Executive Summary
The National Conversation on Public Health and Chemical Exposures (National Conversation) is a federal project to “develop an action agenda—clear, achievable recommendations—that can help government agencies and other organizations strengthen their efforts to protect the public from harmful chemical exposures.”¹ The role of the National Association of County and City Health Officials (NACCHO) in the National Conversation is to capture local health department (LHD) perspectives on addressing chemical exposure and to determine how chemical exposure policies and strategies might impact LHD jurisdictions.

In order to assess LHD perspectives, NACCHO hosted two facilitated discussions of LHD representatives in Oakland, CA, and Columbus, OH. From these facilitated discussions, five thematic areas of LHD concern emerged. First, LHD practitioners and the public do not fully understand the effects of chemical exposure on health. Limited understanding is attributed to gaps in scientific research and lack of access to data and information on chemical exposure. More information is needed on different types of chemical exposure and their health effects. Second, a centralized repository of data is needed. Data should be standardized, credible, and have the ability to connect chemical exposure to health conditions. Third, communication and coordination among the federal, state, and local governments should be improved. More effective coordination and communication associated with information sharing, funding mechanisms, practice standards, and best practices are needed. Fourth, response to and mitigation of chemical exposure require greater funding support. More funding is required to support effective monitoring of and response to chemical exposure and the associated health effects. Finally, stronger policies and leadership from the federal government are needed in order to address the health effects of chemical exposure. Policies should be based on the precautionary principle and primary prevention, and the federal government should take a stronger stance on regulations, standards, and enforcement.

Background
The Centers for Disease Control and Prevention (CDC) and the Agency for Toxic Substances and Disease Registry (ATSDR) are sponsoring the National Conversation. The goal of the project is to develop an action agenda for achieving the vision “that the United States will use and manage chemicals in ways that are safe and healthy for all people.”² More information about the National

¹ [www.atsdr.cdc.gov/nationalconversation](http://www.atsdr.cdc.gov/nationalconversation)

Conversation can be found at www.atsdr.cdc.gov/nationalconversation.3

Because chemical exposure hazards are always local, LHD input is vital to an effective national action agenda. NACCHO’s role in the National Conversation is to capture LHD perspectives on addressing chemical exposure and to determine how chemical exposure policies and strategies might impact LHD jurisdictions.

Summary
The National Conversation addresses six strategic topic areas related to chemical exposure and public health: (1) scientific understanding; (2) monitoring; (3) chemical emergencies; (4) serving communities; (5) education and communication; and (6) policies and practices. To capture the LHD perspective on these strategic topic areas, NACCHO hosted two facilitated discussions. The first facilitated discussion was held March 8, 2010, in Oakland, CA, with representatives from California LHDs. The second facilitated discussion was held April 8, 2010, in Columbus, OH, with participants from Ohio LHDs.4

At each discussion, participants responded to six questions, each of which corresponded to one of the six strategic topics areas:

1) Scientific Understanding: What gaps exist in the scientific understanding of chemical exposure in your health department and community?
2) Monitoring: What data gaps exist related to chemical use, release, exposure levels, or health outcomes—the fulfillment of which would result in the most significant health improvements in your jurisdiction?
3) Chemical Emergencies: What organizations play a central role in chemical emergency prevention, preparedness, and response coordination in your jurisdiction, as well as what gaps exist in coordination among these actors?
4) Serving Communities: What methods have been employed to engage with, support, and empower communities impacted by chemical exposure?
5) Education and Communication: What would improve LHD ability to effectively educate and communicate with the public regarding issues of chemical exposure?
6) Policies and Practices: What critical gaps exist in policy and practice regarding chemical exposure, and how might these gaps be addressed in any new legislation, such as in a reform of the Toxic Substances Control Act?

This report presents the participants’ responses to these six questions. These responses serve as a partial representation of LHD concerns and recommendations regarding the six National Conversation strategic topic areas.

Scientific Understanding: What gaps exist in the scientific understanding of chemical exposure in your health department and community?

Oakland, CA
Participants have concerns regarding baseline measurement and chemical exposure. Participants lack awareness of whether baseline measures already exist for relevant chemical exposure scenarios. If such baseline measures do exist, participants are unaware of where or how to locate this information. Further, even if baseline measurements were accessible, participants mention minimal understanding of the value and utility of baseline measures.

