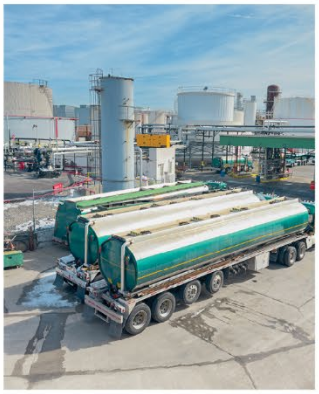

Chemical Preparedness for Local Health Department Preparedness and Response Plans

Handbook to Support the Development of Public Health Chemical Incident Preparedness Plans

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1. Introduction

Purpose

The Chemical Preparedness Handbook is designed to assist local health departments (LHDs) in creating effective public health emergency preparedness and response plans for low-probability, high-risk chemical incidents. This handbook offers a framework for developing a chemical preparedness plan, including recommended content and key subject areas.

In collaboration with the Agency for Toxic Substances and Disease Registry (ATSDR), the National Association of County and City Health Officials (NACCHO) conducted comprehensive research in 2023 – including focus groups with LHD experts and an environmental scan – in which the research team reviewed existing literature to identify and synthesize formal and informal literature describing the role and participation of LHDs in chemical preparedness and response to optimize planning and avoid duplication. The findings revealed a significant concern among LHDs regarding chemical incident preparedness, coupled with uncertainty about their roles and a lack of adequate resources. Effective chemical preparedness and response at the local level are essential for safeguarding public health, protecting the environment, and ensuring community resilience in the face of chemical emergencies. This handbook aims to address the identified gaps in chemical preparedness within LHDs.

The handbook emphasizes the importance of interagency coordination and emergency resources in managing low-probability, high-impact chemical incidents that surpass the routine capabilities of standard response agencies like HAZMAT, local EPA, or fire departments. It provides specific guidance on how LHDs can define their roles and responsibilities, in collaboration with external response partners, during major chemical incidents.

How to Use This Handbook

This handbook is designed for both novice and experienced public health planners tasked with developing a public health chemical preparedness and response plan. It

should be used to develop a chemical preparedness plan that complements existing planning documents and resources used by LHDs in their routine emergency preparedness activities. On its own, the handbook is not intended to serve as a standalone chemical preparedness plan or as a comprehensive resource for directing response during a chemical incident.

To use this handbook:

- Familiarize yourself with the chemical preparedness key concepts and chemical preparedness response plan structure outlined in the initial sections.
- Use the information provided under Planning & Mitigation, Preparedness, Response and Recovery to guide the creation of your health department's chemical preparedness plan, making sure to integrate local-specific information and resources.
- Follow the practical steps and recommended actions included in checklists at the end of each section of the handbook and compiled in Appendix C to help you systematically build and enhance your local health department's chemical preparedness plan.
- Leverage the examples and case studies included in the handbook to understand real-world applications and adapt the strategies to your health department's specific needs.
- Refer to this handbook as a reference tool throughout the planning process and use it to facilitate training sessions and exercises within your organization.

By consistently incorporating the guidance from this handbook, you can develop a robust and effective chemical preparedness plan tailored to your community's unique needs and challenges.

Plan Development Assumptions

This handbook is based on the knowledge of local health department representatives and is designed for use by local health department staff. Targeted personnel include planners, environmental health professionals, epidemiologists, and executive leadership. While the information included is meant to provide comprehensive guidance, it should be used with consideration of the following planning assumptions.

- The handbook does not supersede local authorities or existing all-hazard plans, hazard-specific preparedness plans, and regulations.
- LHDs have an emergency preparedness program that includes a formalized emergency response structure and procedures, staff training on general emergency preparedness and response, and available resources and funding to

support emergency preparedness activities (e.g., planning initiatives, personal protective equipment, purchasing and storage).

- Any chemical preparedness plan developed using this handbook will be integrated into the LHD preparedness cycle and will therefore be consistently maintained, trained on, and exercised.
- Any chemical preparedness plan developed using the handbook is intended to be scalable, flexible, and adaptable to meet the needs of a wide range of chemical incident types, sizes, and public health impacts.
- LHDs have access to the appropriate subject matter experts (SMEs), operational staff, and decision-makers to develop the preparedness plan, incorporating LHD-specific considerations, operations, and resource allocations.
- LHDs have access to jurisdictional risk assessment (JRA) and/or community health needs assessment (CHNA) processes and reports.
- LHDs have a comprehensive understanding of their population's needs and demographics.

Finally, LHD staff using this handbook are encouraged to collaborate with agency decision-makers and partners to incorporate agency or jurisdiction-specific information into their preparedness plans. Local partners may also use this handbook to enhance their understanding of the roles and responsibilities of LHDs during chemical incidents.

The *Chemical Preparedness Handbook for Local Health Departments* was developed by local health departments for local health departments.

Please share your experience with this handbook by answering a few user satisfaction questions.

2. Key Concepts

A chemical incident is generally defined as an accidental or intentional release of hazardous substances that pose significant risks to public health, safety, and the environment. These incidents can occur during the production, transportation, storage, or use of chemicals and may result in contamination, explosions, fires, or exposure to toxic substances.

Effective response to chemical incidents involves coordinated efforts among emergency responders, public health officials, and other relevant agencies to mitigate the impact and ensure public safety. Local health departments, while not always the lead response agency, play a crucial role in the immediate aftermath of such incidents, also known as the “golden hour” or “golden first minutes.” During chemical incidents, the actions taken during the "golden first minutes” will determine the success of the overall response.

Below is a description of the characteristics and types of chemical incidents. Users of this handbook should familiarize themselves with the information and use the questions for consideration provided in the appendices to guide their planning efforts.

Characteristics of a Chemical Incident

Chemical incidents present multifaceted challenges that demand a comprehensive approach to public health preparedness. Understanding the characteristics of these incidents is crucial for effective planning, response, and recovery efforts. From their sudden onset and varied sources to their widespread impact on health and the environment, chemical incidents require coordinated response actions involving multiple agencies and stakeholders. The following list outlines key characteristics of chemical incidents within the context of public health preparedness, highlighting the complexities involved in managing these emergencies and emphasizing the importance of proactive planning, interagency coordination, and community engagement.

Sudden Onset: Chemical Incidents often occur unexpectedly, requiring immediate response actions.

Varied Sources: These incidents can arise from industrial accidents, transportation mishaps, storage failures, or intentional releases.

Widespread Impact: They can affect large areas, potentially contaminating air, water, soil, and food supplies.

Acute and Chronic Health Effects: Depending on the chemical and length of exposure, chemical incidents can lead to both short- and long-term health effects.

Complexity in Response: Effective response requires coordination among multiple agencies, including emergency responders, public health officials, environmental protection agencies, and healthcare providers.

Resource-Intensive: Managing a chemical incident demands substantial resources, including specialized equipment, trained personnel, and financial support.

Public Communication Needs: Clear, accurate, and timely communication with the public is critical to managing fear, providing health advisories, and coordinating evacuation or shelter-in-place orders.

Interagency Coordination: Successful response hinges on well-established communication and coordination mechanisms among local, state, and federal agencies.

Preparedness and Training: Continuous training and exercises are essential to maintain readiness for chemical incidents, ensuring that responders are familiar with protocols and procedures.

Regulatory and Compliance Requirements: Response efforts must adhere to existing regulations and guidelines set forth by local, state, and federal authorities.

Assessment and Monitoring: Involves the rapid evaluation of the incident's scope, health impact, and ongoing risks, as well as the continuous tracking of the situation to guide response actions.

Health Infrastructure Strain: Large-scale incidents can overwhelm local healthcare systems, necessitating surge capacity planning and mutual aid agreements.

Environmental Factors: Geography, weather, topography, land use, etc., can affect the spread of chemicals, absorption rates, and the effectiveness of clean up and containment.

Proximity to Homes/Infrastructure: A chemical incident has no boundaries; it may occur next to a populated neighborhood, local businesses, or vital infrastructure such as the community's water source.

Types of Chemical Incidents

Chemical incidents can take on several different forms, making them complicated to prepare for. While a great deal of information already exists on the various types of chemical incidents, local health departments should refer to the below planning considerations when assessing their current preparedness for chemical incidents and in the development of their chemical preparedness plan. Risk assessments are a great tool used by LHDs to identify potential chemical hazards of concern in their jurisdiction and develop specific strategies to address these threats. In the *Planning and Mitigation* section of this handbook, LHDs can learn more about the importance of identifying risks, the different types of risk assessments, and existing resources to ensure comprehensive and coordinated efforts.

The considerations below encompass the major causes of chemical incidents, including industrial accidents, transportation mishaps, storage failures, and intentional acts of terrorism. LHDs must comprehensively address these diverse causes in their preparedness efforts to effectively prevent, respond to, and recover from chemical emergencies.

Industrial accidents

These can include chemical plant fires, explosions, and leaks.

Hazardous chemicals are prolific in many industries, including agriculture, manufacturing, and critical infrastructure. Hazardous chemicals may be stored or processed at plants, warehouses, and factories within your jurisdiction. If these chemicals are not stored or handled properly, or an accident occurs, a chemical release may occur that poses acute and/or long-term health risks to the jurisdiction.

See *Appendix A* to read about the Elk River Chemical Spill. See *Appendix B* for Questions to Consider During Industrial Accidents.

Transportation Accidents

These can include leaks from storage, explosions, or mixing of chemicals during transport and collisions.

Hazardous chemicals are shipped and transported into and across the U.S. every day, oftentimes in large quantities via ships, barges, trucks, and rail. The Department of

Transportation (DOT) utilizes placards to identify the risks of the chemicals being transported and has a National Hazardous Materials Route Registry. An accident resulting from a collision, topple, or improper storage may result in a significant chemical release into the air, soil, and water.

See *Appendix A* to read about the Graniteville Train Disaster in Graniteville, South Carolina, and the Anhydrous Ammonia Chemical Release in Lake County, Illinois. See *Appendix B* for Questions to Consider During Transportation Accidents.

Natural Disasters

These can include forest fires, earthquakes, and volcanic eruptions.

Natural disasters, such as hurricanes, earthquakes, floods, and tornadoes, can precipitate chemical incidents by damaging industrial facilities, storage sites, and transportation infrastructure that handle hazardous materials. The destruction caused by these events can lead to the release of toxic substances into the environment, compounding the initial disaster's impact and creating secondary public health emergencies. For instance, flooding can breach chemical storage tanks, while earthquakes can rupture pipelines or damage containment structures. As a result, the risk of contamination, explosions, and fires increases, necessitating coordinated emergency response efforts to manage the compounded threats to public health and safety. Local health departments must incorporate these potential scenarios into their preparedness plans to ensure comprehensive risk mitigation and effective response strategies.

See *Appendix A* to read about the Arkema Facility Fires in Crosby, Texas. See *Appendix B* for Questions to Consider During Natural Disasters.

Deliberate Releases

These can include the release of chemicals in conflict or terrorism.

Planning for deliberate chemical releases involves preparing for incidents where hazardous substances are intentionally released to cause harm, such as acts of terrorism or sabotage. Local health departments must develop robust response plans that include coordinated efforts with law enforcement, emergency services, and other relevant agencies. This preparation involves identifying potential targets, conducting risk assessments, training staff, and ensuring the availability of protective equipment and medical resources. Effective communication strategies and community engagement are also essential to manage public fear and provide clear instructions during such events.

See *Appendix A* to read about the 2001 Anthrax Attacks. See *Appendix B* for Questions to Consider During Deliberate Releases.

Common Chemicals of Concern

Planning for all hazardous chemicals is impractical, so LHDs should streamline their efforts by focusing on (1) selecting common chemicals that are present in their communities, (2) identifying those most likely to cause a chemical incident, and (3) categorizing and grouping chemicals based on shared characteristics to simplify planning. Risk assessments are a great tool used by LHDs to identify potential chemical hazards of concern in their jurisdiction and develop specific strategies to address these threats. In the *Planning and Mitigation* section of this handbook, LHDs can learn more about how to identify risks, the different types of risk assessments, and existing resources to ensure comprehensive and coordinated efforts.

Below is a non-exhaustive chart of potential hazardous chemicals that may serve as a useful starting point for your jurisdiction. It may be useful to locate facilities that use or store hazardous chemicals and keep track of hazardous chemicals being transported through or near your jurisdiction in order to plan for potential chemical incidents: Chart adapted from OSHA.

Hazardous Chemicals			
Category	**Examples**	**Characteristics**	**Primary Hazards**
Flammable Substances	Gasoline, Propane, Ethanol	Easily ignitable, burn quickly	Fire, explosions
Toxic Chemicals	Cyanide, Mercury, Pesticides	Poisonous, harmful to health even in small amounts	Acute or chronic toxicity, environmental damage
Corrosives	Sulfuric Acid, Hydrochloric Acid	Can cause severe burns and tissue damage	Chemical burns, respiratory damage
Reactive Substances	Sodium, Potassium, Peroxides	React violently with water, air, or other chemicals	Explosions, toxic gas release
Radioactive Materials	Uranium, Radon, Plutonium	Emit ionizing radiation	Radiation sickness, long-term health effects
Oxidizers	Hydrogen Peroxide, Chlorine	Provide oxygen to support the	Fire, explosions

		combustion of other materials	
Compressed Gases	Oxygen, Nitrogen, Carbon Dioxide	Stored under high pressure	Explosions, asphyxiation
Carcinogens	Asbestos, Benzene, Formaldehyde	Known to cause cancer	Long-term health effects
Asphyxiants	Carbon Monoxide, Methane	Displace oxygen, leading to suffocation	Asphyxiation, unconsciousness
Irritants	Ammonia, Chlorine Gas	Cause inflammation or irritation of tissues	Respiratory distress, skin, and eye irritation

There are several additional resources available for the use of identification and analysis of chemical hazards:

- CAMEO Chemical | National Oceanic and Atmospheric Administration
  This software facilitates emergency planning and response for hazardous chemicals. It can help predict hazards if chemicals mix and provides critical information like physical properties, health risks, and response recommendations.

- Emergency Response Guide | U.S. Department of Transportation
  This guide is designed for first responders dealing with hazardous materials during transportation incidents.

Additionally, here are a few planning tools that focus on chemical safety, chemical hazards, chemical properties, and more. LHDs may benefit from reviewing these resources when developing their preparedness plans as they provide valuable information and regulatory frameworks for mitigating risks associated with chemical incidents.

Additional Background Information			
Title	**Agency**	**Descriptions**	**Best Use**
Chemicals by Category	ATSDR	Chemicals are grouped by how they affect human health and the environment.	LHDs concerned with mitigating and treating the health impacts of hazardous chemical exposures.

Priority List	ATSDR	Outlines a list of priority substances commonly found at facilities on the National Priorities List (NPL), based on characteristics such as frequency, toxicity, and potential for human exposure.	Useful for LHDs in jurisdictions concerned with industrial and transportation accidents.
Right to Know Act	EPA	SLTT (State, Local, Tribal, and Territorial) officials are required to use industry information on hazardous chemical storage, use, and releases for chemical preparedness.	Collaborate with your Local or Tribal Emergency Planning Committee to gather information on what hazardous chemicals are present in your jurisdiction, to focus your planning efforts accordingly.
Listed Hazard Categories	OSHA	Organizes hazards by physical hazards (i.e., fire hazards, reactive hazards, explosion hazards) and health hazards (i.e., systemic effects, target organ effects).	It provides additional background information and can be helpful to simplify planning when categorizing and grouping chemicals.

CDC – Division of State and Local Readiness (DSLR)

The CDC's Division of State and Local Readiness supports public health preparedness and response efforts at state and local levels. It provides funding, technical assistance, and coordination to enhance the ability of health departments to respond to emergencies, including natural disasters, disease outbreaks, and bioterrorism. DSLR oversees the Public Health Emergency Preparedness (PHEP) Cooperative Agreement, helping jurisdictions improve their readiness capabilities through strategic planning, exercises, and workforce development.

Public Health Emergency Preparedness Cooperative Agreement

The PHEP Cooperative Agreement outlines several critical requirements for health departments aiming to strengthen their public health systems' capacity to handle emergencies. To follow are the key points.

1. **Program Goals:** The PHEP program aims to enhance the ability of public health systems to effectively prepare for, respond to, and recover from public health threats and emergencies. This includes improving public health emergency

management, enhancing workforce development, and maintaining robust laboratory capabilities.

2. **Funding Allocation:** The funding will support various activities, including personnel, supplies, equipment, travel, and contracts necessary to achieve the program's objectives.
3. **Capability Requirements:** Recipients must comply with the CDC's Public Health Emergency Preparedness and Response Capabilities, focusing on areas such as community preparedness, emergency operations coordination, and public health surveillance.
4. **Training and Exercises:** Applicants are required to participate in exercises and training to ensure readiness and validate their preparedness plans. This involves conducting integrated preparedness planning workshops and developing multiyear plans.
5. **Workforce Development:** The cooperative agreement emphasizes building and maintaining a skilled public health workforce. This includes strategies for staff recruitment, retention, and mental health support to manage surge capacity during emergencies.

Public Health Emergency Preparedness and Response Capabilities

The Public Health Emergency Preparedness and Response Capabilities framework significantly enhances jurisdictional public health preparedness and response capacity by providing a comprehensive, all-hazard approach to emergency preparedness. The capabilities ensure that local health departments are equipped to handle a variety of emergencies, including natural disasters, infectious disease outbreaks, and bioterrorism events. By emphasizing the importance of coordinated and scalable response, the capabilities enable LHDs to effectively allocate resources, streamline communication, and implement evidence-based strategies. The capabilities foster resilience and readiness at the local level, improving the overall public health infrastructure.

The relevance of the capabilities for chemical incidents is highlighted by its comprehensive and adaptable structure, which integrates detailed risk assessments. Chemical incidents require a coordinated and multifaceted approach to effectively reduce risks and protect public health. By incorporating risk assessments, the framework ensures that LHDs can systematically evaluate potential hazards, identify vulnerabilities, and prioritize response efforts. This detailed assessment process allows LHDs to tailor their strategies to both general emergencies and the unique challenges posed by chemical incidents, ensuring a well-rounded and proactive readiness to handle diverse situations.

Role of the Health Department

Local health departments play a critical role in responding to chemical incidents, with responsibilities spanning preparedness, response, and recovery phases. LHDs are often responsible for conducting health surveillance, identifying and monitoring those exposed, and ensuring that medical facilities are prepared to handle chemical-related illnesses. They also work closely with emergency management to facilitate effective communication and resource allocation, support the implementation of safety measures to prevent further exposure, and provide guidance on decontamination procedures. Additionally, LHDs disseminate timely and accurate information to the public, advising on protective actions and mitigating the incident's impact on the community.

Potential roles and responsibilities may include:

1. **Surveillance and Monitoring:** Conducting surveillance to detect chemical exposures, illnesses, and injuries among the affected population. Monitoring environmental conditions and health indicators helps assess the extent of the incident's impact and guides response efforts. Coordinating with local and/or state public health laboratories to collect, transport, and test different types of samples (air, water, soil, food, blood, and urine).

2. **Public Health Advisory and Communication:** Issuing public health advisories and warnings to inform the community about potential health risks associated with chemical incidents. Providing clear, accurate, and timely information helps residents take appropriate protective measures and access necessary resources.

