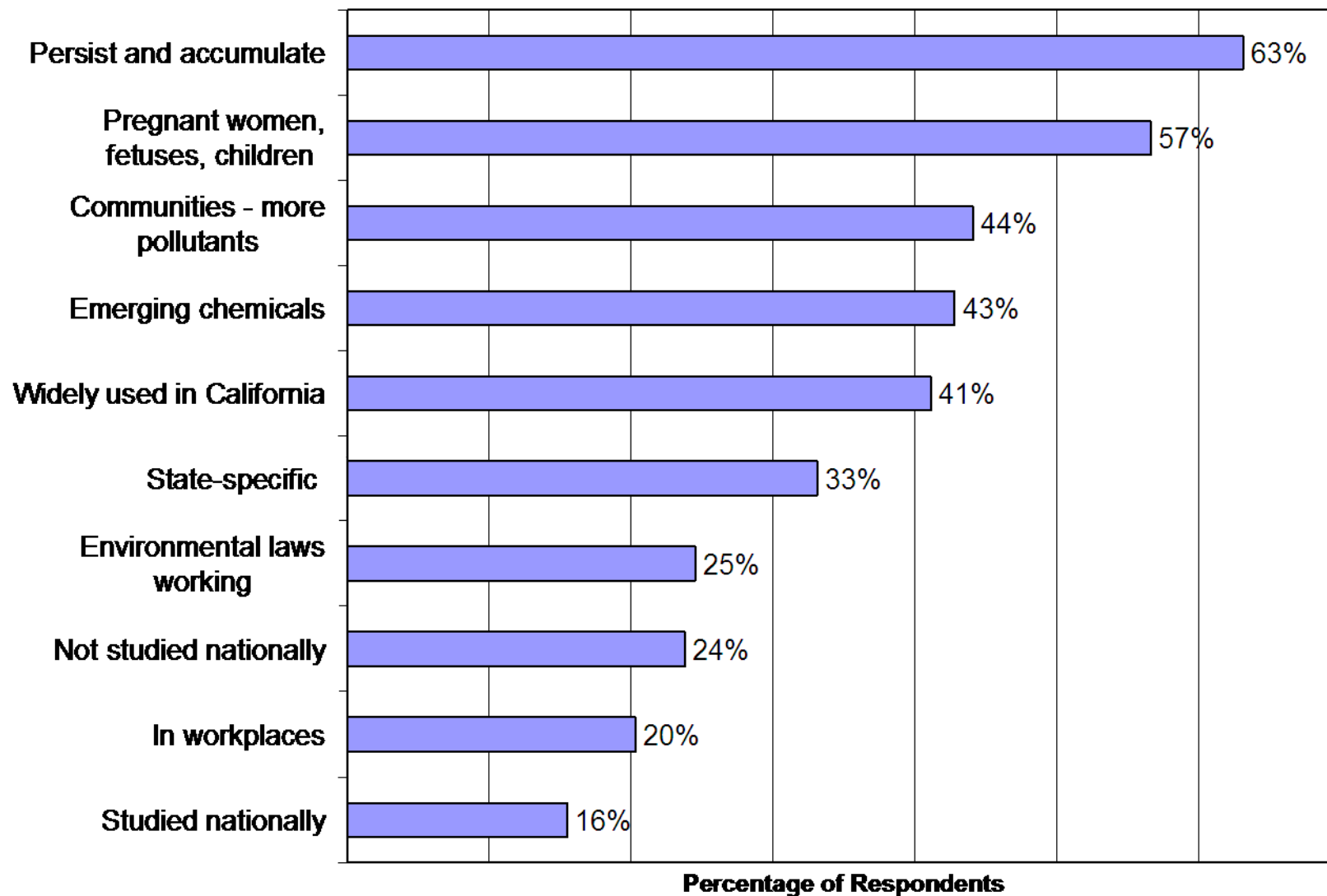
Possible **new** criteria

8. Pregnant women, fetuses and children are likely to be especially sensitive
9. Persist in the environment and can accumulate in people's bodies
10. Chemicals that are found in communities where people may come into contact with more pollutants than the general population

Results – Participation Levels

- Workshops and teleconferences
 - 37 comments on criteria
- Survey
 - 290 respondents chose their top four from among possible criteria
 - 148 respondents made suggestions on criteria
- Email submissions – 4 individuals or organizations made comments on criteria

Public Survey: Top Four Choices of Criteria



Criteria selected most often

- Measuring chemicals **that persist** in the environment and can accumulate – 63%
 - Workshop and teleconference participants expressed interest in banned chemicals.
- Measuring chemicals to which **pregnant women, fetuses and young children** are likely to be especially sensitive – 57%
 - Mentioned most often by participants in workshops and teleconferences. Similar issue raised by one email submission.