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3 Background slides regarding the National Conversation can be accessed at www.naccho.org/topics/environmental/upload/NATCON03-04-10.ppt.
4 The NACCHO-facilitated discussion held in Oakland, CA, included a background presentation by Montrece Ransom, JD, MPH, of the National Center for Environmental Health (NCEH) and ATSDR. The NACCHO-facilitated discussion held in Columbus, OH, included a background presentation by Ben Gerhardstein, MPH, of NCEH and ATSDR. Both discussions were facilitated by Juliana Birkhoff, PhD, of RESOLVE, Inc.
In addition to lack of baseline measurement applicable to familiar chemical exposure scenarios, participants note a dearth of baseline measurement regarding new and emerging types of chemical exposure. Specific areas of concern include chemical exposure associated with bio-solids, recycled water, endocrine disruptors, pharmaceuticals in water, and composting waste. Baseline measurement is also lacking for subpopulations, such as children, pregnant women, women of childbearing age, specific occupations, and specific regions.

Participants also highlight the lack of knowledge on chemical exposure potentialities of foreign-produced goods that are imported for domestic use. The federal government must ascertain more information regarding the chemical composition of foreign goods and more thoroughly disclose this information to LHDs and to the public. The federal government and local health authorities should have more information on exposure routes of these goods. Moreover, some participants argue that the same gaps in information collection and distribution exist and must be addressed for domestically produced goods as well.

Participants note that the amount of information available on the health effects of chemical exposure is limited. Little is known about the dose-response relationship for numerous types of chemical exposure. In addition, connections between chemical exposure and chronic diseases and the effect that social stressors have on the relationship between chemical exposure and health remain unclear. Further, participants identify the need for more information on the health effects of overlapping and cumulative exposure to chemicals. Moreover, participants stress the need for more information and better understanding because chemical exposure rarely, if ever, is isolated to a single exposure from a single chemical.

In addition to the lack of information and knowledge of the health effects of chemical exposure, challenges arise in defining “acceptable” levels of exposure. Participants argue that there are limited definitions of acceptable levels of chemical exposure. In addition, the definition of acceptable exposure must be more objective. Further, definitions must take into account exposure levels that are scientifically acceptable versus levels that are socially acceptable.

Columbus, OH
Participants identify a need for more information and research on chemical exposure. More information on the toxicity of individual chemicals, such as beneficial re-use wastes, pharmaceutical concentrations in water resources, carcinogens, and chemicals present in food, is needed. In addition, participants identify the need for research on the synergistic or multiplicative health effects of chemical exposure. Participants also lack understanding of the acute and long-term health effects of most chemical exposure, including exposure to “green” chemicals.

Like LHDs, the public also lacks information and understanding related to chemical exposure. With regard to consumer goods, the public should have better knowledge of issues associated with chemical exposure and chemical exposure risk. Even if the public is interested in understanding risks of chemical exposure from consumer goods, the public is beset with complicated consumer data and misinformation. Further, the public lacks knowledge of substitute consumer goods that pose less risk of hazardous chemical exposure. With regard to chemical exposure generally, participants believe that the public relies on LHDs for expertise, even though LHD expertise might be very limited.

Participants note that some useful resources for helping to bridge gaps in scientific understanding of chemical exposure do exist. For example, participants regard the ToxProfiles tool of the Agency for Toxic Substances and Disease Registry as a good resource for LHDs. In addition, participants value Material Safety Data Sheets.
Participants recommend a number of actions that might reduce gaps in the scientific understanding. LHDs should receive more education regarding chemical exposure. Generally, information instructing the public or LHDs on chemical exposure should be simpler. Some argue information on chemical exposure should be understandable at the sixth-grade level. Information provided to the public should also include practical guidance (e.g., ways that a family might respond to chemical exposure that impacts the indoor air quality of its home).

Monitoring: What data gaps exist related to chemical use, release, exposure levels, or health outcomes—the fulfillment of which would result in the most significant health improvements in your jurisdiction?

Oakland, CA
Participants identify data gaps associated with the monitoring of chemical exposure. Monitoring of toxins associated with industrial facilities such as oil refineries is insufficient, as is monitoring of air pollutants. In addition, data on indoor chemical exposure for homes, schools, and work places are limited. Participants also note a lack of data on the chemical exposure risk from commercial goods. Furthermore, monitoring that connects chemical exposure to health outcomes, such as cancer, largely does not exist.