3. **Clinical Support, Mass Care, and Treatment:** Coordinating medical care and treatment for individuals affected by chemical exposures, collaborating with healthcare facilities, emergency medical services, and poison control casualty incidents, providing medical countermeasures, and supporting triage and patient care operations.

4. **Environmental Health Assessment:** Assessing the environmental impact of the chemical incident, including air, water, and soil contamination. Conducting environmental sampling, monitoring, mapping, and remediation activities to mitigate health risks and protect public health and safety.

5. **Risk Communication and Community Engagement:** Effective risk communication fosters transparency, builds trust, and enhances community resilience during and after an incident. LHDs may be assigned to be the Public Information Officer and may be responsible for establishing a JIS (Joint Information System) or JIC (Joint Information Center). Engaging with community members, stakeholders, and elected officials to address concerns, provide updates on response efforts, gather feedback, monitor and message via social media platforms, print, radio, and television media outlets.

6. **Coordination and Collaboration:** Collaborating with local, state, and federal agencies, non-governmental organizations, and private sector partners, to coordinate response activities, share information, and leverage resources. Participating in emergency operations centers, incident command structures, and interagency task forces facilitates efficient and integrated response efforts.

7. **Epidemiological Investigation:** Conducting epidemiological investigations to identify patterns of illness, assess risk factors, and inform public health interventions. Collecting and analyzing health data helps identify vulnerable populations, prioritize interventions, and prevent further spread of illness.

8. **Recovery and Resilience Building:** Supporting long-term recovery and resilience-building efforts, including community health assessments, mental health services, and infrastructure restoration. Collaborating with stakeholders to address the social, economic, and environmental impacts of the incident and promote community well-being.

Jurisdictional Authority

It is important for LHDs to be intimately familiar with their jurisdictional authorities concerning their role in chemical incidents. Understanding these authorities empowers planners to effectively navigate the complexities of emergency response ensuring compliance with relevant laws, regulations, and mandates. By knowing their jurisdictional authorities, planners can swiftly mobilize resources, coordinate interagency collaboration, and implement necessary measures to protect public health and safety. Moreover, this familiarity enables planners to make informed decisions, provide accurate guidance to stakeholders, and facilitate communication with governmental agencies, community partners, and the public.

LHDs can determine their jurisdictional authorities through various means:

1. **Statutory Laws and Regulations:** Reviewing relevant statutes, laws, ordinances, and regulations at the local, state, and federal levels provides a primary source of authority. Planners should familiarize themselves with laws specific to public health, emergency management, environmental protection, and hazardous materials.

2. **Governance:** It is also important for LHDs to understand their local and state governance structure, as it determines their relationship with state health agencies and can influence local jurisdictional authority.

   Examples of LHD Governance Structure[1]

   a. Local Governance/Decentralized: All LHDs are units of the local government. Local health departments are mostly led by local government employees and fiscal authority and decisions are generally retained by the local government.
   b. State Governance/Centralized: All LHDs are local or regional units of the state government. Local health departments are mostly led by state employees and fiscal authority and decisions are generally retained by the state.
   c. Shared: LHDs in the state are governed by both state and local authorities.
   d. Mixed: LHDs in the state have more than one governance type.

3. **Governmental Policies and Directives:** Governmental policies, directives, and executive orders issued by relevant authorities, such as health departments, emergency management agencies, or environmental protection agencies, delineate specific responsibilities and powers during chemical incidents.

4. **Interagency Agreements and Memoranda of Understanding (MOUs):** Collaborative agreements between different agencies or jurisdictions outline roles, responsibilities, and authorities during emergencies. Planners should review and understand these agreements to ensure effective coordination and

[1] Association of State and Territorial Health Officials (ASTHO). (n.d.). State and Local Health Department Governance Classification System. Retrieved July 10, 2024, from https://www.astho.org/globalassets/pdf/state-local-governance-classification-tree.pdf
Cunningham, M., Patel, K., & McCall, T. (2022). 2022 National Profile of Local Health Departments. National Association of County and City Health Officials. Retrieved July 10, 2024, from https://www.naccho.org/uploads/downloadable-resources/NACCHO_2022_Profile_Report.pdf

cooperation.

5. **Legal Counsel:** Seeking guidance from legal counsel specializing in public health, emergency management, or environmental law can provide valuable insights into jurisdictional authorities. Legal experts can interpret complex legal frameworks and provide tailored advice to planners.

6. **Training and Professional Development:** Participating in training programs, workshops, and seminars on public health law, emergency management, or hazardous materials regulations can enhance planners' understanding of their legal jurisdictional authorities. These educational opportunities often cover legal aspects relevant to chemical incidents and provide practical guidance for planners.

7. **Networking and Collaboration:** Engaging with peers, colleagues, and stakeholders within the public health and emergency management sectors facilitates knowledge-sharing and mutual support. Networking opportunities, such as conferences, forums, and working groups, enable planners to learn from others' experiences and gain insights into jurisdictional authorities.

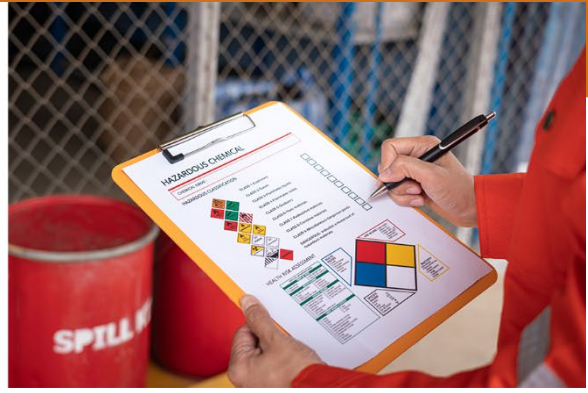
By utilizing the resources and approaches above, LHDs can effectively identify, understand, and apply, not only their own jurisdictional authority but also that of their response partners, to enhance preparedness and response efforts. Mapping jurisdictional authorities is critical to plan development and can help LHDs answer the following planning questions.

- What responsibility/authority does the LHD have?
- Who is responsible for decontamination (human, environmental and veterinary)?
- Who regulates soil, water, and/or air?
- Who regulates utilities, transportation, and/or facilities?
- Who issues evacuation or shelter-in-place orders?
- Who are the subject matter experts?
- Who is responsible for public information and warning?

Jurisdictional Authority Resources

- Emergency Planning and Community Right-to-Know Act (EPCRA): Authorized in 1986, this Act helps communities plan for chemical emergencies by requiring industry to report on the storage, use, and releases of certain chemicals to federal, state, tribal, territorial, and/or local governments.

- National Profile of Local Health Departments: Presents comprehensive, accurate, and reliable data about LHDs' governance, funding, staffing, and activities across the United States.
- CDC's Public Health Law Program: Provides tools, resources, training, and legal technical assistance to public health practitioners.



3. Chemical Incidents: Planning & Mitigation

Planning and mitigation in public health emergency preparedness is important because it involves implementing proactive measures to reduce the potential impact and severity of any event on communities. Effective mitigation strategies, such as regulatory oversight on hazardous substances, proper storage and handling practices, robust emergency response planning, and public education on chemical safety, can significantly minimize exposure and health risks. By identifying vulnerabilities and developing targeted interventions, LHDs can prevent or lessen the harmful effects of chemical releases, protect the environment, and ensure the safety and well-being of the population.

The National Mitigation Framework outlines mitigation roles across the whole community and provides insight for minimizing the impacts of disasters. The National Mitigation Framework focuses on risk and resilience and examines core capabilities necessary for organizations involved in mitigation, including threats and hazards identification, risk and disaster resilience assessment, planning, community resilience, public information and warning, long-term vulnerability reduction, and operational coordination. The National Mitigation Framework leverages mitigation-enhancing products, services, and assets across the community to encourage resilience building and raise risk awareness.

Identify Risk and the Public Health Implications

The PHEP Cooperative Agreement mandates thorough risk assessments to identify and evaluate potential hazards, including chemical threats, to craft targeted response strategies and allocate resources efficiently. This proactive approach ensures better preparedness and effective responses, protecting public health and safety.

Identifying and understanding public health risks enable targeted emergency responses. Local health departments can develop strategies, conduct drills, and educate the public on emergency procedures for specific threats like chemical spills, guiding resource allocation and evacuation protocols to address health implications such as respiratory issues or chemical burns.

A PHEP risk assessment typically includes the following main components:

1. **Hazard Identification:** Identifying potential hazards and threats, such as infectious diseases, natural disasters, or chemical incidents.

2. **Vulnerability Assessment:** Evaluating the susceptibility of populations, infrastructure, and systems to these hazards.
3. **Impact Analysis:** Estimating the potential consequences of the identified hazards on public health, including morbidity, mortality, and economic impacts.

4. **Risk Evaluation:** Assessing the likelihood and severity of the identified risks to prioritize them based on their potential impact.

5. **Mitigation Strategies:** Developing and implementing measures to reduce the risks and enhance resilience.

6. **Response Planning:** Creating detailed plans for effective response and recovery, including coordination with stakeholders and resource allocation.

7. **Monitoring and Review:** Continuously monitoring and reviewing the risk assessment to adapt to new threats and changes in risk levels.

Planners must review existing risk assessments or conduct a new risk assessment before developing an emergency operations plan. Local health departments have access to a variety of resources and tools to help them identify risks and enhance their preparedness for chemical emergencies. One critical resource is the National Risk and Capability Assessment (NRCA), which provides a comprehensive framework for assessing risks and evaluating the capabilities needed to address them. The NRCA can help LHDs systematically identify and prioritize potential hazards, including chemical threats, by analyzing historical data, local infrastructure, and potential vulnerabilities.

Types of Risk Assessments

Below you will find three different types of risk assessments - Threat and Hazard Identification and Risk Assessment (THIRA), Stakeholder Preparedness Review (SPR), and Hazard Vulnerability Assessment (HVA) - that are beneficial to consider when identifying risk and public health implications for your chemical preparedness plan.

Threat and Hazard Identification and Risk Assessment (THIRA)

A THIRA is a systematic process used by emergency management professionals to identify and analyze potential external threats and hazards that could affect a community. It

involves assessing the likelihood and potential impacts of various natural, technological, and human-caused hazards, including floods, earthquakes, chemical spills, pandemics, and terrorist attacks. The THIRA process helps communities prioritize risks, allocate resources, and develop comprehensive emergency preparedness plans tailored to their specific vulnerabilities and capabilities. By conducting a THIRA regularly, communities can enhance their resilience and readiness to respond effectively to emergencies and disasters.

The development and maintenance of a THIRA are typically organized by county/city emergency management agencies. It is crucial for LHDs to be involved in this process to ensure comprehensive planning and effective response to public health threats. Their participation helps identify health-related risks and ensures that public health considerations are integrated into emergency preparedness strategies.

Stakeholder Preparedness Review (SPR)

The Stakeholder Preparedness Review is an evaluation and assessment process used to gauge the preparedness levels of stakeholders involved in emergency management and response. It involves reviewing and analyzing the capabilities, plans, and resources of various stakeholders, including government agencies, non-profit organizations, private sector entities, and community groups. The SPR aims to identify strengths, weaknesses, and gaps in preparedness efforts, allowing stakeholders to enhance coordination, communication, and collaboration before, during, and after emergencies. This review process helps ensure that all relevant parties are adequately prepared to fulfill their roles and responsibilities in responding to disasters and protecting public safety.

LHDs should consider hosting routine Emergency Support Function 8: Public Health and Medical (ESF-8) partner meetings to foster collaboration among public health, medical services, and emergency management stakeholders. These meetings can be leveraged to facilitate an SPR to assess preparedness capabilities, identify gaps, and develop strategies on a continuous basis.

Hazard Vulnerability Assessment (HVA)

A Hazard Vulnerability Assessment (HVA) is a systematic approach used to identify and prioritize potential hazards and vulnerabilities within a specific community, organization, or system. It identifies internal factors such as population demographics, infrastructure vulnerabilities, critical facilities, and available resources for response and recovery. HVA results in a profile of vulnerabilities and capabilities specific to an organization or community, guiding tailored preparedness and mitigation efforts.

Health departments are most familiar with a version of the Public Health Risk Assessment Tool (PHRAT), a software-based type of HVA used by public health planners to assess health risks posed by various hazards. It integrates data sources like epidemiology, environment, and demographics to assess likelihood and impacts of risks such as outbreaks, disasters, and environmental threats. It helps prioritize and plan responses, offering simulations for scenario testing and supporting evidence-based decisions in public health emergencies and disasters.

Additional Resources: Technical Resources: Hazard Vulnerability/Risk Assessment

Planning Considerations

Regardless of the type of risk assessment conducted, it is important to ask certain fundamental questions to comprehensively evaluate the preparedness of the local health department for chemical incidents. These questions serve as checkpoints to assess potential risks, vulnerabilities, and readiness levels within the jurisdiction.

Addressing the following questions ensures a holistic approach to planning and responding to chemical incidents:

- What areas are at potential risk for a chemical incident? Does the LHD serve this area and the people living there? Does the LHD serve the surrounding communities?
- How many people does your LHD serve? What are key characteristics of this population that should be considered during the planning process?
- What are potential exposure pathways for hazardous chemicals to reach your jurisdiction?
- What critical infrastructure (e.g., electricity, water, sanitation, transportation, communication) exists in your jurisdiction and where are they located? What communities does this infrastructure serve (e.g., in your jurisdiction and beyond)? What is their level of risk and preparedness for a chemical incident?
- How prepared is your jurisdiction to conduct a major area evacuation? What evacuation routes exist and are they at risk of impact in the event of a chemical incident? How prepared is your LHD to rapidly assess and recommend which areas should evacuate?
- How prepared is your jurisdiction to conduct a major shelter-in-place operation? What tools and resources do your LHD already have to conduct a shelter-in-place operation? How prepared is your LHD to rapidly assess and recommend which areas should shelter-in-place?

- What level of awareness/knowledge does the public possess regarding chemical hazards and preparedness/response? Has the LHD previously conducted a public education campaign to further spread awareness on chemical hazards and preparedness?
- What physical, social, and environmental vulnerabilities exist within your jurisdiction? What communities in your jurisdiction are at greater risk of exposure to a potential chemical exposure during a major incident? Refer also to social determinants of health.
- How could the potential consequences of a major chemical incident exacerbate existing conditions or inequities within your jurisdiction?

Existing Planning Documents and Resources

When developing a chemical response plan, referencing existing documents is essential for ensuring comprehensive and coordinated efforts. These plans, which may include a community health assessment (CHA), hazard mitigation plans, and continuity of operations (COOP) plans, provide valuable guidance and frameworks that ought to be integrated into the chemical response plan. By leveraging existing plans, LHDs can avoid redundancy, capitalize on established protocols, and align response efforts with broader public health emergency preparedness strategies. Additionally, referencing these plans allows for the identification of gaps or areas for improvement, enabling LHDs to strengthen their chemical response plans.

Below is a table that arranges preparedness plans according to the level of government where the plans can typically be found and types of agencies that may be the owners of the plan. This table provides a general overview and may vary based on specific jurisdictional structures and the nature of the chemical emergency.

Preparedness Plans	Level of Government	Types of Agencies
All-Hazards Emergency Operation Plan (EOP)	Local, State, Federal	Emergency Management, Public Health Departments, Law Enforcement, Fire Departments
Continuity of Operations Plan (COOP)	Local, State, Federal	All Government Agencies, Healthcare Facilities, Utilities
HazMat Response Plans	Local, State, Federal	Fire Departments, Environmental Protection Agencies, Emergency Management
CHEMPACK Plans	State, Federal	Public Health Departments, Hospitals, Emergency Medical Services

Surveillance and Epidemiological Investigation Protocols	Local, State, Federal	Public Health Departments, CDC, Healthcare Facilities
Crisis and Emergency Risk Communication Plans (CERC)	Local, State, Federal	Public Health Departments, Emergency Management, Communications Departments
Area Evacuation Plans	Local, State	Emergency Management, Law Enforcement, Transportation Departments
Shelter-in-place Plans	Local, State	Emergency Management, Public Health, Law Enforcement
Mass Care Plans (i.e., sheltering and temporary relocation)	Local, State, Federal	Emergency Management, Red Cross, Public Health, Social Services
Healthcare Surge Plans	Local, State	Hospitals, Public Health Departments, Emergency Medical Services
Critical Infrastructure Disruption Plans	Local, State, Federal	Public Works, Utilities, Transportation Departments, Emergency Management
Waste Management Plans	Local, State, Federal	Environmental Protection Agencies, Public Works, Public Health
Public Health Laboratory Testing Plans	Local, State, Federal	Public Health Laboratories, CDC, Environmental Protection Agencies
Community & Partnership Engagement Plans	Local, State	Public Health Departments, Community Organizations, Emergency Management
Continuity & Access to Social Services (including veterinary)	Local, State	Social Services, Public Health, Animal Control Agencies
Recovery plans (environmental monitoring, clearance, etc.)	Local, State, Federal	Environmental Protection Agencies, Public Health, Emergency Management

Community Health Assessment

A Community Health Assessment is a systematic process used by LHDs to evaluate the health needs, assets, and disparities within a community. It involves gathering and analyzing data on demographics, health status indicators, social determinants of health, and environmental factors to identify key health issues and priorities. In the context of emergency response planning, the CHA is particularly relevant because it helps LHDs identify at-risk and vulnerable populations and critical health infrastructure that may be at

risk during emergencies such as natural disasters or public health crises. The CHA development process is usually conducted by LHD staff responsible for continuous quality improvement (CQI) or accreditation; planners should work closely with these individuals. By integrating CHA findings into emergency response plans, planners can better tailor preparedness strategies, allocate resources effectively, and engage the community in readiness efforts.

At Risk Populations

The CHA is an invaluable tool in emergency response planning, particularly for at-risk populations. By systematically gathering and analyzing data on the health status, needs, and resources of a community, the CHA identifies vulnerable groups such as the elderly, children, individuals with disabilities, and those with chronic health conditions. This detailed information enables LHDs to develop targeted strategies that address the specific needs of these populations during emergencies. For example, the CHA can highlight areas where additional medical resources or evaluation assistance may be required. Furthermore, it facilitates the implementation of interventions designed to protect the health and well-being of at-risk individuals. Incorporating the CHA into preparedness plans ensures a more effective, equitable, and inclusive response to public health crises.

When reviewing a CHA the following questions should be considered:

- What physical, social, and environmental vulnerabilities exist within your jurisdiction? Are there common characteristics that increase the vulnerability/risk level for certain communities in your jurisdiction, as they pertain to chemical incidents (e.g., population characteristics such as age, race and ethnicity, gender, pre-existing health conditions, environmental factors, access to public/private transportation, cellphone or internet usage, English proficiency)?
- What communities in your jurisdiction are at greater risk of exposure to a potential chemical exposure during a major incident? Is this the result of proximity to chemical industry and/or transportation lines, or due to another cause?
- How do the conditions of each community intersect with structural conditions (e.g., existing policies and decision-making processes, structural racism and sexism, barriers to healthcare and public health information access) to create/exacerbate inequities in risk to and impacts from a major chemical incident?
- What inequities exist in your jurisdiction that could create uneven results during a chemical incident response? Examples include knowledge and education inequities, income and economic inequities, geography, and housing considerations, and all the above as they intersect with identity and power

structures (race and structural racism, gender and patriarchy within public health and healthcare, LGBTQ+, religion, immigration status).