Other criteria frequently chosen as among **top four** by survey respondents

- Chemicals that are found in communities where people may come into contact with more pollutants than the general population – 44%
- Measuring new or emerging chemicals that are now becoming widely used – 43%
- Measuring chemicals that are widespread in California – 41%



Additional Suggestions on Criteria

- Results grouped to ease understanding of areas of interest
 - Toxicity
 - Exposure
 - Laboratory
 - Other

Toxicity-related Criteria

- **Severity** of the effect
- **Type of harm** caused by the chemical
- Potential for **cumulative effects** of chemicals
- Toxicity and exposure considered together in some form of **hazard evaluation**



Exposure-related Criteria (1)

- **Extent** of exposure
- **Persistence**
- **Specific locations or sources** of exposure

Exposure-related Criteria (2)

Populations at risk

- Those **with a chronic illness** or condition
- Due to intrinsic characteristics, such as **age or genetic factors (e.g., race)**
- Due to **location or particular exposures faced**, such as communities exposed to high levels of toxic chemicals, or exposed workers

Laboratory-related Criteria

- Type of biomarkers available, such as biomarkers of effect
- Type of biomatrix sampled, such as blood, urine, cord blood, etc.
- Method availability, accuracy and sensitivity
- Cost

Other Criteria

- Results allow for intervention or to assess effectiveness
- Emerging chemicals
- Measured by national program (CDC list)
- Chemicals that have safe alternatives
- Risk communication issues
- Other issues – economics, level of public concern, delisting

Highlights from Public Input

- Persistent chemicals, emerging chemicals and specific sources of exposure
 - Drinking water, indoor air, consumer products
- Populations at risk
 - Children, pregnant women and fetuses
 - Communities with heavy exposure burdens
- Particular endpoints and higher risk exposures
 - E.g., endocrine disruptors, carcinogens, reproductive toxins
 - Widespread or higher level exposures to potent toxins



Input From State Public Health and Environmental Programs

- State agencies were contacted and asked to provide input to a set of questions
 - Set of agencies described in earlier session
- Possible criteria for selecting chemicals to biomonitor were presented
 - Same as set presented to public
- Asked to choose their top four criteria

Results – Participation Level

- Multiple programs from different boards and departments participated
 - Approximately 35 responses; some based on group discussions
- Primarily telephone interviews, some with multiple staff present
- Some written responses

Criteria selected **most often** by State staff

Top choice:

- Chemicals that affect pregnant women, fetuses and young children

Other strong interests:

- Chemicals widely used in California
- New or emerging chemicals
- Chemicals that persist and bioaccumulate

Additional Suggestions on Criteria from State Staff – Toxicity-related

- Select based on **biological effect**. For example, chemicals that:
 - Are endocrine disruptors
 - Disrupt signaling pathways important during development
 - Trigger auto-immune responses
 - Affect thyroid hormone
- Select chemicals for which there is a **marker of effect**, e.g., perchlorate & thyroid disruption

Additional Suggestions on Criteria from State Staff – Exposure-related

- Need for **community studies** and attention to environmental justice were highlighted
- Chemicals important in **all relevant media** (e.g., ambient air, indoor air, water, food)
- Question of whether to include **persistent chemicals** banned in U.S. for decades

Additional Suggestions on Criteria from State Staff – Lab-related

- Important to conduct preliminary studies, broad **investigative screening**.
 - What are the peaks in a sample?
- Some chemicals are **sentinels** for other groups of chemicals. Choose representative chemicals.
- **Follow-up tests** for individuals with high levels of certain metals to do speciation, rather than doing for all (e.g., methyl mercury)

Additional Suggestions on Criteria from State Staff – Other

- Assessing **regulatory importance** valued, but seen as difficult, with repetition necessary
- Identify chemicals where there can be a **public health intervention**
 - Do we know what to do with biomonitoring data? Do we have the resources to take action?
- Look at what EU is biomonitoring
- The program needs to **be visionary** – anticipate future emerging concerns

Highlights from State Staff Input

- Top choices of criteria are exposure-related:
 - Pregnant women, fetuses and young children
 - Widespread exposure; persistent chemicals; emerging chemicals
 - Community-based studies
- Toxicity-related:
Think about endpoints and mechanisms
- Laboratory-related:
Look for peaks, choose sentinel chemicals
- Other criteria: Focus on chemicals for which intervention is possible