Participants recommend that the federal government implement stricter federal government review of the chemical exposure risk from imported and domestically produced commercial goods. The requirements for the chemical composition of goods, the information about composition that must be disclosed, and the exposure routes for goods are all issues that require better federal standards and enforcement.

Participants also recommend creating systems that centralize credible and standardized data. LHD efforts to address chemical exposure would benefit from access to monitoring information produced from other local health jurisdictions, especially from neighboring jurisdictions. Participants recommend creating state and national centralized repositories of local monitoring data and of the studies, reports, etc. that are related to these data, whether produced by LHDs, academia, or other sources. Such repositories need also provide for effective dissemination of their contents to LHDs. In order to ensure the credibility of the resources held by a repository, the resources should be subject to peer review. To further improve the credibility of monitoring data, efforts should be made to standardize units, equipment, what is being measured, and calibration standards for monitoring activities.

Columbus, OH
Participants identify factors associated with large gaps in current chemical exposure monitoring data. The large amount of data that needs to be gathered and inadequate funding constrain data monitoring efforts. Lack of funding also impedes the usefulness of collected data. For example, lack of funding limits the number of epidemiologists available to analyze collected data. Lack of monitoring capacity is particularly prevalent in rural areas where monitoring often does not occur at all.

Participants believe that even where capacity is present, data gaps persist. Data gaps result from a lack of access to existing data. Gaps also result from a lack of interagency sharing by the United States Department of Agriculture, the United States Environmental Protection Agency, the Ohio Environmental Protection Agency, and other entities that monitor data. Participants are concerned about the reliability of existing data and note that new data sources, such as BioWatch, are difficult to interpret. In addition, data collection is not systematic or comprehensive; rather, it is often initiated in response to complaints. Moreover, monitoring often does not take place at all because some stakeholders fear potential results.
While data gaps endure, participants note some successes in chemical exposure-related monitoring in Ohio. Successful monitoring efforts have been undertaken in the areas of ambient air quality, public drinking water, and wastewater plant discharge. Childhood lead surveillance and the monitoring of closed landfills have been effective. Ohio’s effort to address perfluorooctanoic acid (C8) pollution has exhibited successful monitoring components. Finally, the Ohio Cancer Incidence Surveillance System collects and analyzes cancer incidence data for Ohio.

Participants believe that efforts to improve monitoring should begin with identifying and prioritizing areas and chemicals requiring monitoring. Participants highlight foods and consumer goods imported into the United States, pharmaceuticals in water resources, sources of bottled drinking water, the general toxicity of water resources, and mercury in the vicinity of coal-fired power plants.

Potential improvements to the monitoring system are numerous. Participants recommend increased sharing of data and data-collection tools among local health jurisdictions as well as with state-level authorities. This might be achieved, in part, through a centralized repository for monitoring data and related materials. Such a centralized repository should feature, among other things, a database of epidemiological surveillance regarding chemical exposure. In order to ensure the credibility of data produced by monitoring activities, LHDs should subject monitoring methods and equipment to programs of quality assurance and quality control. Monitoring systems should also engage in processes of regular and continuous quality improvement.

To enhance the usefulness of monitoring data, LHDs and other participants in monitoring activities should be better trained in understanding and communicating monitoring data. Monitoring systems should also increase use of geographic information systems. In addition, monitoring systems should be better equipped to engage in rapid deployment. To this end, LHDs should be provided with appropriate monitoring equipment and training in conducting monitoring activities.

Participants recognize a need for increased funding in order to maintain and improve monitoring related to chemical use, release, exposure, and health outcomes. Participants recommend that the federal government provide appropriate funding to local, state, and tribal agencies to conduct such monitoring. Additionally, the public health system should partner with non-governmental organizations and should encourage voluntary self-monitoring by chemical producers and significant users.

Chemical Emergencies: What organizations play a central role in chemical emergency prevention, preparedness, and response coordination in your jurisdiction, as well as what gaps exist in coordination among these actors?

Oakland, CA
Participants indicate county governments and hazardous materials interagency task forces as organizations that play a central role in chemical emergency prevention, preparedness, and response coordination. For example, Contra Costa County, CA, worked with stakeholders such as the community, industrial facilities, and unions to develop a chemical emergency program. The program aims to reduce chemical emergencies through the following strategies: education efforts; requirements of industrial facilities to perform safety-culture assessments; increased safety audits; substantial fines for violations of industrial safety ordinances; and aggressive prosecution of violators. The program includes media training on how to proceed during a chemical emergency and a warning system to alert the public, emergency responders, and if necessary, the National Weather Service of a chemical emergency. Contra Costa County also employs an ombudsman to ensure fluid communication between the program and the community.
Hazardous materials interagency task forces exist to plan the response to chemical emergency events. The Certified Unified Program Agency (CUPA) of California provides annual training activities for these task forces. Participants believe that CUPA training is very successful in preparing hazardous materials interagency task forces to respond to chemical emergencies.