Emergency Planning and Community Right-to-Know Act (EPCRA)

The Emergency Planning and Community Right-to-Know Act is a federal law enacted to support emergency planning efforts and enhance public access to information about hazardous chemicals in their communities. It requires industries to report on the storage, use, and release of hazardous substances to state and local authorities. EPCRA mandates that this information be made available to the public through Local Emergency Planning Committees (LEPC), Tribal Emergency Planning Committees (TEPC) and emergency response stakeholders, including LHDs. This law is crucial for emergency preparedness and response as it enables communities to assess potential risks from hazardous chemicals, plan for emergencies effectively, and protect public health and the environment.

To find information specific to the EPCRA in your jurisdiction, start by visiting your state's environmental agency website or contacting your LEPC/TEPC, and consider attending local convenings. State environmental agencies typically oversee EPCRA compliance and provide resources related to hazardous substances, reporting requirements, and emergency planning. The LEPC/TEPC, usually operating within county or city government, can offer details on local EPCRA regulations, including hazardous materials reporting and community preparedness initiatives. Additionally, the U.S. Environmental Protection Agency (EPA) offers comprehensive resources online, such as guidance documents and fact sheets, to help understand and comply with EPCRA requirements nationwide.

Planning Action Checklist

Planning Action Checklist for Local Health Departments	
Researching Jurisdictional Authorities	
☐	Identify local, state, and federal agencies responsible for chemical emergency response.
☐	Clarify roles and responsibilities of each authority in a chemical incident.
☐	Review legal and regulatory frameworks governing chemical emergency preparedness and response.
Conduct Risk Assessments	
☐	Identify potential chemical hazards within the jurisdiction (e.g., industrial sites, transportation routes, storage facilities).
☐	Assess the vulnerability of the population and critical infrastructure to chemical incidents.
☐	Evaluate past incidents and current threat levels to prioritize risks.
Review Existing Planning Documents	
☐	Collect and analyze existing emergency response plans, including regional and neighboring jurisdictions' plans.
☐	Review the Local Emergency Planning Committee (LEPC) reports and Hazardous Materials Emergency Preparedness (HAZMAT) plans.
☐	Examine mutual aid agreements and memorandums of understanding (MOUs) with other agencies and organizations.
Engage Stakeholders	
☐	Identify and engage key stakeholders including emergency management, law enforcement, fire departments, hospitals, schools, and community organizations.
☐	Schedule meetings or workshops to gather input and foster collaboration among stakeholders.
☐	Establish a working group or task force dedicated to chemical preparedness.
Conduct Community and Infrastructure Surveys	
☐	Survey local industries and businesses to identify chemicals used, stored, and transported within the jurisdiction.
☐	Map critical infrastructure such as hospitals, schools, and transportation hubs, assessing their proximity to potential chemical hazards.
☐	Engage with community members to understand public concerns and perceptions regarding chemical risks.
Evaluate Resources and Capabilities	
☐	Assess the availability and adequacy of emergency response resources, including personnel, equipment, and facilities.
☐	Identify gaps in resources and capabilities and plan for acquiring necessary assets.

☐	Review training and exercise records to determine the readiness of responders and the need for additional training.
Document and Review Findings	
☐	Compile all gathered information into a comprehensive report.
☐	Review and validate findings with stakeholders and subject matter experts.
☐	Use the collected data to inform the development of a detailed chemical preparedness response plan.
☐	Review the planning action checklist annually and update as needed.

4. Chemical Incidents: Preparedness

Preparedness ensures that communities and healthcare systems are ready to effectively manage and mitigate the complex challenges posed by chemical incidents. Preparedness involves comprehensive planning and training to address potential chemical hazards, thereby minimizing health risks and environmental impacts. By developing and exercising emergency response plans, and establishing clear communication channels among stakeholders to prepare, public health agencies can ensure a rapid, coordinated, and efficient response when an incident occurs, which is crucial for reducing morbidity and mortality. Therefore, the preparedness section of this handbook is the largest and where you will spend most of your time. In the upcoming sections, you will learn more about the primary LHD responsibilities including public health surveillance, medical countermeasures, and information sharing, as well as ancillary preparedness tasks including mass care support and laboratory testing. Having a strong understanding of what preparedness is and what it looks like in your jurisdiction will allow your LHD's plan to operate seamlessly when a chemical incident occurs.

General Preparedness Tasks

There are several general preparedness tasks LHDs should engage in that are useful for preparing for all types of emergencies and help LHDs build capacity for quick and efficient response. These tasks, including building partnerships and coordinating with local volunteers, are important responsibilities for LHDs to engage in and are detailed in the sections below.

Partnerships

Collaboration among diverse entities, including government agencies, healthcare providers, emergency services, non-governmental organizations, and community groups, enables the pooling of resources, expertise, and information. Effective coordination helps to streamline communication, avoid duplication of efforts, and ensure that all response activities are well-organized and targeted. By fostering strong partnerships, LHDs can enhance their capacity to manage emergencies, rapidly mobilize necessary resources, and provide comprehensive support to affected populations. These collaborative efforts also

facilitate the development of integrated response plans, joint training exercises, and shared best practices, ultimately leading to a more resilient and prepared community.

Local health departments can establish partnerships and improve coordination with response partners through several strategic approaches.

1. **Engagement and Networking:** Actively participate in local, regional, and national healthcare coalitions, emergency management organizations, and interagency committees. This involvement helps build relationships, share information, and align objectives.

   Examples:

   - Local Emergency Planning Committee (LEPC)
   - Local Emergency Support Function #8 (ESF-8) Partners Meeting
   - Local/Regional Healthcare Coalition Meetings
   - Local Disaster/Emergency/Incident Advisory Council

2. **Memoranda of Understanding (MOUs):** Formalize partnerships with key stakeholders, including hospitals, clinics, emergency responders, law enforcement, public utilities, and community organizations though MOUs. These agreements clarify roles, responsibilities, and resource commitments during emergencies.

3. **Regular Communication Channels:** Establish clear communication protocols and maintain regular contact with response partners. Use email lists, conference calls, and online platforms to facilitate information sharing, updates on preparedness activities, and coordination of response efforts.

4. **Joint Training and Exercises:** Conduct joint training sessions and exercises with response partners to enhance interoperability, test response plans, and build familiarity with roles and procedures. These activities improve coordination, identify gaps, and foster teamwork among agencies.

5. **Information Sharing and Collaboration:** Share relevant data, situational assessments, and intelligence with response partners to facilitate informed decision-making during emergencies. Develop mechanisms for sharing sensitive information securely and in compliance with privacy regulations.

   Examples:

   - Incident Action Plans (IAPs)
   - WebEOC

- ReadyOP

6. **Mutual Aid Agreements:** Establish mutual aid agreements with neighboring jurisdictions and organizations to facilitate the sharing of resources, personnel, and expertise during large-scale emergencies that exceed local capacities.

7. **Community Engagement (Whole Community Approach):** Involve community stakeholders, including businesses, schools, faith-based organizations, and vulnerable populations, in preparedness efforts. Engaging the community enhances resilience, promotes public trust, and improves the effectiveness of emergency response.

8. **After-Action Reviews and Continuous Improvement:** Conduct after-action reviews following exercises and real incidents to assess performance, identify lessons learned, and implement improvements. This process strengthens partnerships by addressing challenges and enhancing response capabilities over time.

The above strategies can foster effective partnerships, improve coordination with response partners, and enhance overall readiness to respond to any public health emergency including chemical incidents.

Potential Partnerships and Roles

See *Appendix C* for Questions to Consider When Establishing LHD Role with Partners.

Partners and Roles	
LOCAL	
Fire Department(s)	Responds to chemical spills or releases, conducts initial hazard assessment, and implements containment and mitigations measures.
Emergency Medical Services (EMS)	Provides medical assistance to individuals exposed to chemicals, transports patients to medical facilities, and coordinates with hospitals for specialized treatment.
HAZMAT	Specialized team trained to handle hazardous materials incidents. Conducts chemical identification, containment, and decontamination procedures.
Law Enforcement	Secures the incident scene, manages traffic and crowd control, and collaborates with other agencies to ensure public safety.
Hospitals and Healthcare Facilities	Provides medical treatment for individuals exposed to chemicals, including decontamination, triage, and

	specialized care for chemical-related illnesses and injuries.
Emergency Management Agency/Office	Coordinates overall response efforts, activates emergency operations centers, liaises with state and federal agencies, and ensures communication with the public.
Veterinary Health Services	Addresses animal welfare concerns, including decontamination and treatment of exposed animals
County/Municipal Government Social Services	Provides support services to affected individuals and families, including shelter, food, counseling, and other social services.
STATE	
State Department of Health (DOH)	Conducts or provides guidance on health risk assessments, provides guidance on medical treatment protocols, coordinates with hospitals and healthcare providers across county lines, and manages public health messaging and information dissemination.
State Emergency Management Agency	Coordinates overall state response efforts, activates state emergency operations center (EOC), and provides support to local jurisdictions through resource allocation, personnel deployment, and logistical support.
Department of Environmental Protection (DEP)	Assists with environmental monitoring and assessment. Provides expertise on chemical hazards and clean up techniques and ensures compliance with environmental regulations.
Department of Transportation (DOT)	Manages transportation routes and logistics, assists with road closures and detours, and coordinates hazardous material transportation permits and regulations.
Department of Agriculture (DAG)	Addresses agricultural and food safety concerns, including livestock and crop protection, and collaborates on environmental contamination issues affecting agriculture.
Fish and Wildlife Services (FWS)	Assesses and mitigates impacts on wildlife and natural habitats, coordinates wildlife rescue and rehabilitation efforts, and monitors and addresses contamination of water bodies and ecosystems.
Poison Control	Offers expert medical advice and information on the toxicological effects of chemicals, assists healthcare providers with treatment protocols for poisoning, and provides public education on poison prevention and response.
FEDERAL	

Centers for Disease Control and Prevention (CDC)	Provides public health guidance, conducts health risk assessments, offers expertise on chemical exposures and medical treatments, and assists with epidemiological investigations and public health surveillance.
Agency for Toxic Substances and Disease Registry (ATSDR)	Conducts health assessments, provides guidance on exposure risks and medical management, and offers expertise on toxicological effects of chemicals.
U.S. Department of Agriculture (USDA)	Assesses and mitigates impacts on agriculture, including crops, livestock, and food safety. Coordinates with local agricultural agencies to protect the food supply, conducts testing and monitoring for contamination, and provides guidance on managing agricultural resources affected by the chemical incident.
U.S. Environmental Protection Agency (EPA)	Leads environmental monitoring and cleanup efforts, provides expertise on hazardous materials, enforces environmental regulations, and supports remediation activities and assessments of environmental impact.
Federal Emergency Management Agency (FEMA)	Coordinates federal response efforts, provides disaster relief funding, activates the National Response Framework (NRF), and supports state and local emergency management agencies with resources and logistics.
Administration for Strategic Preparedness & Response (ASPR)	Coordinates public health and medical response efforts, manages the deployment of the Strategic National Stockpile (SNS), and provides medical countermeasures, healthcare resources, and expertise.
Federal Bureau of Investigation (FBI)	Investigates potential criminal activities related to the chemical incident, including terrorism, sabotage, and other illegal activities, and provides forensic support and intelligence.
NON-TRADITIONAL RESPONSE PARTNERS	
Community Organizations and Non-Governmental Organizations (NGOs)	Provide essential services such as shelter, food, clothing, and emotional support to affected individuals and families. They can assist with community outreach, education, and volunteer coordination. They can also be trusted sources and connected with underserved populations.
Businesses and Corporations	Offer resources such as facilities, equipment, and supplies. They can also provide expertise in logistics, communications, and other areas critical to emergency response and recovery.

Faith-Based Organizations	Provide spiritual support, counseling services, and logistical assistance such as shelter and food distribution. They often have strong community networks that can be mobilized quickly.
Academic Institutions and Research Centers	Offer expertise in chemical safety, public health, and environmental science. They can conduct research, provide technical assistance, and support data analysis and risk assessment efforts.
Volunteer Organizations (e.g., Community Emergency Response Teams – CERT, Medical Reserve Corps – MRC, Red Cross)	Assist with a variety of tasks including community outreach, providing first aid, managing shelters, and supporting logistics and administrative tasks.
Utilities and Infrastructure Companies	Ensure the continuity and restoration of essential services such as electricity, gas, water, and telecommunications. They can also assist with hazard mitigation related to their infrastructure.
Environmental and Conservation Groups	Provide expertise on the environmental impact of chemical incidents and support cleanup and remediation efforts. They can also assist in monitoring and protecting wildlife and natural resources.

Volunteer Management

LHDs may already know of staff and community members such as first responders, nurses, and doctors who wish to serve as volunteers during emergencies. It is important to identify and involve volunteers as a form of administrative preparedness during planning stages to assess volunteer strengths and capabilities, time and resource constraints, additional required trainings, and agreed mutual expectations. If there is a limited number of local staff available, LHDs should consider partnering with local Voluntary Organizations Active in Disaster (VOAD) as a method to bolster staffing during emergency response. Successful emergency response and recovery relies on early communication, engagement, and coordination with volunteers and organizations. Below are a few examples of community-based volunteer organizations you may find in your jurisdiction.

- The Medical Reserve Corps (MRC) is a national network of 300,000 volunteers and 800 community-based units organized locally throughout the United States and its territories. MRC volunteers are mobilized to support various activities including preparedness and response planning, emergency shelter operations and medical care, disaster clean-up and recovery support, and community education and outreach.

- Community Emergency Response Teams (CERT) are a source of volunteer disaster assistance available in every state and may also be available locally within communities. The CERT program provides training to volunteers in basic skills for disaster preparedness and response including fire safety, search and rescue, and medical support.
- The Red Cross assists with providing immediate disaster relief and recovery support through shelters, health services, emergency financial assistance, and community-based recovery services.
- United Way helps mobilize resources to support communities during disasters and response efforts through connecting communities to services such as shelters, emergency food, medical care, clean-up services, and access to government programs.

Psychological Support

Chemical incidents may have a long-lasting impact on the psychological well-being of first responders and those directly affected by the incident. It is critical that preparedness plans contain information on how to incorporate psychological support during response and recovery.

Impact

Injury and illness and loss of jobs, housing, safe food, drinking water, and clean air can cause a great deal of psychological stress. This stress can create issues with employment, finances, family dynamics, and physical wellness impacting the overall health of a community. Some examples of mental health disorders that may increase or need targeted support include anxiety, depression, post-traumatic stress/Complex post-traumatic stress disorder (PTSD, CPSTD), grief, and substance use disorder.

First responders may experience negative psychological impacts from the aftermath of a traumatic event firsthand. They are likely to work long hours with little rest or food and experience/hear about traumatic events many times during the initial response. First responders are at increased risk for anxiety, depression, PTSD, CPSTD, burnout, and compassion fatigue.

Planning and Training

Planning for psychological support during chemical emergencies is essential for local health departments to mitigate mental health impacts on both the community and responders. Comprehensive training should begin by educating staff on common psychological reactions such as acute stress, anxiety, PTSD, and depression, and identifying vulnerable populations like children, the elderly, individuals with pre-existing

mental health conditions, and first responders. Training for first responders and healthcare providers in Psychological First Aid (PFA) is crucial for providing immediate emotional support, while crisis intervention strategies help manage acute psychological distress effectively. Establishing a referral system ensures that those needing long-term psychological care receive appropriate services.

The Substance Abuse and Mental Health Services Administration (SAMSA) Disaster Technical Assistance Center (DTAC) supports states, U.S. territories, tribes, and local agencies and providers to plan for and respond to mental health and substance use–related needs after a disaster. SAMSA also provides various resources and training on disaster behavioral health, including the Psychological First Aid Online course.

Simulation drills and exercises that include psychological support scenarios help ensure readiness and allow for the evaluation of the training's effectiveness. Continuous feedback and improvement should be part of the training process. Adequate resource allocation, including funding and supplies for mental health services, is critical for effective response and recovery.

Primary Public Health Preparedness Tasks

This section outlines the primary preparedness responsibilities of LHDs for chemical incidents. The primary responsibilities of LHDs are centered around mitigating public health impacts on communities, communicating health risks, and maintaining the resilience of communities and health systems during and after a chemical incident.

Public Health Surveillance

Public health surveillance activities involve a combination of environmental and biosurveillance measures to detect chemical exposures early. Environmental monitoring requires continuous assessment of air, water, and soil for chemical contaminants using advanced sensors and technologies. Concurrently, biosurveillance involves tracking health indicators in both humans and animals by analyzing data from healthcare facilities, poison control centers, and other relevant sources. Surveillance systems are designed to continuously monitor health data for unusual patterns or spikes in symptoms that could indicate a chemical release. *Refer to the Environmental Health section under Chemical Incidents: Response for more information.*

Data collection and analysis are fundamental to effective surveillance, and epidemiologists play a critical role in chemical incident preparedness planning. Local health departments can utilize both active and passive surveillance systems to detect chemical exposures and incidents. Active surveillance involves proactive measures where

public health professionals actively seek out information. This includes regular monitoring of environmental samples (air, water, soil) for chemical contaminants using sensors and other technologies. Additionally, public health professionals may conduct periodic surveys and collect data directly from healthcare providers, laboratories, and poison control centers to detect signs of chemical exposure in humans and animals. This proactive approach ensures the timely identification of potential chemical threats and allows for quicker intervention.

Passive surveillance, on the other hand, relies on the reporting of chemical incidents and exposures by healthcare providers, laboratories, and the public. This system is less resource-intensive and involves the collection of data from routine health records, incident reports, and other sources that are voluntarily submitted. While passive surveillance may not provide immediate data, it is essential for tracking long-term trends and identifying patterns of chemical exposure. Integrating data from both active and passive surveillance systems enhances the ability of LHDs to detect and respond to chemical incidents effectively. By establishing or tapping into existing surveillance mechanisms, LHDs can quickly identify potential chemical incidents, allowing for a timely public health response. This early detection is vital for initiating containment and decontamination measures, thereby reducing the spread of harmful chemicals, and limiting the number of individuals exposed.

Incorporating public health surveillance and epidemiological investigation into chemical incident preparedness planning ensures a proactive and informed response capability. Preparedness plans should outline specific protocols for surveillance activities, including which data sources to monitor and the thresholds for triggering an investigation. Additionally, they should detail the steps for conducting epidemiological investigations, including collaboration with public health laboratories, law enforcement, and environmental agencies. Training LHD staff in these procedures and conducting regular drills can enhance readiness. LHDs can create their own process for health surveillance or utilize existing databases and tools for assistance.

Additional Resources:

These external resources complement current internal health systems by providing additional expertise, capabilities, and support beyond what an LHD already has. They serve as valuable extensions and can enhance the capacity to respond effectively to various health challenges and emergencies.

Trainings:

- Assessment of Chemical Exposures Training (ACE) is a training that informs the learner in how to perform an epidemiologic assessment after a chemical incident. It also includes a toolkit with surveys, consent forms, databases, and other training materials that can be useful in responding to or planning for a chemical incident.

Survey Tools:

- Behavioral Risk Factor Surveillance System (BRFSS) is a national telephone survey conducted by CDC every year, that gathers data on Americans' health behaviors, chronic conditions, and preventive service use.

Data Sharing:

- The National Environmental Public Health Tracking Network (Tracking Network) integrates data from national, state, and city sources on environmental hazards, health impacts, and population health to support informed decision-making.