Important gaps exist in the coordination among actors charged with chemical emergency prevention, preparedness, and response coordination. Participants note gaps in coordination among regulatory bodies and between environmental planning bodies and industrial facilities. Participants suggest that, in addressing gaps in coordination, attention should be paid to weak federal and state leadership and lack of appropriate legislation.

Columbus, OH
Participants recognize local emergency planning committees as organizations that play a central role in chemical emergency prevention and preparedness. Such committees are most useful when members include LHDs, hazardous materials (HAZMAT) teams, local government officials, local industrial facilities, and other stakeholders. Tools useful to chemical emergency response coordination include the National Incident Management System and its Incident Command System, strong local HAZMAT teams, and the Computer-Aided Management of Emergency Operations Program.

Several gaps exist regarding coordination of chemical emergency prevention, preparedness, and response. For example, gaps exist in jurisdictional responsibility and authority, real or perceived. Such gaps can be exacerbated by the complicated and confusing system of government agency responsibility for different aspects of chemical exposure. In addition, LHDs, the public, and public health system partners do not fully understand the LHD role in chemical emergency engagement. Further, poor funding of chemical emergency engagement contributes to a general lack of communication and lack of established capacity to communicate among LHDs and other relevant actors.

Recognizing the gaps that exist related to coordination of chemical emergency prevention, preparedness, and response, participants recommend a number of corrective measures. The roles and responsibilities of those involved in chemical emergency engagement should be clearly defined. Participants note that every community should be covered by a HAZMAT team and that first-responders in the event of a chemical emergency should be clearly identified. Lines of communication and structures and procedures for collaboration among relevant local, state, and federal actors should be established.

Effective coordination of chemical emergency engagement requires increased and better training of relevant actors, especially of emergency responders. Participants note that training has increased in step with increased funding for chemical emergency engagement in the wake of the terrorist attacks of September 11, 2001, but that training remains inadequate, especially for lower-level staff. Further, LHDs require additional training regarding health risks and chemical emergencies.

Funding is currently insufficient to ensure adequate staffing of important chemical emergency engagement actors such as LHDs and the Ohio Environmental Protection Agency’s Division of Emergency and Remedial Response. Funding is also currently insufficient to ensure the availability of appropriate personal protective equipment to chemical emergency responders.

Regarding post-emergency concerns, participants are interested in the development of state and federal standards defining the conditions that must be met to appropriately determine if a chemical emergency site is resolved. Participants also seek the standardization of rules and disposal practices
regarding soils and other materials contaminated during a chemical emergency.

**Serving Communities: What methods have been employed to engage with, support, and empower communities impacted by chemical exposure?**

**Oakland, CA**
Participants employ many different communication tools to engage with, support, and empower communities impacted by chemical exposure. In Sonoma County, CA, following the discovery of contamination of groundwater by chemical solvents, a groundwater response team was formed. The public was alerted to the situation and was provided information through fact sheets and similar materials. In Contra Costa County, CA, public meetings have been held in order to facilitate the sharing of concerns between the community and the LHD as well as serve as an opportunity for the LHD to provide the community with relevant information. Public meetings in Solano County, CA, regarding chemical exposure have been held at affected sites.

Some jurisdictions create stakeholder groups for issues such as bio-solids, landfill operations, and other public concerns. Appointed citizen commissions that are staffed by county employees can be formed. Similarly, task forces can be formed at the local level to promote the cooperation necessary to effectively address chemical exposure issues. Participants recognize that forming stakeholder groups, citizen commissions, and task forces can also promote community involvement and community buy-in in addressing situations of chemical exposure.

Special programs may be useful to better serve the needs of communities within which English is not the predominant language of communication. For example, Contra Costa County, CA, which has a significant population of Spanish-speakers, provides Spanish-language translators at public meetings. Contra Costa County has also worked with its Laotian population to develop multilingual warning systems. Solano County, CA, developed a task force specifically to communicate with Spanish-speakers in rural areas regarding vector-borne diseases. Many LHDs in California use Spanish-speaking health educators, known as *promotoras*, to liaise with the community of which the health educator is a member.