Medical Countermeasures

LHDs should prioritize medical countermeasures (MCM) in planning for chemical incidents due to their potential for severe and immediate health impacts. Chemical exposures can cause acute and chronic conditions, including respiratory distress, chemical burns, and long-term neurological damage. Antidotes, decontamination agents, and supportive treatments are essential for mitigating these effects. Quick access to and administration of these countermeasures can significantly reduce morbidity and mortality rates. Incorporating MCM into emergency preparedness plans enhances community and health system resilience by managing medical surges, preventing healthcare overload, and ensuring continuity of care. Effective planning includes stockpiling supplies, training healthcare personnel, and conducting regular drills, fostering a coordinated response among emergency services, hospitals, and public health officials.

Medical countermeasure planning is vital during a chemical incident response for several reasons:

1. **Protecting Health**: Chemical incidents can expose a community to multiple health hazards. Medical countermeasures help mitigate the health impacts by providing treatments to affected individuals.
2. **Minimizing Casualties**: Prompt medical intervention can reduce the severity of injuries or illnesses caused by chemical exposure, minimizing casualties.

3. **Preventing Long-Term Effects**: Some chemical exposures can result in long-term health effects if not treated promptly. Medical countermeasures can prevent or mitigate these long-term consequences.
4. **Ensuring Effective Response**: Having medical countermeasures readily available ensures that responders can effectively address health emergencies during a chemical incident.
5. **Boosting Public Confidence**: The availability of medical countermeasures demonstrates preparedness and enhances public confidence in the response capabilities of authorities during a chemical incident.

Information Sharing and Warning Systems

Developing and maintaining effective public health information sharing and warning systems is critical to public health emergency preparedness. These systems enable timely communication between state and local health departments, emergency responders, healthcare facilities, and the public, ensuring a coordinated and effective response.

Warning systems come in many forms, including email, text and call notification, social media, television, radio, and website-banners. Depending on the target audience and scenario LHDs can determine the most appropriate alert system by addressing the following questions.

- What current alert systems are in place to notify first responders of public health implications during a chemical incident?
- Who are the key stakeholders that should be a part of this system?
- What current alert systems are in place to notify the community of public health implications during a chemical incident?
- Do these alert systems reach at-risk and vulnerable populations such as those who have limited internet/phone access and/or those who speak a language other than English?
- What steps can be taken to prevent misinformation/mistrust?
- What redundancies are in place if there are technology failures?

Key Elements of Information Sharing and Warning Systems

Integrated Communication Networks:

- Establish robust communication networks that connect local health departments, state and federal agencies, hospitals, emergency services, and community organizations.

- Use platforms like Health Alert Network (HAN) to disseminate critical information quickly and efficiently.

Early Warning Systems:

- Implement early warning systems that can detect chemical threats and provide immediate alerts to relevant stakeholders.
- Utilize technologies such as sensors and monitoring devices to identify chemical releases promptly.

Public Notification Systems:

- Develop public notification systems, including emergency alert systems (EAS), social media, and mobile alerts, to inform the community about chemical threats and provide safety instructions.
- Ensure messages are clear, accurate, and accessible to all populations, including those with disabilities or language barriers.

Data Sharing Protocols:

- Establish protocols for sharing data on chemical incidents, including exposure levels, health impacts, and response actions.
- Ensure that data sharing is secure and complies with HIPAA regulations.

Training and Drills:

- Conduct regular training and exercises to ensure that all stakeholders are familiar with the information sharing and warning systems.
- Simulate chemical incidents to test the effectiveness of communication networks and identify areas for improvement.

Community Engagement:

- Engage with community leaders and organizations to raise awareness about chemical threats and the importance of preparedness.
- Provide educational materials and resources to help the public understand how to respond to chemical emergencies.

Coordination with Media:

- Develop relationships with local media to ensure accurate and timely dissemination of information during a chemical incident.

- Prepare pre-scripted messages and press releases to expedite communication.

Timely Response:

- Rapid dissemination of information enables quick mobilization of resources and personnel, improving response times and mitigating health impacts.

Enhanced Coordination:

- Clear communication channels facilitate coordinated efforts among multiple agencies, ensuring a unified response to chemical incidents.

Public Confidence:

- Transparent and consistent communication builds public trust and encourages compliance with safety measures.

Risk Reduction:

- Early warnings and timely information help reduce exposure to harmful chemicals and prevent further health complications.

Ancillary Preparedness Tasks

It is important for LHDs to be aware of responsibilities such as environmental health (sampling, decontamination, water systems, etc.), the public health laboratory response network (testing samples), and mass care support in chemical preparedness planning. While LHDs are not always the lead agency for these responsibilities, they often have secondary supportive preparedness responsibilities and need to be aware of these tasks.

Public Health Laboratory Response Network

The Public Health Laboratory Response Network – Chemical, is a network of federal, state, and local, military, food testing, veterinary, environmental, and international labs that can respond to chemical incidents. They can assist with testing samples for chemical exposures and serve as the communication liaison between the labs and CDC, local health officials, hospitals, and poison control centers. Collection samples for humans include blood and urine. Collection samples for the environment include air, water, soil, or food from the affected areas. The process for shipping and handling will depend on what sample is collected. Additional information is available here.

Mass Care Support

Typically, mass care is the responsibility of county/city emergency management; however, LHDs often play a role in coordinating safe evacuation and shelter for at-risk or vulnerable community members, including vulnerable populations in hospitals and nursing homes. Coordination among emergency responders, healthcare providers, and community organizations is essential to provide adequate resources, including medical supplies and personnel, to these shelters.

Trainings and Exercises

Training and exercises play a crucial role in providing LHDs with the means of attaining, practicing, validating, and improving their chemical preparedness and response. By including training requirements in the planning process, organizations can address knowledge gaps prior to exercising capabilities.

Below are suggested trainings and exercises specific to chemical incidents. The following links and websites further detail the description, availability, and delivery. Target audiences vary depending on the courses but often include emergency responders, toxicologists, hazardous materials technicians, public health practitioners, healthcare providers/hospitals, pharmacies, NGOs, and emergency managers.

Training/Exercise	Organization	Description	Delivery Format	Target Audience
HAZMAT Emergency Preparedness Training and Tools for Responders Training	ATSDR	This website includes various training resources for managing hazardous materials incidents. There are separate modules for first responders (pre-hospital) and hospital emergency department personnel.	Varies Online	Emergency Planners
Public Health Assessment Training (PHAT)	ATSDR	Training provides overview of ATSDR, its Public Health	Online	Public health professionals

Training/Exercise	Organization	Description	Delivery Format	Target Audience
		Assessment method, how to evaluate exposure pathways for contaminants at hazardous waste sites, how to conduct a health effects evaluation, how to write and communicate environmental health information, and more.		
Key Planning Factors and Considerations for Response to and Recovery from a Chemical Incident Training	FEMA	Addresses the chemical preparedness gaps in emergency response plans with chemical incident specific planning considerations.	In-person. Offered at the Center for Domestic Preparedness campus in Anniston, Alabama. Register here	SLTT emergency managers and planners, first responders, chemical industry partners, hospitals, and NGOs
An Introduction to Hazardous Materials Training	FEMA	This course offers a basic overview of hazardous materials - basic terms, classifications, identification systems, health effects, exposure types, and regulations on use and application.	Online	Target audiences are not limited to specific disciplines, even the public is encouraged to take this course.
IS-100.C: Introduction to the	FEMA	Introduces the Incident	Online	Persons involved with

Training/Exercise	Organization	Description	Delivery Format	Target Audience
Incident Command System, ICS 100		Command System by describing the history, features and principles, and organizational structure of ICS.		emergency planning, and response or recovery efforts.
IS-200.C: Basic Incident Command System for Initial Response, ICS-200	FEMA	Reviews ICS, provides the context for ICS within initial response, and supports higher level ICS training.	Online	Response personnel at the supervisory level who are involved with emergency planning, response, or recovery efforts.
National Exercise Division	FEMA	Provides an overview of exercise implementation. Resources include exercise tools, how to request exercise support, and has FEMA-level exercise points of contact per FEMA region.	Website Preparedness Tool Kit	Anyone across governmental, private, and nonprofit sectors.
Homeland Security Exercise Evaluation Program	FEMA	This website specifically details the creation and structure of exercises, i.e., the Exercise Cycle. Forms, templates, scenarios, and evaluation tools	Online and in-person	Senior leadership

Training/Exercise	Organization	Description	Delivery Format	Target Audience
		are a few of the resources contained in this website		
Environmental Health Training in Emergency Response Awareness Course	FEMA	This seven-hour, online training addresses the role of environmental health responders in preparing for, responding to, and recovering from emergencies and disasters.	Online	Environmental health practitioners and other emergency response personnel.
Disaster Related Exposure Assessment and Monitoring (DREAM)	FEMA	This course is a four-day (32 hours) training course designed to provide knowledge and experience in assessing, monitoring and tracking health effects to emergency responders and community members before, during, and after an emergency or disaster.	Online	Public health professionals, medical professionals, NGOs, Public Works, Emergency management staff at all leadership levels.
Environmental Health Training in Emergency Response Operations (EHTER Ops)	FEMA	This five-day course provides participants with the operations-level knowledge and skills needed to respond to incidents of natural- or	In-person. Offered at the Center for Domestic Preparedness campus in Anniston, Alabama. Register here	Individuals currently serving as environmental health responders assigned to a local, State, or Tribal

Training/Exercise	Organization	Description	Delivery Format	Target Audience
		human-caused disasters and to use appropriate protocols and equipment to achieve mission objectives.		Emergency Response Team, performing environmental health tasks in emergencies and disasters.
Disaster Management Training	TEEX	TEEX offers a wide range of courses delivered at the agency level or at their campus location. There are specific hazardous materials courses from awareness, operations, and technician levels, emergency response/incident command, waste operations, spills, and pipeline safety.	Online	TEEX can customize course delivery for target audiences.
Chemical Agents of Opportunity for Terrorism Training	The American College of Medical Toxicology (ACMT)	10-modual course that addresses the medical and psychological impact of chemicals used as weapons.	Online	Pre-Hospital First Responders (EMTs and Paramedics), Public Health Professionals, Law Enforcement, Emergency Providers.

Resource Management and Equipment

Effective resource management and equipment allocation are critical parts of LHDs' preparedness and response plans for chemical incidents. Ensuring the availability and readiness of appropriate resources and specialized equipment is essential for reducing health risks, managing exposure, and mitigating the impact of chemical emergencies. This involves strategic planning, training, and coordination with various stakeholders, including EMS, hospitals, HazMat, and government agencies. By prioritizing these aspects, LHDs can ensure a swift, coordinated response.

LHDs should document the available resources and equipment they have on-hand that can be rapidly deployed in the event of a chemical incident.

- Personal protective equipment (PPE)
    - There are various levels of PPE required during a chemical incident. Some require formal training, medical assessment, and fit testing prior to use. Planning should include identifying the types, their application in the safety zones, and inventory levels with each agency. Contact should be made with fire departments and HAZMAT teams to ensure training and equipment is maintained.
    - Ensure the appropriate respirators and masks are available to protect workers from inhaling toxic substances and chemicals.
        - Personal Protective Equipment | Emergency Preparedness and Response | CDC
- Testing Kits
    - Fire departments and hazardous materials teams may have the ability to rapidly identify and categorize the type of chemical(s) involved in the incident. State laboratories can conduct confirmatory testing and provide training on packaging, shipping, and handling procedures. The types of testing equipment should be identified and further discussed in planning meetings.
- Portable air monitoring equipment
    - For planning considerations, first responders should discuss the aspects of continuous monitoring procedures that occur on scene. The type of monitoring equipment needed depends on the chemical, the state of matter,

amount, lethal dose measurement, and whether there is more than one type of chemical involved.

- Decontamination equipment
    - Planners should identify which specialized decontamination equipment is available in their jurisdiction to be used on scene and at hospitals. LHDs and partners may refer to HHS/ASPR Decontamination Guidance for Chemical Incidents.

Preparedness Action Checklist

By following this checklist, LHDs can ensure a meaningful and comprehensive response is achieved in the case of a chemical incident.

Preparedness Action Checklist for Local Health Departments	
Planning and Coordination	
☐	**Develop Emergency Plans:** ☐ Create and regularly update emergency response plans, including specific protocols for chemical incidents. ☐ Integrate state and federal resources (e.g., CHEMPACK and SNS) into emergency plans. ☐ Establish clear roles and responsibilities for staff during emergencies. ☐ Incorporate existing surveillance systems and leverage their use in preparedness planning.
☐	**Interagency Collaboration:** ☐ Collaborate with state and neighboring health departments, local emergency management, hospitals, and other key stakeholders. ☐ Participate in regional and state emergency planning committees. ☐ Maintain a contact list of key partners and stakeholders. ☐ Develop and maintain methods/channels for notification
☐	**Training and Exercises:** ☐ Conduct regular training sessions for staff on emergency protocols and chemical incident response. ☐ Organize and participate in joint exercises and drills with local emergency responders and state agencies. ☐ Ensure all staff are familiar with the use and distribution of medical countermeasures.
Resource Management	
☐	**Inventory Management:** ☐ Maintain an up-to-date inventory of medical supplies, PPE, and other essential resources.

	☐ In collaboration with State Health Departments, identify and secure storage locations for CHEMPACK containers and other emergency supplies. ☐ Develop a system for tracking and replenishing inventory levels.
☐	**Logistical Planning:** ☐ Identify points of dispensing (PODs) for rapid distribution of medical countermeasures. ☐ Establish transportation methods for swift movement of resources during an emergency. ☐ Coordinate with local facilities to ensure they can handle and distribute supplies.
Public Communication and Education	
☐	**Public Information Dissemination:** ☐ Develop clear, accurate, and timely communication strategies for the public during emergencies. ☐ Create and distribute educational materials on chemical safety and emergency preparedness. ☐ Use multiple communication channels (social media, local media, community meetings) to reach diverse populations.
☐	**Community Engagement:** ☐ Engage with community leaders and organizations to raise awareness about emergency preparedness. ☐ Conduct outreach to at-risk populations to ensure they understand how to respond during a chemical incident. ☐ Organize community forums and workshops on emergency preparedness.
Assessment and Monitoring	
☐	**Situation Assessment:** ☐ Establish protocols for rapid assessment of chemical incidents and their impact on public health. ☐ Coordinate with environmental agencies to monitor air, water, and soil for contamination. ☐ Implement surveillance systems to track health outcomes and identify emerging risks.
☐	**Data Collection and Analysis:** ☐ Collect and analyze data to inform decision-making and improve response efforts. ☐ Maintain records of incidents, responses, and outcomes to evaluate and refine emergency plans. ☐ Have a data sharing agreement with all relevant local, state, and federal partners. ☐ Share data with state and federal partners to support a coordinated response.

Regulatory Compliance	
☐	**Adherence to Guidelines:** ☐ Ensure all emergency response activities comply with local, state, and federal regulations. ☐ Keep abreast of changes in laws and guidelines related to emergency preparedness and public health. ☐ Regularly review and update policies and procedures to maintain compliance.
Psychological Support	
☐	**Community Psychological Support** ☐ Identify partners and resources within the LHD and the community to provide psychological support services. ☐ Include psychological support partners in training and exercises. E.g., partner with the local Medical Reserve Corps to train behavioral health professionals. ☐ Determine the capacity and referral processes for psychological support services. ☐ Partner with NGOs, faith-based organizations, community organizations, and other stakeholders (e.g., community centers, schools, etc.) to strengthen community resilience. ☐ Assess the needs of high-risk and vulnerable populations, such as non-native English speakers, people with disabilities, people experiencing homelessness, and others. **First Responders and Public Health Professionals** ☐ Provide training to improve mental health awareness and resilience such as the Psychological First Aid Online, Mental Health First Aid for Fire/EMS. ☐ Conduct drills and exercises that include psychological support scenarios

5. Chemical Incidents: Response

As discussed in the Preparedness section, LHDs may be responsible for a range of critical response activities. These include assessing the public health impact, coordinating medical countermeasure distribution, and ensuring timely communication with the public about safety measures. LHDs must also collaborate with emergency responders to manage exposure risks, provide medical care to affected individuals, and monitor environmental conditions to prevent further contamination. Additionally, LHDs engage in ongoing surveillance to track health outcomes, support decontamination efforts, and facilitate recovery operations. These activities are essential for protecting public health and minimizing the impact of chemical incidents.

While the size and scope of a chemical incident will influence to what extent an LHD will mobilize, several key triggers necessitate immediate action: a hazardous materials incident threatening life or the environment, a nerve agent incident requiring CHEMPACK activation, and an increase in symptoms consistent with chemical exposure at local hospitals. LHDs must be prepared to activate and staff internal and external to ICS to coordinate and respond to public health emergencies. In large-scale, life-threatening incidents, state or federal agencies may lead the overall response, or a Unified Command may be established. Nonetheless, LHDs play a crucial role and should consider the following to inform initial response strategies and objectives:

- **Priorities:** What are your immediate priorities?
- **Affected Population:** How many people have been affected? Who are most at-risk?
- **Geographical Impact:** What geographical area has been impacted?
- **Exposure Pathways:** What are the exposure pathways?
- **Communication:** Which information has already been communicated, and what information are you responsible for sharing?
- **Healthcare Facilities:** Have healthcare facilities been impacted?
- **Critical Infrastructure:** Has critical infrastructure been impacted?
- **Weather Conditions:** Will weather conditions impact the situation?

The National Response Framework (NRF) provides fundamental principles of emergency management to guide the nation's response to all types of incidents. The NRF is built on concepts identified in the National Incident Management System (NIMS) to coordinate roles and responsibilities across the nation. Organizations can partially or fully implement the structures, roles, and responsibilities outlined in the NRF during a large-scale incident. When these roles and responsibilities are implemented, it is possible to respond, coordinate, and provide specialized resources and capabilities in an appropriate scaled manner for the type of incident.

Coordination with External Partners

Coordination between local health departments and external response partners is crucial in ensuring an effective response to chemical incidents. Local health departments play a pivotal role in protecting public health, but their capabilities and resources are often limited. Therefore, collaboration with external partners such as emergency management, fire departments, law enforcement, hospitals environmental protection agencies, and federal agencies (e.g., CDC, EPA, etc.) is essential. This coordination enables a unified and efficient response. Additionally, it helps avoid duplication of efforts and ensures that all aspects of the emergency, from immediate response to long-term recovery, are adequately addressed.

The Incident Command System (ICS) is a critical mechanism for enhancing coordination among diverse response partners. ICS provides a standardized, flexible structure for managing incidents of any size or complexity. It defines clear roles and responsibilities, establishes a common language, and facilities effective communication and decision-making. By using ICS, agencies can integrate their efforts, streamline operations, and ensure that all responders are working towards common objectives.

An example of agency coordination in a chemical response can be seen in an incident involving a large-scale chemical spill. In such a scenario, the LHD would work closely with the fire department, which typically takes the lead in HAZMAT response. The LHD would provide expertise on the public health implications of chemical exposure, conduct health surveillance, and communicate risks to the public. Simultaneously, environmental protection agencies would assess environmental impacts and guide containment and cleanup efforts. Hospitals and emergency medical services would prepare for potential mass casualty incidents, treating those affected by chemical exposure. Through the ICS structure, these agencies would operate under a unified command, ensuring coordinated actions, efficient resource utilization, and a comprehensive response to protect health and safety.

Public Health Surveillance

Epidemiological investigation is essential for understanding the scope, scale, and source of a chemical incident. Once a potential chemical exposure is identified through surveillance or an incident occurs, epidemiologists conduct detailed investigations to confirm the chemical agent involved, identify affected populations, and determine the exposure pathways. This involves collecting and analyzing data from various sources, such as environmental samples, medical records, and personal interviews with affected individuals. The information gathered helps to develop an accurate situational awareness, guiding public health professionals in implementing targeted response actions and communicating risks to the public. Effective epidemiological investigations also provide critical insights for medical countermeasure distribution, ensuring that resources are directed where they are most needed. *Refer to the Environmental Health section below for more information about environmental monitoring.*

Local health departments must implement structured systems for reporting chemical incidents to ensure comprehensive data gathering. This involves integrating data from hospitals, clinics, laboratories, and other healthcare providers into a cohesive health information system. Such integration helps identify patterns and anomalies indicative of chemical exposures, facilitating timely risk assessment. Risk assessments involve evaluating exposure levels and routes, as well as conducting toxicological assessments to understand the potential health impacts of chemical exposures. *Refer to the Human Exposure Assessment section below for more information.*

Event-based surveillance, which gathers and analyzes reports of chemical incidents from media, healthcare facilities, and public reports, also plays a crucial role in early detection and response. Timely analysis and reporting of exposure data help in guiding emergency response efforts, providing necessary medical care, and informing the public about safety measures. Comprehensive surveillance ensures ongoing monitoring of health outcomes, contributing to long-term community health resilience.

Survey Tools:

- ATSDR's Epi CASE (Contact Assessment Symptom Exposure) Toolkit is a standardized data collection tool that supports real-time needs assessments during a public health emergency through survey forms for collecting data to rapidly assess individuals exposed to or affected by hazardous materials and register affected populations and responders. Data gathered using this toolkit can produce simple descriptive statistics and can be used for conducting additional epidemiological follow-up, such as health studies, community

evaluations, health registries, and contacting enrolled individuals with health updates and follow-up services.

Data Sharing:

- Consider using CBRN Responder for chemical incident data sharing and multi-hazard event management. It integrates with federal assets and incorporates national-level policy guidance, for planning, preparedness, and operational tools and resources.

Human Exposure Assessment and Health Effects

Human exposure assessments after chemical incidents aim to understand how people are exposed to chemicals, the relationship between exposure levels and health outcomes, and the overall impact on community health. Local health departments begin by identifying the chemicals involved and assessing pathways of exposure, including inhalation, ingestion, and dermal contact. They conduct environmental sampling to measure chemical concentrations in air, water, soil, and biological samples from affected individuals to quantify exposure levels. This data helps determine who was exposed, the extent of exposure, and potential health risks. *Refer to the Environmental Health section below to read more about Environmental Sampling and Monitoring*.

Once exposure levels are determined, dose-response analysis evaluates how varying levels of exposure relate to different health effects. This involves studying how the severity and likelihood of health outcomes change with increasing or decreasing exposure levels. Understanding these relationships helps prioritize interventions for those most at risk and informs long-term health monitoring strategies. Identifying at-risk groups helps tailor interventions and prioritize resources.

The collected data guide public health responses, including issuing health advisories, implementing environmental cleanup, and conducting long-term health monitoring. By thoroughly assessing human exposure, local health departments enhance community resilience, prevent future incidents, and protect public health.

Concurrently, LHDs assess health effects through epidemiological studies, clinical evaluations, and biomonitoring. They monitor symptoms and diseases among exposed individuals to identify acute and chronic health impacts. This evaluation is critical for providing timely medical care, identifying vulnerable populations, and guiding public health interventions aimed at mitigating health consequences.

Through collaboration with emergency responders, healthcare providers, and environmental agencies, LHDs ensure comprehensive data collection, accurate risk

assessment, and effective communication of health risks to the public. This multidisciplinary approach not only supports immediate response efforts but also informs long-term strategies to prevent similar incidents and safeguard community health in the aftermath of chemical incidents.

Information on the health effects of chemical exposure can be found in the following resources:

- Signs and symptoms of chemical exposures | WHO
- Chemical Hazards Emergency Medical Management - CHEMM (hhs.gov)

Environmental Health

Environmental health plays a critical role in preparing for and responding to chemical incidents. Although not always housed within LHDs, environmental health teams may have a variety of responsibilities in monitoring air, soil, and water before, during, and after an incident occurs, assessing and identifying chemicals involved in an incident, ensuring water systems are protected, setting up and inspecting shelters, and supporting decontamination processes, among other functions. LHDs should be aware of the activities housed under environmental health, include them in their chemical preparedness plans and trainings, and build strong partnerships with these public health professionals.

Environmental Monitoring and Sampling

Effective environmental monitoring and sampling of air, soil, and water are crucial components in preparing for and responding to chemical incidents. Monitoring the environmental impact of chemical incidents helps guide protective measures, evacuation zones, cleanup, and remediation efforts. By continuously assessing and responding to monitoring data, authorities can effectively manage and mitigate the impacts of chemical incidents over time, ensuring the safety and well-being of affected populations and ecosystems.

Air monitoring involves real-time sensors and passive sampling methods to detect airborne chemicals and assess immediate risks to public health, especially in the aftermath of events where hazardous chemicals are released into the air. Airborne chemicals can include gases, vapors, aerosols, and particulate matter, depending on the nature of the substance involved. Real-time air monitoring systems are used to assess the extent and concentration of airborne chemicals, helping emergency responders make informed decisions regarding evacuation zones and protective measures. Soil sampling helps localize and quantify chemicals in areas potentially affected by industrial activities or

accidents, while water monitoring focuses on surface and groundwater sources, employing tools to ensure the safety of drinking water supplies and aquatic ecosystems. Determining the concentration of contaminants in air, soil, and water should be coordinated between the local and state environmental health agencies and the EPA.

EPA Environmental Exposure Tools:

- Air
- Water and sediment
- Soil and Dust
- Food

Safety of Water Systems

Environmental health teams also work to ensure the safety of water systems during a chemical incident. During such incidents, hazardous chemicals can contaminate surface and groundwater sources, potentially affecting drinking water supplies and aquatic ecosystems. Rapid detection and response are essential to prevent the spread of contaminants. Implementing emergency measures such as isolating affected water sources, issuing boil water advisories, communicating risks and safety measures to the public, and providing alternative drinking water supplies (e.g., water bottles) can mitigate immediate risks. Preparedness activities that strengthen the collaboration between local health departments, environmental agencies, and water utilities are key for quick, effective, and efficient response and recovery to chemical incidents, ensuring the continued safety and reliability of water systems.

Medical Toxicology & Poison Centers

Medical toxicology provides specialized care for individuals exposed to hazardous chemicals. Medical toxicologists specialize in diagnosing and treating poisoning, working closely with emergency responders and public health professionals to identify hazardous substances, assess exposure levels, and implement appropriate medical interventions. Poison centers serve as a vital resource during chemical emergencies, offering 24/7 access to toxicology experts who can guide healthcare providers and the public in managing chemical exposures. They provide immediate information on the toxicity of chemicals, appropriate treatment protocols, and necessary decontamination procedures. During chemical incidents, poison centers can play a key role in coordinating the medical response, advising on evacuation zones, and disseminating public health information about chemicals of concern. Strong partnerships with medical toxicologists and poison centers prior to chemical incidents can ensure timely and effective medical care, reduce

the burden on emergency departments, and enhance public health preparedness and response.

Hazardous Materials & Debris Management

Immediate identification, containment, and proper disposal of hazardous materials and debris following a chemical incident is critical to protect public health and prevent further contamination. The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) provides a framework for hazardous materials and debris management during chemical incidents. *Read more about the NCP under the Resource Requests section of this handbook*. Environmental health teams may be involved in coordinating with federal, state, and local agencies to efficiently contain, remove, and dispose of hazardous materials and contaminated debris.

Decontamination

Decontamination involves the immediate removal and neutralization of hazardous substances from affected individuals, equipment, and areas to prevent further exposure and spread. Environmental health teams should collaborate with HAZMAT to implement decontamination, including the use of PPE for responders, proper disposal of contaminated materials, and thorough cleaning of affected sites to ensure comprehensive decontamination efforts and minimize the risk of secondary contamination.

Shelters

Depending on the type of chemical incident and the area affected, shelters may be needed to protect affected individuals and ensure their well-being until it is safe for them to return to their homes. Local health departments' responsibilities in setting up and managing shelters vary among jurisdictions. Coordination with emergency management agencies, healthcare providers, and volunteer and non-profit organizations like the MRC and Red Cross is essential to ensure shelters are adequately staffed with trained personnel and equipped with necessary supplies to meet the needs of evacuees. Environmental health teams may be responsible for inspecting shelters regularly to monitor environmental conditions and food safety to ensure the health of individuals during their stay.

Agricultural Safety

Protecting agricultural resources during a chemical incident is essential to prevent contamination of food supplies and ensure the safety of the food chain. Environmental health teams should collaborate with agricultural agencies, such as the USDA, as applicable, to implement emergency response plans, monitor agricultural areas, implement protective measures to minimize contamination of crops and livestock

following chemical incidents and ensure that contaminated products do not enter the food supply chain.

Public Information and Risk Communication

Strong and effective communication is key to reducing the impact of a chemical incident. It is critical to pre-identify risk communication strategies and needs that may arise. The following are questions to consider.

Timely and Accurate information

- How can LHDs ensure information is following the STARCC principle (Simple, Timely, Accurate, Relevant, Credible and Consistent)?
- What is the LHD's public information review process?
    - Is it prohibitive to timely information?
    - Does it allow time for translation to different languages to occur?
    - Does it foster cultural competency through an appropriate SME?
    - What positions within the agency and external organizations should be used to provide content and review?
    - What processes, templates, graphics, etc. can be developed prior to an incident occurring?

Addressing Public Concerns and Misinformation

- What methods can be utilized to collect information directly from the public to assess questions and concerns? *Consider town halls, call centers, live social media broadcast, etc.*
- What methods can be deployed to assess the overall reactions/beliefs/concerns of the impacted community? *Consider social media monitoring/trend tracking, scans for published articles/information, etc.*
- How can empathy, action, and respect be conveyed in messaging to gain trust and buy-in from hesitant community members?

Equity Considerations

- What is the common language(s) of the impacted community?
- What are the cultural influences that may impact the meaning or perception of the messages?
- What is the average health and literacy level of the impacted community?
- What are additional barriers that may be present in receiving and understanding information? How can these barriers be addressed?

Additional Risk Communications Strategies

- Train risk communications staff in brevity and plain language that can quickly and accurately provide critical information.
- Create fill in the blank templates that can be accessed and used in urgent communications. For example, press releases, social media posts, testing or point of dispensing instructions for the community, and communications to first responders regarding safety information.
- Identify messaging strategies that can be implemented for those that may be unable to read due to reading level ability, disability, non-English speaking, etc. Strategies can include creating visual demonstrations of key information such as evacuation routes, testing, and medical care.
- Identify SMEs that can be contacted in the event of an incident to assist with risk communications strategies.
- Ensure all aspects of response and recovery are covered, including evacuation, PPE, medical care, psychological care, impacts to environment, and immediate and ongoing concerns.

Community Psychological Support

During responses to chemical incidents, LHDs must work with the appropriate partners to prioritize psychological support for the community to mitigate mental health impacts. Immediate implementation of Psychological First Aid (PFA) is crucial for providing emotional support and stabilizing affected individuals. Public education campaigns about recognizing psychological distress and accessing available resources are essential. These campaigns can be supplemented with workshops and seminars on coping strategies and resilience-building to empower the community to manage stress and anxiety effectively.

Coordination with mental health services is vital for a comprehensive response. Establishing partnerships with local mental health professionals and integrating mental health support into the overall emergency response plan ensures that psychological care is not overlooked. This involves creating a network of mental health providers ready to offer services during and after an emergency. Additionally, several organizations provide key psychological support resources that can support LHDs' response:

- **SAMHSA's Disaster Distress Helpline**: Offers crisis counseling and support for individuals experiencing emotional distress related to natural or human-caused disasters.

- **National Child Traumatic Stress Network (NCTSN)**: Offers resources and training materials for addressing the psychological impact of traumatic events on children. NCTSN Resources
- **CDC's Coping with a Disaster or Traumatic Event:** Provides guidelines and resources for emergency preparedness and response, including mental health considerations.

Responder Safety and Health

Ensuring the safety of responders—whether they are LHD personnel, emergency responders, or healthcare workers—is essential to maintain the continuity and effectiveness of the response effort. Responder safety can also directly impact public trust and confidence in an LHD's ability to manage the incident. Supporting staff's overall well-being (physical, mental, emotional, social, and spiritual) is critical for response actions, the community, and for supporting resiliency. The Emergency Responder Health Monitoring and Surveillance (ERMHS) framework can be used by organizations to monitor the health and safety of emergency responders before, during, and after a response. ERHMS aims to prevent acute and chronic illness and injury in emergency responders and other public health personnel and volunteers, including environmental health specialists and mental health professionals.

Psychological Support

Responders are often exposed to traumatic and intense situations, making them susceptible to acute stress reactions, anxiety, PTSD, and burnout. Implementing debriefing sessions shortly after incidents allows responders to process their experiences and emotions, mitigating the risk of long-term psychological effects. Peer support programs foster a supportive environment where colleagues can share their experiences and offer mutual support, promoting a sense of community and understanding. Access to mental health services, including counseling and therapy, is crucial for those needing professional help, and regular mental health assessments can help identify those at risk and provide early intervention.

Local health departments should offer an Employee Assistance Program (EAP) to ensure the well-being of staff members facing high-stress situations during emergencies. Through the EAP, employees can confidentially access services such as individual and family counseling, crisis intervention, and stress management support. During emergencies, the EAP provides 24/7 helplines and on-site crisis response to help employees manage acute stress and emotional distress. Additionally, resources like financial and legal counseling, substance abuse support, and wellness programs are available to address a wide range of

needs. More information can be found through the Employee Assistance Professionals Association (EAPA).

Resource Requests

Understanding the process of resource requests from local to state to federal levels is important for LHDs in emergency responses. LHDs often initiate resource requests based on the scope and scale of an emergency. These requests are then escalated to State Health Departments, which coordinate with state and federal agencies to fulfill them. State resources can include additional medical supplies, specialized personnel, and logistical support, while federal resources may encompass broader assistance such as funding, expertise from agencies like FEMA, or deployment of national assets like the Strategic National Stockpile. This structured approach ensures that LHDs can access a comprehensive range of resources necessary to effectively manage and mitigate emergencies, bolstering community resilience and response capabilities. The following are resources that may be requested during a chemical emergency.

CHEMPACK Program

The CHEMPACK program strategically prepositions chemical antidotes and medical supplies nationwide, crucial for rapid response during chemical incidents. LHDs should collaborate closely with State Health Departments to integrate CHEMPACK resources into local emergency response plans. This involves identifying and securing locations such as hospitals and fire stations where CHEMPACK containers can be stored for quick access. Training healthcare personnel and first responders on CHEMPACK protocols is essential to ensure effective deployment and use of these critical supplies. Regular drills involving local emergency responders and CHEMPACK resources help maintain readiness and familiarity with operational procedures, enhancing overall preparedness for chemical emergencies.

Strategic National Stockpile

Integrating the Strategic National Stockpile (SNS) into public health chemical preparedness planning involves several strategic actions to enhance readiness and response capabilities for chemical incidents. The SNS maintains large quantities of medicines, vaccines, and medical supplies, which can be rapidly deployed during a chemical emergency. LHDs should coordinate with the SNS to understand available medical countermeasures and develop logistical plans for their swift distribution. This includes identifying points of dispensing, transportation methods, and local storage facilities. LHDs can request SNS resources through their state health departments, which will work with federal officials to facilitate the deployment. Regular communication and

exercises with SNS officials ensure synchronization between local and federal systems for a seamless activation and deployment process.

Emergency Management Assistance Compact

The Emergency Management Assistance Compact (EMAC) is a national interstate mutual aid agreement that facilitates resource sharing among states, provides timely and cost-effective relief, and helps mitigate resource insufficiencies during emergencies and disasters. In order for EMAC to be activated, a state's governor must have declared an emergency and authorized spending for response and recovery. The impacted (requesting) state may choose what resources it needs and at what cost, and it can request resource support from the responding (assisting) state.

National Response System & Regional Response Teams (RRTs)

The primary federal plan for responding to oil and hazardous material releases to the environment is called the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). The NCP describes the organizational structure and procedures for "preparing for" and "responding to" an oil or hazmat incident – this system is called the National Response System (NRS).

The NCP applies to accidental releases, as well as intentional releases and terrorist attacks. The NCP is contained in regulations at 40 CFR Part 300 and is administered by the U.S. Environmental Protection Agency with assistance from other federal departments and agencies that have a role in supporting this mission.

All state and local health departments may be a part of their Regional Response Team (RRT). Regional Response Teams are part of the NRS. The NRS is divided into national, regional, area, state, local, tribal and industry levels. Participants of the NRS include federal, state, local, and private sector agencies, and organizations, with interests in or responsibilities for oil and hazardous substances emergencies. Through the NRS, federal agencies are able to provide on-site support and capabilities at a local level.

There are 13 RRTs, one for each of ten federal regions, plus one for Alaska, one for the Caribbean, and one for the Pacific Basin. Each RRT maintains a Regional Contingency Plan (RCP) and has state, as well as federal government, representation. RRTs are planning, policy, and coordinating bodies and do not respond directly to the scene. While called a "response team," RRTs do not actually deploy as a team to incident sites, but members reach back into their organizations to deploy and make available resources needed by the federal On-Scene Coordinator. Individual RRT members may, however, deploy to the incident site as resources from their agencies. RRTs also provide technical advice and recommendations to the federal On-Scene Coordinator.

The RRTs are co-chaired by EPA and the USCG year-round. During a response, the agency providing the On-Scene Coordinator chairs the RRT. The RRT may provide assistance at the state or local level if requested by the federal On-Scene Coordinator during an incident.

FEMA Federal Agency Mission Assignments

Federal agencies may provide disaster assistance under their own authorities or through mission assignments from FEMA, authorized by the Stafford Act. FEMA issues mission assignments prior to or following a Presidential declaration of an emergency or major disaster. These assignments facilitate the deployment, utilization, and provision of assistance from a comprehensive array of federal resources to address disaster-related requirements.

ATSDR Assessment of Chemical Exposures (ACE) Program

After a chemical incident occurs, states can request technical assistance through the ACE program to provide a multi-disciplinary, often multi-agency, team. The ACE team can support state and local health departments with GIS mapping and assistance with sample methodologies, clinical testing, and coordination with other federal agencies. Additionally, the ACE team may conduct investigations with incident responders, hospitals, and exposed individuals to understand what happened, who was exposed, what health effects were experienced, and inform response and recovery efforts.

Response Actions Checklist

The following is a non-exhaustive checklist of broad public health responsibilities and tasks. Responsibilities will vary depending on local and state authorities, as well as staffing and capacity.

Response Action Checklist for Local Health Departments	
Initial Response	
☐	**Incident Assessment:** ☐ Quickly assess the scope and scale of the chemical incident. ☐ Identify the chemicals involved and their potential health impacts. ☐ Determine the immediate needs of the affected population.
☐	**Notification and Activation:** ☐ Notify relevant local, state, and federal agencies. ☐ Activate the emergency response plan and emergency operations center (EOC). ☐ Mobilize internal response teams and assign roles.
☐	**Public Communication:** ☐ Issue initial public health advisories and safety instructions.