In determining best practices for developing community engagement on issues of chemical exposure, participants recommend looking to other areas of public health for existing programs that include significant community engagement. Two areas where such programs are thought to exist are those of healthy eating and of active living. Further, the Protocol for Assessing Community Excellence in Environmental Health (PACE EH) and Mobilizing for Action through Planning and Partnerships (MAPP) are two public health tools that are not specific to addressing issues of chemical exposure but that participants recommend as effective at engaging the community in addressing public health issues.

Overall, participants stress the importance of transparency and credibility in engaging the community. To this end, government should collect and disseminate relevant information as quickly as possible to the community affected by chemical exposure.

**Columbus, OH**
Where a community has been impacted by chemical exposure, participants recommend that the LHD and other local authorities approach, engage, and interact with the community as openly and transparently as possible. The LHD should be truthful but should also develop a capacity for risk communication and be careful not to create excessive or undue fear in the community. Further, the LHD should listen to the community’s concerns even if the concerns seem unrealistic.

Opportunities for face-to-face communication with LHD representatives should be provided to the
Community groups can be used to develop the relationship between the LHD and the community, but the LHD should remain alert to any agenda that such a group might have different from or in addition to the common concerns of the community at large.

Regular and continuing communication among all relevant federal, state, and local government authorities should be maintained until the issues arising from the chemical exposure are resolved. The status of the resolution of these issues should be relayed to the community.

**Education and Communication: What would improve LHD ability to effectively educate and communicate with the public regarding issues of chemical exposure?**

**Oakland, CA**

In order to effectively educate and communicate with the public on issues related to chemical exposure, LHDs require improved knowledge of the chemical exposure in question and its associated health effects. Public health workers must have knowledge of the possible routes of exposure and have access to information on the level of exposure and the implications of exposure to human health and well-being.

Better environmental health education for medical professionals and improved connections between medical professionals and public health professionals would improve LHD ability to educate and communicate with the public. Chemical exposure issues should be included in differential diagnoses choices. Physicians should know the appropriate tests to confirm chemical exposure effects. Laboratory staff should know how to conduct such tests when requested by physicians. Where there are elevated risks of chemical exposure, physicians should be educated on chemicals of interest; which laboratory tests measure chemical exposure; and what laboratories are accessible for testing. Participants stress the importance of physicians reporting epidemiologic data to public health professionals.

Public health professionals need better direction on where to locate information about chemicals involved in instances of chemical exposure. Further, current systems of warning and advisory regarding chemical exposure are insufficient. Participants believe that creating a central repository for environmental health chemical exposure information, as detailed in the Monitoring section above, would help public health professionals educate the public.

The federal government should produce and publicize educational resources regarding best practices for different actors to prepare for and respond to chemical exposure. For example, participants recommend creating online informational modules regarding chemicals commonly found in and around the home and creating an informational module specifically designed to assist new parents in preventing and responding to chemical exposure of children. Participants suggest looking to the CDC Healthy Homes Initiative, which addresses lead, for models of useful educational and training modules.

Government partnerships with health and parenting publications, schools, etc. should be considered as potential channels for educating and communicating with the public regarding chemical exposure. Poison control centers and other government call centers should also be recognized as valuable assets through which the public can gain information regarding chemical exposure and where to seek additional information.

Participants note a number of other problems facing LHDs in educating and communicating with the public regarding chemical exposure. There exists no clear definition of what constitutes credible information regarding monitoring chemical exposure. LHDs need more instruction on how to engage the public in the absence of credible information regarding a possible chemical exposure.
Public health officials should be better trained in speaking and messaging about risk and risk assessment. Finally, public health officials need more instruction on how to engage the public regarding chronic chemical exposure.

Columbus, OH
Participants recommend a number of ways to improve LHD ability to effectively educate and communicate with the public regarding chemical exposure. First, LHDs should be more adequately staffed. Currently, LHDs are not staffed to appropriately address issues of chemical exposure education or communication. For example, Ohio LHDs have no toxicologists on staff. Second, LHDs should be better educated regarding issues of chemical exposure. Third, better marketing materials and strategies targeting the public should be created. Participants are particularly interested in materials and strategies that promote the use of lower-risk alternatives to mainstream chemicals in daily life. To this end, participants recommend greater transparency and reporting regarding chemical content of consumer goods and increasing LHD knowledge of the chemical footprint of the entire life-cycle of consumer goods.

Oakland, CA
Participants believe that gaps exist in policy and practice regarding chemical exposure. Federal policies regarding chemical manufacture and use are far too permissive. Participants strongly recommend chemical policies that prioritize primary prevention and incorporate the precautionary principle.

Federal policy and practice currently fail to adequately promote the use of least-dangerous or even less-dangerous chemicals. This gap exists with regard to the application of chemicals in manufacturing, the inclusion of chemicals in consumer goods, and the use of chemicals involved in food production, among other areas. Government policy and practice should go further still to promote green chemistry, which is defined by the Green Chemistry Initiative of the California Department of Toxic Substances as “the innovation, design and manufacture of chemical products and processes intended to reduce or eliminate the creation and use of materials hazardous to human health and the environment.” One way to promote the use of least-dangerous chemicals and green chemistry is to develop policies and practices that expose and apply to producers and consumers the cradle-to-grave cost of the negative externalities of a good.

With regard to the funding of local health authorities, participants believe that the current practice of sending federal monies to local health authorities via state agencies is less than ideal. Participants think that a more efficient and productive arrangement would be for the federal and local governments to engage one another directly.

Finally, participants are concerned about chemical exposure resulting from human contact with water that is contaminated with unused pharmaceuticals. Participants believe that current federal policy is to permit unused pharmaceuticals to be disposed of through inclusion in regular household trash or, in some cases, through public sewage systems (i.e., through flushing down sinks or toilets). This policy presents an elevated risk of contamination by pharmaceuticals of water resources and subsequent chemical exposure. Participants recommend developing policies and legislation to mitigate this threat. One suggestion from participants is the creation of federal policy allowing and facilitating public health authorities to execute collection programs for controlled substances such as...
pharmaceuticals. In any case, participants urge stronger federal guidance in the area of chemical exposure resulting from pharmaceutical disposal. 

**Columbus, OH**

Participants believe that current federal policy and practice related to chemical exposure exhibit notable gaps. The Toxic Substances Control Act (TSCA) does too little to protect the public from dangerous chemicals. Concerns with TSCA include the practice of automatic approval of a chemical where no action regarding the chemical is taken by the United States Environmental Protection Agency within 90 days of the submission of the pre-manufacturing notice. Participants are concerned that only 2,000 to 3,000 of the approximately 80,000 chemicals approved for use in the United States have been subject to toxicology review. Participants recommend that policy and practice regarding chemicals and public health should be more prohibitive and look to including the precautionary principle.

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) fails to effectively address those instances of chemical pollution and chemical exposure for which it was created. Participants express particular concern with what they perceive to be unacceptably long time frames for clean-ups under CERCLA. Participants note that clean-ups can take decades and recommend that policy and practice regarding chemical exposure should consider timeliness.

**Conclusion**

The NACCHO-facilitated discussions identified many LHD concerns regarding public health and chemical exposure. Out of these, five thematic areas of LHD concern emerge:

1. LHD practitioners and the public do not fully understand the effects of chemical exposure on health. Limited understanding is attributed to gaps in scientific research and lack of access to data and information on chemical exposure. More information is needed on different types of chemical exposure and the health effects of chemical exposure.

2. A centralized repository of data is needed. Data should be standardized, credible, and have the ability to connect chemical exposure to health conditions.

3. Communication and coordination among the federal, state, and local governments should be improved. More effective coordination and communication associated with information sharing, funding mechanisms, practice standards, and best practices is needed.

4. Response to and mitigation of chemical exposure require greater funding support. More funding is required to support effective monitoring of chemical exposure, associated health effects, and the effective response to chemical exposure.

5. Stronger policies and leadership from the federal government are needed in order to address the health effects of chemical exposure. Policies should be based on the precautionary principle and primary prevention, and the federal government should take a stronger stance on regulations, standards, and enforcement.

These five areas and the many other LHD concerns and recommendations enumerated herein will be used to inform the development of the action agenda of the National Conversation on Public Health and Chemical Exposures. Moving forward, NACCHO will continue to engage issues associated with chemical exposure on behalf of LHDs. For more information, please contact NACCHO staff at environmentalhealth@naccho.org.
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The mission of the National Association of County and City Health Officials (NACCHO) is to be a leader, partner, catalyst, and voice for local health departments in order to ensure the conditions that promote health and equity, combat disease, and improve the quality and length of all lives.