	☐ Provide clear information about the nature of the incident and protective actions. ☐ Use multiple communication channels to reach diverse populations.
Coordination and Resource Management	
☐	**Interagency Coordination:** ☐ Coordinate with local emergency management, healthcare facilities, and other key stakeholders. ☐ Ensure seamless communication and information sharing among all response partners. ○ Build mechanisms for interagency communication to facilitate coordination among different organizations - MOUs, Data Sharing Agreements (DSAs), etc. ☐ Participate in unified command structures if established. ☐ Develop and regularly update contact lists for all external partners.
☐	**Medical Resource Deployment:** ☐ Request additional medical supplies and personnel from the State Health Department as needed. ☐ Set up points of dispensing for the distribution of medical countermeasures. ☐ Ensure rapid deployment and distribution of CHEMPACK resources if necessary.
☐	**Health Coordination:** ☐ Coordinate with local hospitals and clinics to manage patient surge and treatment. ☐ Provide guidance on triage, treatment protocols, and patient transfer procedures. ☐ Ensure the availability of mental health support for affected individuals and responders. ☐ Provide culturally competent psychological support matching the needs and demographics of the local jurisdiction
Public Health Surveillance	
☐	☐ Implement structured systems for reporting chemical incidents (integrate data from hospitals, clinics, laboratories, etc.). ☐ Conduct epidemiological investigations to confirm chemical agents, identify affected populations, and determine exposure pathways. ☐ Conduct event-based surveillance to gather reports from media, healthcare facilities, and public reports. ☐ Provide timely analysis and reporting of exposure data to guide emergency response efforts. ☐ Utilize tools like ATSDR's Epi CASE Toolkit for real-time needs assessments and follow-up services. ☐ Use data-sharing platforms like CBRN Responder for chemical incident data sharing and event management.

Human Exposure Assessment and Health Effects	
☐	☐ Identify chemicals involved in the incident and assess pathways of exposure (inhalation, ingestion, dermal contact). ☐ Perform dose-response analysis to evaluate health outcomes related to exposure levels. ☐ Identify at-risk groups and prioritize interventions. ☐ Issue health advisories based on exposure data. ☐ Conduct long-term health monitoring of affected populations. ☐ Utilize resources for information on the health effects of chemical exposure (e.g., CDC, WHO, ATSDR).
Environmental Health	
☐	☐ Monitor air, soil, and water before, during, and after chemical incidents. ☐ Conduct environmental sampling and real-time air monitoring. ☐ Collaborate with environmental agencies for environmental impact assessments and cleanup efforts. ☐ Ensure the safety of water systems through rapid detection and emergency measures. ☐ Coordinate hazardous materials and debris management with federal, state, and local agencies. ☐ Implement decontamination procedures for affected individuals, equipment, and areas. ☐ Inspect shelters for environmental conditions and food safety. ☐ Collaborate with agricultural agencies to protect agricultural resources and prevent contamination of food supplies.
Public Information and Risk Communication	
☐	**Ongoing Public Information**: ☐ Provide regular updates to the public on the incident status and response efforts. ☐ Offer guidance on health precautions and available services. ☐ Address public concerns and misinformation promptly.
☐	**Community Engagement:** ☐ Engage community leaders and organizations to support response efforts. ☐ Ensure vulnerable populations receive tailored information and support.
Community Psychological Support	
☐	**Implementation of Psychological First Aid (PFA)** ☐ Train staff and responders in PFA techniques. ☐ Deploy PFA-trained personnel to affected areas. ☐ Ensure PFA is provided to stabilize, and support affected individuals. **Public Education Campaigns** ☐ Develop and disseminate information on recognizing psychological distress. ☐ Provide information on accessing mental health resources.

	☐ Utilize various media platforms for public education (social media, flyers, local news). ☐ Organize workshops and seminars on coping strategies, resilience-building, and managing stress and anxiety. **Coordination with Mental Health Services** ☐ Establish partnerships with local mental health professionals and organizations. ☐ Integrate mental health support into the overall emergency response plan. ☐ Create a network of mental health providers ready to offer services during and after an emergency. **Resource Allocation** ☐ Ensure adequate funding for mental health services during emergencies. ☐ Allocate necessary supplies and resources for psychological support. ☐ Maintain an inventory of mental health resources and ensure they are accessible.
Responder Safety and Health	
☐	**Safety and Security:** ☐ Ensure the safety of response personnel by providing appropriate PPE and safety training. ☐ Provide just-in-time training on safety protocols and health risks associated with chemical incidents. ☐ Monitor responder health and well-being (physical, mental, emotional, social, and spiritual). ☐ Implement decontamination procedures for responders. ☐ Ensure regular communication with responders regarding safety and health updates. ☐ Conduct post-incident health assessments and support for responders. **Psychological Support** ☐ Identify available psychological support services, including critical incident stress debriefings. ☐ Establish support systems for responder mental health and stress management. ☐ Leverage coalitions such as the Health Care Coalitions or Local Emergency Managers Committee to ensure psychological support needs are identified and addressed. ☐ Ensure access to an Employee Assistance Program (EAP) and inform staff about EAP services.
Documentation and Reporting	
☐	**Incident Documentation:** ☐ Maintain detailed records of all response activities, decisions, and resources used. ☐ Document health impacts and outcomes for post-incident analysis.

☐	**Reporting and Communication:** ☐ Provide regular situation reports to local, state, and federal partners. ☐ Share data and findings with relevant agencies to support coordinated efforts.

6. Chemical Incidents: Recovery

Local health departments are integral in disaster recovery due to their deep knowledge of the community and established trust. They are often the first to respond when an event occurs but beyond the immediate response, LHDs continue to play a critical role in managing the long-term effects of an incident. This includes coordinating environmental remediation efforts to clean up hazardous materials and ensure safe living conditions for residents, as well as public communication efforts, providing timely and accurate information, surveillance, medical support, and other crucial recovery tasks.

The amount of time and resources needed for community and organizational recovery depends on the incident's severity and the anticipated long-term effects. Short-term, immediate, and long-term recovery checklists can be beneficial to any LHD recovery plan.

FEMA's Pre-Disaster Recovery Planning Guide for Local Governments provides guidance to local governments for preparing for recovery and creating pre-disaster recovery plans that incorporate the whole community, enhance recovery capabilities among partners, and establish an organizational framework, policies, and plans for all-encompassing local recovery efforts. This guide provides an in-depth overview of preparedness and recovery planning principles, planning topics for consideration, and specific planning activities. The planning method detailed in this guide also corresponds with the process outlined in Comprehensive Preparedness Guide 101 (CPG 101). FEMA also has several Recovery Resources on their website for individuals, government officials, non-government organizations to guide them in recovery planning.

The National Disaster Recovery Framework (NDRF) provides LHDs with a structured approach to coordinate and implement recovery efforts following disasters, including chemical incidents. It outlines roles and responsibilities, promotes collaboration with federal, state, and community partners, and emphasizes community-centric recovery planning. The framework helps LHDs integrate health-focused recovery efforts, ensure timely access to healthcare services, and address public health challenges arising from chemical exposures. When developing their recovery plans, LHDs should consider the following recovery efforts.

Environmental Remediation

Depending on the type and amount of the substance released, there can be numerous environmental impacts on air, soil, and water quality. The following should be considered.

Clean-up

- What method(s) need to be deployed to clean-up the contamination?
- Who is the lead agency coordinating clean-up?
- What is the role of the LHD?

Treatment

- What are the viable treatments that can aid in restoring safety to the air, soil, or water?
- Who is the lead agency applying treatments?
- What is the role of the LHD?

Testing

- What testing capabilities exist and are needed to monitor ongoing contamination?
- Who is the lead agency for testing during initial response as well as long-term recovery?
- What is the role of the LHD?

Community Engagement and Communication

Aside from immediate notifications of an active incident, it is also important to determine how on-going communication will occur during the recovery phase. Planning should consider the following.

- What methods of communication will be utilized for long-term communication? How will the community be made aware of this? What language(s) does it need to be consistently translated in?
- Are there community leaders or ambassadors that can be equipped to help support messaging, especially in harder to reach and at-risk and vulnerable populations?
- Are there coalitions or activist groups that either pre-existed or were formed in response to the incident that can and should be engaged? How will that engagement occur?
- How is education provided on short-term and long-term impacts? Who is receiving this education (e.g., community members, medical providers, EMS, etc.)

Epidemiologic Surveillance

On-going epidemiological surveillance is needed to monitor and respond to physical impacts to the community that may include, deaths, disability, carcinogen impact, and negative birth outcomes. The following should be considered when planning.

- What agencies can be leveraged to provide subject matter expertise on the physical impacts of such a release? Who would need access to these systems?
- What national, state, and local data management systems currently exist or would need to be procured to assist in tracking surveillance findings?
- How is data being collected?
- Who is being asked to provide data and how is that request communicated?

Corrective Action

After an incident occurs, conducting an after-action report can help LHDs to understand what went wrong and what went right during a response. Capitalizing on this opportunity to review allows an LHD to build future resilience by minimizing risk and the resources needed for response and recovery if the incident were to occur again. Also, at a planning and policy level, recovery efforts can utilize the crucial period following the event to influence public opinion and encourage proactive measures towards future disaster prevention. The following should be considered.

- How effective was the initial response to the incident? Were resources deployed promptly and efficiently?
- How successful were measures currently in place at protecting the community?

Registries

The Epi CASE Toolkit is a standardized data collection tool developed by ATSDR that supports real-time needs assessments during a public health emergency through survey forms for collecting data. It allows local and state public health and disaster response agencies to rapidly assess individuals exposed to or affected by chemicals during a large-scale incident and register affected populations and responders. It collects demographic information, health information, exposure information, exposure-related health effects, immediate health and safety needs, and health insurance. Data gathered using this toolkit can produce simple descriptive statistics and can be used for conducting additional epidemiological follow-up, such as health studies, community evaluations, health registries, and contacting enrolled individuals with health updates and follow-up services.

Developing and maintaining registries over-time can be labor intensive and costly. Two follow are two examples of registries connected to real-world events.

- Flint Registry | City of Flint
    - The Flint registry was established in 2017 in collaboration with the City of Flint, Greater Flint Health Coalition, educators, clinicians, community-based organizations, and Flint residents. It registers individuals who lived, worked, received childcare, or attended school in Flint, as well as those who were exposed during pregnancy during the Flint water crisis. The Flint Registry identifies individuals exposed to lead, connects individuals to resources focused on reducing the health effects of lead, documents the effects of lead exposure on residents, and evaluates the effectiveness of health, educational, environmental, and community services on improving the health of enrollees. HHS granted $14.4 million to support the registry. Over 21,000 people are currently enrolled in this registry.
- World Trade Center Health Registry - 9/11 Health | nyc.gov
    - The World Trade Center Health Registry was created in November 2001 by the NYC Health Department to register responders and survivors affected by 9/11, track potentially long-term physical and mental health impacts, and help enrollees receive medical services for health conditions related to 9/11. Five surveys have gone out between 2003 and 2020 to learn about long-term health impacts on individuals. The registry also supports research studies on numerous health impacts of 9/11, including elevated stroke risk from dust-cloud exposure, asthma, hearing loss, depression, and post-traumatic stress disorder (PTSD). The Registry has enrolled 88,014 responders and 44,516 survivors as of March 2024.

Waste Management

The extent of the chemical release, its quantity, and the location of the incident will guide discussions on selecting appropriate waste management actions. Actions include how waste can be minimized, collected, and treated, as well as where waste can be sent for staging, storage, or final disposal. The following should be considered.

- How much waste did the incident generate?
- Can the waste be minimized? Can any items be reused or recycled?
- Should items, buildings, or exterior surfaces be decontaminated?
- Should the waste be treated prior to recycling or disposing of it?
- Are multiple waste management options needed or will one suffice?

- How quickly should the waste be managed?
- What arrangements must be made to transport the waste to an off-site facility?

Public Information

Public information is a vital part of a preparedness plan and should be incorporated throughout. However, during the response phase, the principles of being first, accurate, and trustworthy are paramount. This can be achieved by disseminating timely, well-coordinated information that is reliable and accessible to the entire community. Providing coordinated, prompt, and actionable information supports community recovery by managing expectations throughout the process, and using clear, culturally sensitive language without unnecessary jargon or acronyms is essential for effective communication. The following should be considered.

- What role does the media play in disseminating public information?
- Who is the trusted source to deliver the information?
- How can mixed messages from multiple experts be avoided?
- Is there transparency in the messaging without stoking panic, creating a constant demand for supplies/services, or creating privacy concerns?

Medical Support and Social Services

Restoring medical support services such as hospitals and dialysis centers, alongside crucial social services like childcare and schools, is essential for the community's recovery. This effort requires a unified approach from all stakeholders and partners within the affected region. It is also important to implement strategies to protect the health and safety of both the public and recovery workers amidst the challenges of a post-incident environment. The following should be considered.

- Who are the affected populations, groups, and key partners in recovery?
- How do you prioritize the needs of the community?
- Are you including health care centers (including behavioral health), public health, and social services functions in your response?

Psychological Support

The provision of long-term psychological support to responders and individuals affected by chemical incidents is crucial for recovery and sustaining the overall well-being of the population. After the immediate crisis response, it is essential to offer continued access to individual and group therapy to address lingering effects such as PTSD, anxiety, and depression. Regular mental health assessments help monitor progress and adjust

treatment plans as needed. Additionally, resilience and coping skills training through workshops and educational resources can equip individuals with effective strategies to manage stress and build resilience.

Community support plays a significant role in long-term recovery. Programs that aid reintegration into normal activities and connect individuals with local resources can enhance their sense of belonging and stability. Family and caregiver support, including counseling and resources, is also vital, as these individuals may face their own challenges related to the incident. Long-term care coordination through case management ensures that affected individuals receive ongoing support and access to necessary services, such as financial aid and healthcare.

Resilience and Equity Considerations

Chemical incidents can create disparities in high-risk and vulnerable populations. To proactively address those disparities, the following should be considered.

- Through community health assessments and other assessments, what areas are most likely to be impacted by a chemical incident?
- What barriers exist in that community in terms of healthcare access, transportation access, reliable internet/phone access, and history of mistrust/reluctance of previous public health mitigations?
- What relationship/assets in that community currently exist that can be leveraged?
- How will surveillance efforts ensure the collection of critical data, such as race and ethnicity, to better ensure the identification of trends for more expedient interventions?

Documentation

During a response, documentation is a critical part of administrative preparedness that not only supports in financial reimbursement and trend identification, but also identifies gaps in existing plans so future responses can be improved upon. The following documentation strategies should be considered.

- How are staff time and expenses being tracked?
- How are resources and inventory management occurring?
- How is first responder psychological and physical safety being documented?
- Do key plans include chemical release such as: emergency response guides, all-hazards plans, continuity of operations plans?
- When and how is after-action reporting going to occur and how will identified improvement items be tracked?

- Who will author and how will progress reports, situation reports, or reports relating to response objectives and operational periods be written and disseminated?
- Are there any other agency standards or policies that need to be considered in retaining testing, prophylaxis, or treatment records?

Recovery Funding

Recovery funds to local health departments may come from various sources and types, depending on the scale and magnitude of the chemical incident and responsible parties. Similarly to response funds, recovery dollars may come from federal agencies, like FEMA and EPA (e.g., EPA Superfund Settlements), and are funneled through state and local governments or agencies. Local health departments need to work together with their local partners, government officials, and emergency management to advocate for funds to be allocated for public health recovery efforts. For more information, refer to Appendix B: Disaster Recovery Funding: Achieving a Resilient Future? of the National Academies of Science report, *Healthy, Resilient, and Sustainable Communities After Disasters*.

Recovery Action Checklist

By following this Chemical Emergency Recovery Action Checklist, local health departments can effectively manage the transition from response to recovery, ensuring the health and safety of the community while building resilience for future chemical incidents.

Recovery Action Checklist for Local Health Departments	
Immediate Post-Incident Actions	
☐	**Transition to Recovery** ☐ Formally transition from response to recovery operations specific to chemical incidents. ☐ Activate the recovery section of the emergency operations plan. ☐ Appoint a recovery coordinator experienced in chemical incidents to lead efforts.
☐	**Assessment and Documentation:** ☐ Conduct a detailed assessment of the chemical incident's impact on public health, infrastructure, and the environment. ☐ Document all chemical exposures, health impacts, and response actions for recovery planning and regulatory reporting.
Public Health and Medical Services Restoration	
☐	**Healthcare Facility Support** ☐ Assist local hospitals and clinics in managing and treating ongoing chemical exposure cases. ☐ Coordinate the return of specialized medical resources and personnel to normal operations.

☐	**Public Health Services** ☐ Resume routine public health services with a focus on monitoring and addressing chemical exposure effects. ☐ Implement long-term health surveillance for delayed effects of chemical exposure. ☐ Provide guidance and support for decontamination procedures in healthcare settings.
☐	**Psychological Support** ☐ Continue to provide long-term psychological support services for responders and individuals affected by the chemical incident. ☐ Connect individuals with local resources and reintegration programs. ☐ Raise awareness and continue to promote psychological resources.
Environmental Remediation	
☐	**Contamination Assessment:** ☐ Collaborate with environmental agencies to assess the extent of chemical contamination. ☐ Identify specific areas requiring cleanup and decontamination efforts.
☐	**Remediation Efforts** ☐ Coordinate and support the cleanup of chemical contaminants in affected areas. ☐ Monitor air, water, and soil quality to ensure the effectiveness of remediation efforts. ☐ Provide public updates on environmental safety and remediation progress.
Environmental and Safety Measures	
☐	**Environmental Monitoring:** ☐ Collaborate with environmental agencies to monitor air, water, and soil for contamination. ☐ Assess the extent of environmental damage and the need for containment and cleanup.
☐	**Safety and Security:** ☐ Ensure the safety of response personnel by providing appropriate PPE and safety training. ☐ Coordinate with law enforcement to secure affected areas and manage access.
Community Support and Engagement	
☐	**Public Communication:** ☐ Provide continuous updates on chemical recovery efforts and health safety information. ☐ Address public concerns regarding chemical exposure and provide clear guidance on health precautions. ☐ Use multiple communication channels to ensure information reaches all community members.

☐	**Community Engagement:** ☐ Engage community leaders and organizations to support recovery efforts. ☐ Organize community meetings to gather feedback, address concerns, and provide recovery information. ☐ Offer targeted support and resources for vulnerable and at-risk populations impacted by the chemical incident.
Resource Management and Logistics	
☐	**Resource Allocation** ☐ Manage and allocate resources effectively to support chemical recovery efforts. ☐ Track the use of resources, including chemical antidotes and specialized equipment, and ensure proper documentation for reimbursement.
☐	**Financial Management** ☐ Document all expenses related to the chemical incident and recovery efforts. ☐ Apply for state and federal assistance programs and grants specific to chemical emergencies. ☐ Coordinate with state and federal agencies for financial support for chemical remediation and recovery.
Evaluation and Improvement	
☐	**After-Action Review:** ☐ Conduct a comprehensive after-action review with all stakeholders focusing on the chemical incident. ☐ Identify strengths, weaknesses, and areas for improvement in the chemical response and recovery efforts. ☐ Collect feedback from staff, partners, and the community to refine future chemical emergency plans.
☐	**Plan Updates:** ☐ Update emergency response and recovery plans based on after-action findings specific to chemical incidents. ☐ Integrate lessons learned into future training and exercise programs related to chemical emergencies.
Long-Term Recovery and Resilience Building	
☐	**Long-Term Health Monitoring** ☐ Implement programs to monitor the long-term health impacts of chemical exposure on the population. ☐ Provide ongoing support, resources, and medical care for individuals affected by the chemical incident.
☐	**Community Resilience:** ☐ Develop and promote initiatives to enhance community resilience to future chemical incidents. ☐ Engage with community partners to strengthen public health infrastructure against chemical threats.

	☐ Promote public education and awareness programs on chemical safety and emergency preparedness.

7. APPENDIXES

A. Case Studies

Elk River Chemical Spill – Kanawha County, West Virginia (January 2014)

Approximately 10,000 gallons of 4-Methylcyclohexanemethanol (MCHM) spilled into the Elk River and flowed into the West Virginia American Water Company water intake, which serves about 300,000 people, on January 9, 2014. The chemical leaked from a corroded chemical storage tank owned and operated by Freedom Industries.

A "do not use" water order was in place for 10 days, and residents were instructed not to use water for drinking, cooking, or cleaning. This order also forced businesses, schools, and daycares to close. From a Community Assessment for Public Health Emergency Response (CASPER) conducted in April 2014, it was found that most households continued to use water for daily activities such as bathing, washing hands, and cleaning dishes. The lingering odor and uncertainty about health effects decreased the perceived safety of the water supply. Public messaging efforts through trusted sources of information such as television can help rebuild trust in water supplies.

The following article assesses the impact of the chemical spill, assesses the recovery needs of the community, and discusses the results of the CASPER. The post-incident surveys and research indicate that communities benefit from timely public messaging efforts, outreach, and education on personal emergency preparedness. These activities help residents rebuild and maintain trust in systems, and they help build their own emergency plans to minimize disruptions in their daily lives (e.g., taking time off work to care for children/dependents due to school and daycare closures). During and after chemical incidents, LHDs play a crucial role in ensuring public outreach and education activities take place to support their communities in recovering.

- Assessment of Impact and Recovery Needs in Communities Affected by the Elk River Chemical Spill, West Virginia, April 2014 - PMC (nih.gov)

An After-Action Review of the incident was released four years later. It describes the event, the state's emergency response, challenges, key successes, shortcomings, and feedback from agencies and the review team:

- After Action Review - Freedom Industries Chemical Leak (WV)

Graniteville Train Disaster – Graniteville, South Carolina (January 2005)

The Graniteville Train Disaster of 2005 in South Carolina was an incident involving a train derailment that led to a chlorine spill and gas exposure deemed as one of the worst such exposures in the U.S.

A freight train collided with a parked train at 2:49 AM on January 6, 2005, after a mistaken track switch. This resulted in one of the three chlorine tank cars being punctured and 60 tons of liquid chlorine being released. The liquid chlorine vaporized and turned into a cloud of chlorine gas which spread through the town full of sleeping residents. Nine people died immediately, 72 people were hospitalized for acute health effects from chlorine inhalation, more than 840 sought medical attention, and 5,400 residents had to evacuate for 2-3 weeks. Graniteville lacked critical infrastructure and resources as it was a rural and unincorporated town, and a medically underserved area at the time of this disaster.

The two articles below discuss the vital roles of community engagement and building partnerships for incident response and recovery, as these were key to establishing a community health tracking registry and public communication efforts throughout the process. While immediate response is necessary, the public health impacts often linger and LHDs may be called to support these recovery efforts where partnerships and engagement continue to be key.

- Engaging a Chemical Disaster Community: Lessons from Graniteville
- Off the rails in rural South Carolina: a qualitative study of healthcare provider perspectives on the long-term health impact of the Graniteville train disaster

Anhydrous Ammonia Chemical Release – Lake County, Illinois (April 2019)

On April 25, 2019, in Lake County, Illinois, a farm tractor on a main two-lane county road had a mechanical failure with its two ammonia tanks, which resulted in at least 500 gallons of anhydrous ammonia being released into the air at 4:24 AM. The ammonia turned into a low-lying, large plume of white gas and spread through the area and nearby homes. The gas affected vehicles driving by, causing them to stall, and drivers and passengers reported an acrid smell and taste, throat irritation, coughing, difficulty breathing, and

choking. Victims had to be rescued from cars and homes near the release. Residents living within a one-mile radius of the release were issued a shelter-in-place order, which was transmitted via reverse 9-1-1. A water spray was applied by the fire department to dilute the plume until the ammonia tanks were empty, which occurred about three hours after the incident.

A report about the anhydrous ammonia chemical release discussed the impacts of communication and coordination challenges during the incident response. First responders were unaware that they were responding to a chemical/hazmat incident and thus did not have the correct personal protective equipment. Hospitals also did not engage in proper decontamination due to insufficient information-sharing about the chemical, type of exposure, and triage category of incoming patients, resulting in secondary exposures for hospital staff. Several recommendations were made to improve communication during chemical incidents such as "standardizing the 9-1-1 operator training for hazmat events" and "implementing a comprehensive hazmat communication model to include multi-agency training that incorporated communication with hospitals." This case study report emphasized that an effective response to a chemical emergency depends on timely and accurate identification of hazardous materials and clear communication and coordination between partners.

- Anhydrous Ammonia Chemical Release — Lake County, Illinois, April 2019

Organic Peroxides Fires and Releases Following Hurricane Harvey Flooding – Crosby, Texas (August 2017)

On August 31, 2017, in Crosby, Texas, the Arkema Crosby facility, which manufactures organic peroxides, lost power for its refrigeration systems due to flooding from Hurricane Harvey, causing several fires due to combustion. The facility was located on a 100- and 500- year flood plain, meaning there had only been a one percent and 0.2 percent risk of flooding in any given year. However, Hurricane Harvey was a Category 4 hurricane and produced unprecedented rainfall over Texas and Louisiana. The organic peroxides needed to be stored at a low temperature with refrigeration to prevent decomposition.

Several critical emergency response activities occurred during this incident. Arkema alerted first responders and Unified Command about the possibilities of an incident occurring and the hazards associated with the organic peroxides. Due to flooding, electricity was shut off and the organic peroxides were moved into nine refrigerated trailers, which could not be moved to higher elevations as water levels rose and power started to fail. Facility workers were evacuated on August 29, and emergency responders

implemented an evacuation zone within a 1.5-mile radius of the facility. Five police officers assigned to monitor the perimeter drove through a cloud of white smoke and a cloud of black smoke, and subsequently reported symptoms of nausea, headaches, sore throat, and itchy watering eyes. Three of the trailers combusted and burned on their own. Emergency responders conducted controlled burns on the remaining six. Twenty-one people reported exposure to the release due to one of the highways remaining open. This incident highlights the importance of performing risk assessments and identifying facilities in a jurisdiction that may be susceptible to extreme weather events. Timely and clear communication can also enhance safety of first responders, prevent exposure, and minimize impacts of a large-scale chemical incident.

A document released by the U.S. Chemical Safety and Hazard Investigation Board (CSB) provides details of the incident, response activities, and lessons learned.

- Extreme Weather, Extreme Consequences: CSB Investigation of the Arkema Crosby Facility and Hurricane Harvey

The final investigation report by CSB proves an in-depth overview of the incident, history of flooding, preparedness plans at Arkema Crosby, guidance, and recommendations.

- Organic Peroxide Decomposition, Release, and Fire at Arkema Crosby Following Hurricane Harvey Flooding

Anthrax Attacks – United States (October – November 2001)

Between October 4 and November 20, 2001, several letters containing spores of anthrax bacteria (*Bacillus anthracis*, or *B. anthracis*) were sent through the U.S. mail. Twenty-two people developed anthrax, and five people died. It was one of the largest bioterrorism attacks in the United States. Several risk communication issues emerged during these incidents. The Federal Bureau of Investigation made an announcement on October 12, 2001, about at least four letters containing anthrax being processed at a postal distribution facility in Hamilton, New Jersey. More than 70% of residents in New Jersey were concerned about exposure to anthrax; and 20% reported being affected. The concern was overwhelming for agencies such as the New Jersey Department of Health and Senior Services, who received over 6000 calls related to bioterrorism in October and November, and the CDC, who received over 8,860 calls between October 8 and 31. Confusion about anthrax and its impacts on health was nationally widespread, and postal workers and senate staffers were especially dissatisfied with the information they were receiving.

The response from health agencies and key organizations during these attacks signified the need for more effective communication and coordination amongst agencies. While local and state agencies were effective at sharing information with each other, it was difficult at the federal level due to varying objectives between law enforcement and public health. Local health officials also could not release timely communication due to criminal investigations, so they were unable to mitigate fear in communities. A journal article discusses the importance of successful risk communication and transparency during health emergencies between partners at local, state, and federal levels to successfully manage confusion, mistrust, and uncertainty amongst agencies and the public.

- Facilitation of Risk Communication During the Anthrax Attacks of 2001: The Organizational Backstory | AJPH | Vol. 97 Issue 9 (aphapublications.org)

B. Questions to Consider Based on Type of Chemical Incident

INDUSTRIAL ACCIDENTS
1. Does your jurisdiction have chemical plants, storage facilities, or distribution sites? a. If so, where are these sites located and who are the primary consumers/users of these plants in your jurisdiction? 2. What chemicals are stored or manufactured and what hazards do they pose (e.g., flammable, corrosive)? 3. What planning documents exist if an area evacuation or shelter-in-place is needed in the areas surrounding the chemical plant(s)? Do these planning documents account for the presence of hazardous chemicals? 4. Who is responsible for oversight of these chemical plants (e.g., Right to Know Act) 5. Does your LHD have a working relationship with this government agency and with the plant operators? 6. What important infrastructure or natural features are located near the chemical plant(s)? a. Examples include agriculture, food plants, waterways, healthcare facilities, schools, and other essential service providers. 7. What communities in your jurisdiction are reliant on these chemical plants and sites? a. Are these communities at an increased susceptibility to health effects? What measures are in place to ensure language accessibility? 8. Is there pre-existing public health data on these communities to inform potential epidemiological investigations in the event of a major chemical incident? 9. What communities in your jurisdiction are located near these chemical plants and sites? a. Are these communities at an increased susceptibility to health effects? What measures are in place to ensure language accessibility? 10. Is there pre-existing public health data to inform potential epidemiological investigations in the event of a major chemical incident? 11. What level of awareness and knowledge do members of the community (e.g., the public, impacted communities, first responders, healthcare providers) already have about the presence of chemical plants and the potential hazards of a spill or leak?
TRANSPORTATION ACCIDENTS
1. What transportation lines and modes of transportation exist in your jurisdiction for moving hazardous chemicals?

2. What hazardous chemicals are being transported and what hazards do they pose?
3. Is your LHD notified when/how hazardous materials are being transported within your jurisdiction?
4. Who is responsible for oversight of these transportation routes?
5. Does your LHD have a working relationship with this government agency and with transportation companies?
6. What communities in your jurisdiction are located near these transportation lines?
    a. Are these communities at an increased susceptibility to health effects? What measures are in place to ensure language accessibility?
7. Is there pre-existing public health data to inform potential epidemiological investigations in the event of a major chemical incident?
8. What level of awareness and knowledge do members of the community (e.g., the public, impacted communities, first responders, healthcare providers) already have about the transport of chemicals in your jurisdiction and the potential hazards of a spill or leak?

NATURAL DISASTERS

1. What are the most likely natural disasters in our area, and which facilities that handle hazardous materials are at risk during such events?
2. How can we enhance our risk assessment and mapping to identify chemical storage sites and transportation routes that could be affected by natural disasters?
3. What level of awareness and knowledge do first responders have to identify the potential intentional use of hazardous chemicals or chemical agents?
4. What level of awareness and knowledge do healthcare providers have to identify potential exposures to chemical agents, such as nerve or blister agents?
5. What level of awareness and knowledge does your Poison Center or your LHD SMEs have to identify potential exposures to chemical agents, and provide appropriate guidance and messaging to healthcare providers and the public about potential exposure?
6. Does your jurisdiction participate in the CHEMPACK program?
    a. If so, what CHEMPACK assets are available and where are they stored?
    b. Do first responders and healthcare providers know that CHEMPACKs exist, how to access CHEMPACK, and how to use CHEMPACKs?

DELIBERATE RELEASES

1. What potential targets within our jurisdiction are most vulnerable to deliberate chemical releases, and what specific chemicals might be used in such attacks?

2. How can we enhance our coordination and communication protocols with law enforcement, emergency services, and other relevant agencies to respond effectively to deliberate chemical releases?
3. What anticipated needs will law enforcement have for your LHD to pursue a comprehensive criminal investigation?
4. What training programs and resources are needed to prepare our staff for recognizing, responding to, and mitigating the effects of deliberate chemical releases?
5. Do we have sufficient stockpiles of protective equipment, medical supplies, and decontamination resources to handle a large-scale chemical attack?
6. What are our plans for public communication and information dissemination to manage fear, provide clear instructions, and maintain public trust during and after a deliberate chemical release?
7. How can we engage and collaborate with community partners, businesses, and the public to strengthen our overall preparedness and resilience against deliberate chemical releases?

C. Questions to Consider When Establishing LHD Role with Partners

Questions to consider when establishing the LHD role with private, local, state, and/or federal partners. This list is not extensive, and some may not be appropriate depending upon the role of the LHD in a chemical incident.

BEFORE A CHEMICAL INCIDENT
1. How will the LHD be notified of a chemical incident? 2. Who will be responsible for ordering and lifting shelter-in-place or evacuation orders? 3. How will the LHD fit into the Unified Command or ICS structure? 4. How are vulnerable populations identified and how will they be supported in the event of a chemical incident?
DURING THE RESPONSE TO A CHEMICAL INCIDENT
1. How will data and information be shared with participating partners and with the community? 2. Who will be responsible for communicating with the public about the status of the chemical incident? 3. Who will be conducting environmental sampling/monitoring? 4. Who will interpret any environmental data to interpret risk to the public?
AFTER A CHEMICAL INCIDENT
1. How will the LHD be involved in the recovery/clean-up process? 2. What will long-term communication with the community look like? What will the role of the LHD be in that communication?

D. Checklists for Local Health Departments

Chemical Incidents: Planning & Mitigation

Planning Action Checklist for Local Health Departments	
Researching Jurisdictional Authorities	
☐	Identify local, state, and federal agencies responsible for chemical emergency response.
☐	Clarify roles and responsibilities of each authority in a chemical incident.
☐	Review legal and regulatory frameworks governing chemical emergency preparedness and response.
Conduct Risk Assessments	
☐	Identify potential chemical hazards within the jurisdiction (e.g., industrial sites, transportation routes, storage facilities).
☐	Assess the vulnerability of the population and critical infrastructure to chemical incidents.
☐	Evaluate past incidents and current threat levels to prioritize risks.
Review Existing Planning Documents	
☐	Collect and analyze existing emergency response plans, including regional and neighboring jurisdictions' plans.
☐	Review the Local Emergency Planning Committee (LEPC) reports and Hazardous Materials Emergency Preparedness (HAZMAT) plans.
☐	Examine mutual aid agreements and memorandums of understanding (MOUs) with other agencies and organizations.
Engage Stakeholders	
☐	Identify and engage key stakeholders including emergency management, law enforcement, fire departments, hospitals, schools, and community organizations.
☐	Schedule meetings or workshops to gather input and foster collaboration among stakeholders.
☐	Establish a working group or task force dedicated to chemical preparedness.
Conduct Community and Infrastructure Surveys	
☐	Survey local industries and businesses to identify chemicals used, stored, and transported within the jurisdiction.
☐	Map critical infrastructure such as hospitals, schools, and transportation hubs, assessing their proximity to potential chemical hazards.
☐	Engage with community members to understand public concerns and perceptions regarding chemical risks.
Evaluate Resources and Capabilities	
☐	Assess the availability and adequacy of emergency response resources, including personnel, equipment, and facilities.

☐	Identify gaps in resources and capabilities and plan for acquiring necessary assets.
☐	Review training and exercise records to determine the readiness of responders and the need for additional training.
Document and Review Findings	
☐	Compile all gathered information into a comprehensive report.
☐	Review and validate findings with stakeholders and subject matter experts.
☐	Use the collected data to inform the development of a detailed chemical preparedness response plan.
☐	Review the planning action checklist annually and update as needed.

Preparedness Action Checklist for Local Health Departments	
Planning and Coordination	
☐	**Develop Emergency Plans:** ☐ Create and regularly update emergency response plans, including specific protocols for chemical incidents. ☐ Integrate state and federal resources (e.g., CHEMPACK and SNS) into emergency plans. ☐ Establish clear roles and responsibilities for staff during emergencies. ☐ Incorporate existing surveillance systems and leverage their use in preparedness planning.
☐	**Interagency Collaboration:** ☐ Collaborate with state and neighboring health departments, local emergency management, hospitals, and other key stakeholders. ☐ Participate in regional and state emergency planning committees. ☐ Maintain a contact list of key partners and stakeholders. ☐ Develop and maintain methods/channels for notification
☐	**Training and Exercises:** ☐ Conduct regular training sessions for staff on emergency protocols and chemical incident response. ☐ Organize and participate in joint exercises and drills with local emergency responders and state agencies. ☐ Ensure all staff are familiar with the use and distribution of medical countermeasures.
Resource Management	
☐	**Inventory Management:** ☐ Maintain an up-to-date inventory of medical supplies, PPE, and other essential resources. ☐ In collaboration with State Health Departments, identify and secure storage locations for CHEMPACK containers and other emergency supplies. ☐ Develop a system for tracking and replenishing inventory levels.
☐	**Logistical Planning:** ☐ Identify points of dispensing (PODs) for rapid distribution of medical countermeasures. ☐ Establish transportation methods for swift movement of resources during an emergency. ☐ Coordinate with local facilities to ensure they can handle and distribute supplies.
Public Communication and Education	
☐	**Public Information Dissemination:**

	☐ Develop clear, accurate, and timely communication strategies for the public during emergencies. ☐ Create and distribute educational materials on chemical safety and emergency preparedness. ☐ Use multiple communication channels (social media, local media, community meetings) to reach diverse populations.
☐	**Community Engagement:** ☐ Engage with community leaders and organizations to raise awareness about emergency preparedness. ☐ Conduct outreach to at-risk populations to ensure they understand how to respond during a chemical incident. ☐ Organize community forums and workshops on emergency preparedness.
Assessment and Monitoring	
☐	**Situation Assessment:** ☐ Establish protocols for rapid assessment of chemical incidents and their impact on public health. ☐ Coordinate with environmental agencies to monitor air, water, and soil for contamination. ☐ Implement surveillance systems to track health outcomes and identify emerging risks.
☐	**Data Collection and Analysis:** ☐ Collect and analyze data to inform decision-making and improve response efforts. ☐ Maintain records of incidents, responses, and outcomes to evaluate and refine emergency plans. ☐ Have a data sharing agreement with all relevant local, state, and federal partners. ☐ Share data with state and federal partners to support a coordinated response.
Regulatory Compliance	
☐	**Adherence to Guidelines:** ☐ Ensure all emergency response activities comply with local, state, and federal regulations. ☐ Keep abreast of changes in laws and guidelines related to emergency preparedness and public health. ☐ Regularly review and update policies and procedures to maintain compliance.
Psychological Support	
☐	**Community Psychological Support** ☐ Identify partners and resources within the LHD and the community to provide psychological support services. ☐ Include psychological support partners in training and exercises.

	E.g., partner with the local Medical Reserve Corps to train behavioral health professionals. ☐ Determine the capacity and referral processes for psychological support services. ☐ Partner with NGOs, faith-based organizations, community organizations, and other stakeholders (e.g., community centers, schools, etc.) to strengthen community resilience. ☐ Assess the needs of high-risk and vulnerable populations, such as non-native English speakers, people with disabilities, people experiencing homelessness, and others. **First Responders and Public Health Professionals** ☐ Provide training to improve mental health awareness and resilience such as the Psychological First Aid Online, Mental Health First Aid for Fire/EMS. ☐ Conduct drills and exercises that include psychological support scenarios

Chemical Incidents: Response

Response Action Checklist for Local Health Departments	
Initial Response	
☐	**Incident Assessment:** ☐ Quickly assess the scope and scale of the chemical incident. ☐ Identify the chemicals involved and their potential health impacts. ☐ Determine the immediate needs of the affected population.
☐	**Notification and Activation:** ☐ Notify relevant local, state, and federal agencies. ☐ Activate the emergency response plan and emergency operations center (EOC). ☐ Mobilize internal response teams and assign roles.
☐	**Public Communication:** ☐ Issue initial public health advisories and safety instructions. ☐ Provide clear information about the nature of the incident and protective actions. ☐ Use multiple communication channels to reach diverse populations.
Coordination and Resource Management	
☐	**Interagency Coordination:** ☐ Coordinate with local emergency management, healthcare facilities, and other key stakeholders. ☐ Ensure seamless communication and information sharing among all response partners. ○ Build mechanisms for interagency communication to facilitate coordination among different organizations - MOUs, Data Sharing Agreements (DSAs), etc. ☐ Participate in unified command structures if established. ☐ Develop and regularly update contact lists for all external partners.
☐	**Medical Resource Deployment:** ☐ Request additional medical supplies and personnel from the State Health Department as needed. ☐ Set up points of dispensing for the distribution of medical countermeasures. ☐ Ensure rapid deployment and distribution of CHEMPACK resources if necessary.
☐	**Health Coordination:** ☐ Coordinate with local hospitals and clinics to manage patient surge and treatment. ☐ Provide guidance on triage, treatment protocols, and patient transfer procedures. ☐ Ensure the availability of mental health support for affected individuals and responders.

	☐ Provide culturally competent psychological support matching the needs and demographics of the local jurisdiction
Public Health Surveillance	
☐	☐ Implement structured systems for reporting chemical incidents (integrate data from hospitals, clinics, laboratories, etc.). ☐ Conduct epidemiological investigations to confirm chemical agents, identify affected populations, and determine exposure pathways. ☐ Conduct event-based surveillance to gather reports from media, healthcare facilities, and public reports. ☐ Provide timely analysis and reporting of exposure data to guide emergency response efforts. ☐ Utilize tools like ATSDR's Epi CASE Toolkit for real-time needs assessments and follow-up services. ☐ Use data-sharing platforms like CBRN Responder for chemical incident data sharing and event management.
Human Exposure Assessment and Health Effects	
☐	☐ Identify chemicals involved in the incident and assess pathways of exposure (inhalation, ingestion, dermal contact). ☐ Perform dose-response analysis to evaluate health outcomes related to exposure levels. ☐ Identify at-risk groups and prioritize interventions. ☐ Issue health advisories based on exposure data. ☐ Conduct long-term health monitoring of affected populations. ☐ Utilize resources for information on the health effects of chemical exposure (e.g., CDC, WHO, ATSDR).
Environmental Health	
☐	☐ Monitor air, soil, and water before, during, and after chemical incidents. ☐ Conduct environmental sampling and real-time air monitoring. ☐ Collaborate with environmental agencies for environmental impact assessments and cleanup efforts. ☐ Ensure the safety of water systems through rapid detection and emergency measures. ☐ Coordinate hazardous materials and debris management with federal, state, and local agencies. ☐ Implement decontamination procedures for affected individuals, equipment, and areas. ☐ Inspect shelters for environmental conditions and food safety. ☐ Collaborate with agricultural agencies to protect agricultural resources and prevent contamination of food supplies.
Public Information and Risk Communication	
☐	**Ongoing Public Information**: ☐ Provide regular updates to the public on the incident status and response efforts.

	☐ Offer guidance on health precautions and available services. ☐ Address public concerns and misinformation promptly.
☐	**Community Engagement:** ☐ Engage community leaders and organizations to support response efforts. ☐ Ensure vulnerable populations receive tailored information and support.
Community Psychological Support	
☐	**Implementation of Psychological First Aid (PFA)** ☐ Train staff and responders in PFA techniques. ☐ Deploy PFA-trained personnel to affected areas. ☐ Ensure PFA is provided to stabilize, and support affected individuals. **Public Education Campaigns** ☐ Develop and disseminate information on recognizing psychological distress. ☐ Provide information on accessing mental health resources. ☐ Utilize various media platforms for public education (social media, flyers, local news). ☐ Organize workshops and seminars on coping strategies, resilience-building, and managing stress and anxiety. **Coordination with Mental Health Services** ☐ Establish partnerships with local mental health professionals and organizations. ☐ Integrate mental health support into the overall emergency response plan. ☐ Create a network of mental health providers ready to offer services during and after an emergency. **Resource Allocation** ☐ Ensure adequate funding for mental health services during emergencies. ☐ Allocate necessary supplies and resources for psychological support. ☐ Maintain an inventory of mental health resources and ensure they are accessible.
Responder Safety and Health	
☐	**Safety and Security:** ☐ Ensure the safety of response personnel by providing appropriate PPE and safety training. ☐ Provide just-in-time training on safety protocols and health risks associated with chemical incidents. ☐ Monitor responder health and well-being (physical, mental, emotional, social, and spiritual). ☐ Implement decontamination procedures for responders. ☐ Ensure regular communication with responders regarding safety and health updates. ☐ Conduct post-incident health assessments and support for responders.

	Psychological Support ☐ Identify available psychological support services, including critical incident stress debriefings. ☐ Establish support systems for responder mental health and stress management. ☐ Leverage coalitions such as the Health Care Coalitions or Local Emergency Managers Committee to ensure psychological support needs are identified and addressed. ☐ Ensure access to an Employee Assistance Program (EAP) and inform staff about EAP services.
Documentation and Reporting	
☐	**Incident Documentation:** ☐ Maintain detailed records of all response activities, decisions, and resources used. ☐ Document health impacts and outcomes for post-incident analysis.
☐	**Reporting and Communication:** ☐ Provide regular situation reports to local, state, and federal partners. ☐ Share data and findings with relevant agencies to support coordinated efforts.

Chemical Incidents: Recovery

Recovery Action Checklist for Local Health Departments	
Immediate Post-Incident Actions	
☐	**Transition to Recovery** ☐ Formally transition from response to recovery operations specific to chemical incidents. ☐ Activate the recovery section of the emergency operations plan. ☐ Appoint a recovery coordinator experienced in chemical incidents to lead efforts.
☐	**Assessment and Documentation:** ☐ Conduct a detailed assessment of the chemical incident's impact on public health, infrastructure, and the environment. ☐ Document all chemical exposures, health impacts, and response actions for recovery planning and regulatory reporting.
Public Health and Medical Services Restoration	
☐	**Healthcare Facility Support** ☐ Assist local hospitals and clinics in managing and treating ongoing chemical exposure cases. ☐ Coordinate the return of specialized medical resources and personnel to normal operations.
☐	**Public Health Services** ☐ Resume routine public health services with a focus on monitoring and addressing chemical exposure effects. ☐ Implement long-term health surveillance for delayed effects of chemical exposure. ☐ Provide guidance and support for decontamination procedures in healthcare settings.
☐	**Psychological Support** ☐ Continue to provide long-term psychological support services for responders and individuals affected by the chemical incident. ☐ Connect individuals with local resources and reintegration programs. ☐ Raise awareness and continue to promote psychological resources.
Environmental Remediation	
☐	**Contamination Assessment:** ☐ Collaborate with environmental agencies to assess the extent of chemical contamination. ☐ Identify specific areas requiring cleanup and decontamination efforts.
☐	**Remediation Efforts** ☐ Coordinate and support the cleanup of chemical contaminants in affected areas. ☐ Monitor air, water, and soil quality to ensure the effectiveness of remediation efforts.

	☐ Provide public updates on environmental safety and remediation progress.
Environmental and Safety Measures	
☐	**Environmental Monitoring:** ☐ Collaborate with environmental agencies to monitor air, water, and soil for contamination. ☐ Assess the extent of environmental damage and the need for containment and cleanup.
☐	**Safety and Security:** ☐ Ensure the safety of response personnel by providing appropriate PPE and safety training. ☐ Coordinate with law enforcement to secure affected areas and manage access.
Community Support and Engagement	
☐	**Public Communication:** ☐ Provide continuous updates on chemical recovery efforts and health safety information. ☐ Address public concerns regarding chemical exposure and provide clear guidance on health precautions. ☐ Use multiple communication channels to ensure information reaches all community members.
☐	**Community Engagement:** ☐ Engage community leaders and organizations to support recovery efforts. ☐ Organize community meetings to gather feedback, address concerns, and provide recovery information. ☐ Offer targeted support and resources for vulnerable and at-risk populations impacted by the chemical incident.
Resource Management and Logistics	
☐	**Resource Allocation** ☐ Manage and allocate resources effectively to support chemical recovery efforts. ☐ Track the use of resources, including chemical antidotes and specialized equipment, and ensure proper documentation for reimbursement.
☐	**Financial Management** ☐ Document all expenses related to the chemical incident and recovery efforts. ☐ Apply for state and federal assistance programs and grants specific to chemical emergencies. ☐ Coordinate with state and federal agencies for financial support for chemical remediation and recovery.
Evaluation and Improvement	
☐	**After-Action Review:**

	☐ Conduct a comprehensive after-action review with all stakeholders focusing on the chemical incident. ☐ Identify strengths, weaknesses, and areas for improvement in the chemical response and recovery efforts. ☐ Collect feedback from staff, partners, and the community to refine future chemical emergency plans.
☐	**Plan Updates:** ☐ Update emergency response and recovery plans based on after-action findings specific to chemical incidents. ☐ Integrate lessons learned into future training and exercise programs related to chemical emergencies.
Long-Term Recovery and Resilience Building	
☐	**Long-Term Health Monitoring** ☐ Implement programs to monitor the long-term health impacts of chemical exposure on the population. ☐ Provide ongoing support, resources, and medical care for individuals affected by the chemical incident.
☐	**Community Resilience:** ☐ Develop and promote initiatives to enhance community resilience to future chemical incidents. ☐ Engage with community partners to strengthen public health infrastructure against chemical threats. ☐ Promote public education and awareness programs on chemical safety and emergency preparedness.

E. Additional Resources

Guidance

Key Planning Factors and Considerations for Response to and Recovery from a Chemical Incident | FEMA

- Provides in-depth information on planning for and responding to chemical incidents. It discusses how to request federal funding, legislation in place, mass care, and decontamination procedures.

Hazardous Materials Incidents Guidance for State, Local, Tribal, Territorial, and Private Sector Partners | FEMA

- A guide for public health officials to improve resilience against hazardous materials incidents. It compiles resources and trainings from FEMA and other federal partners, offers guidance on incident response, planning, and mitigation practices.

Public Health Emergency Response Guide for State, Local, and Tribal Public Health Directors | CDC

- A tool for LHDs initiating immediate public health responses (during the first 24 hours) and coordinating with emergency structures during acute phases like floods, earthquakes, and acts of terrorism.

The Public Health Response to Biological and Chemical Terrorism: Interim Planning Guidance for State Public Health Officials | CDC

- Assists state public health officials in defining their roles for responding to biological and chemical terrorism and the response responsibilities of local health departments.

Chemical Quick Reference Guides | NRT

- Reference guides intended for Federal On-Scene Coordinators (OSCs). Categories include nerve agents (schedule 1 chemical warfare agents), blister/vesicant agents (schedule 1 chemical warfare agents), choking/pulmonary, lung damaging agents, toxic industrial chemicals (TICs), pesticide/toxic industrial chemical/chemical threat agents, and incapacitating agents.

ACE Teams (Assessment of Chemical Exposures) | ATSDR

- ACE resources provided by ATSDR help local health departments to perform a rapid epidemiological assessment. This site includes a tool kit, fact sheets, and examples of previous ACE investigations.

Comprehensive Preparedness Guide (CPG) 201, 3rd Edition | FEMA

- The CPG provides guidance for conducting a Threat and Hazard Identification and Risk Assessment (THIRA) and Stakeholder Preparedness Review (SPR).

Local Public Health Recovery: An Operational Tool Focused on the Local Role in the Recovery Process | NACCHO

- A NACCHO document with short-term, immediate, and long-term recovery checklists.

National Mitigation Framework | FEMA

- Framework outlining mitigation roles across the whole community and provides insight for minimizing the impacts of disasters. This framework examines core

capabilities necessary for organizations involved in mitigation, including threats and hazards identification, risk and disaster resilience assessment, planning, community resilience, public information and warning, long-term vulnerability reduction, and operational coordination.

National Response Framework | FEMA

- Framework providing fundamental principles of emergency management to guide the country's response to all types of incidents. The NRF is built on concepts identified in the National Incident Management System (NIMS) to coordinate roles and responsibilities across the country. Organizations can partially or fully implement the structures, roles, and responsibilities outlined in the NRF during a large-scale incident.

Pre-Disaster Recovery Planning Guide for Local Governments | FEMA

- Guidance for local governments for preparing for recovery and creating pre-disaster recovery plans that incorporate the whole community, enhance recovery capabilities among partners, and establish an organizational framework, policies, and plans for all-encompassing local recovery efforts.

National Disaster Recovery Framework | FEMA

- Framework for LHDs with a structured approach to coordinate and implement recovery efforts following disasters, including chemical incidents. It outlines roles and responsibilities, promotes collaboration with federal, state, and community partners, and emphasizes community-centric recovery planning. The framework helps LHDs integrate health-focused recovery efforts, ensure timely access to healthcare services, and address public health challenges arising from chemical exposures.

Background Information

ToxFAQs™ | ATSDR

- A comprehensive list of chemicals, organized alphabetically, with answers to their most asked questions including what it is, effects on the environment and human health, and how exposure occurs.

Toxicological Profiles | ATSDR

- In-depth review of the chemical properties including, relevance to public health, health effects, toxicokinetic, and chemical interactions.

Planning and Decision Framework for Chemical Incident Consequence Management | FEMA

- This extensive planning framework focuses on a chemical incident consequence management approach to response and recovery efforts to enhance resilience and minimize damage.

Emergency Response Safety and Health Database | CDC NIOSH

- A readily accessible occupational safety and health database tailored for the emergency response community, providing precise information on high-priority chemical, biological, and radiological agents that responders may encounter in terrorist events.

Public Health Emergency Response Guide for State, Local, and Tribal Public Health Directors | CDC NCEH and EEHS

- NIOSH's ERSH-DB provides quick access to safety information for emergency responders, featuring key data on chemicals, biological, and radiological agents relevant to terrorist incidents.

Emergency Preparedness Guides | OSHA

- Provides guides that offer a brief overview of worker hazards in emergencies, suitable for handouts during events or as training supplements.

Public Health Preparedness and Response to Chemical and Radiological Incidents: Functions, Practices, and Areas for Future Work | RAND

- This report outlines the public health service's roles and responsibilities in planning for and managing chemical or radiological incidents. It details current practices employed by LHDs and identifies specific areas within public health emergency preparedness and response that require additional development of best practices.

Waste Management Decision-Making Process During a Homeland Security Incident Response | EPA

- This EPA website outlines guidelines and processes for making waste management decisions during homeland security incidents, ensuring safe and effective handling of hazardous materials and debris.

Jurisdictional Authority

Emergency Planning and Community Right-to-Know Act (EPCRA) | EPA

- Authorized in 1986, this Act helps communities plan for chemical emergencies by requiring industry to report on the storage, use, and releases of certain chemicals to federal, state, tribal, territorial, and/or local governments.

National Profile of Local Health Departments | NACCHO

- Presents comprehensive, accurate, and reliable data about LHDs' governance, funding, staffing, and activities across the United States.

Public Health Law Program | CDC

- Provides tools, resources, trainings, and legal technical assistance to public health practitioners.

Partnerships

Walley Wise Guy Program

- Walley is a turtle that knows it is wise to go inside his shell whenever there's danger, so this costumed character is the perfect mascot to teach children (and their parents) how to Shelter-In-Place in case of a chemical emergency. He was developed by the Community Education Task Force, a consortium of Local

Emergency Planning Committees in southeast Harris County, Texas and has expanded to member organizations in twenty states.

Neighborhood Empowerment Network

- Cohort of government, non-profit, academic, faith-based, private sector, philanthropic and civic agencies, and institutions. The NEN's mission is to leverage the expertise, resources, and programs of its member organizations to create and deploy tools and resources that empower communities to achieve their self-identified resilience goals.

Do1thing

- Non-profit organization that promotes emergency preparedness for individuals and businesses. Started in 2005 by a group of local emergency managers in the Lansing, MI area, they provide emergency preparedness fact sheets that have been translated into several languages, large and low literacy print formats, as well as audio and video formats.

State of Texas Emergency Assistance Registry (STEAR) Program

- Free registry that provides local emergency planners and emergency responders with additional information on the needs of individuals who do not speak English well, are disabled, require transportation during an evacuation or electricity for life-sustaining equipment. This information also helps emergency planners as they develop plans and procedures for assisting residents during emergencies.

Public Health Surveillance Tools

CBRN Responder

- A secure platform for chemical incident data sharing and multi-hazard event management. It integrates with federal assets and incorporates national-level policy guidance, for planning, preparedness, and operational tools and resources.

CAMEO Chemical | National Oceanic and Atmospheric Administration

- This software facilitates emergency planning and response for hazardous chemicals. It also predicts hazards from chemical mixing and provides critical information like physical properties, health risks, and response recommendations.

Emergency Response Guide | U.S. Department of Transportation

- Provides first responders with a manual intended for use during the initial phase of a transportation incident involving hazardous materials/dangerous goods

ToxGuides™ | ATSDR

- Concise references offering information on chemical properties, exposure sources, health effects, and environmental interactions excerpted from toxicological profiles.

Epi CASE | ATSDR

- Survey form that collects data for real-time needs assessment

Emergency Responder Health Monitoring and Surveillance | CDC

- A framework for organizations to monitor the health and safety of emergency responders before, during, and after a response. ERHMS aims to prevent acute and

chronic illness and injury in emergency responders and other public health personnel and volunteers, including environmental health specialists and mental health professionals.

Chemical Hazards Emergency Medical Management Resources

PPE requirements | CHEMM

- Discusses the need for, the proper selection of, levels of, types of, and limitations of PPE.

Surveillance for Chemical Emergencies | CHEMM

- Discusses the strategies for conducting surveillance, responding if surveillance indicates a chemical emergency, and conducting population follow-up.

Acute patient care | CHEMM

- Guidelines for prehospital management and emergency department/hospital management for ammonia, chlorine, hydrogen cyanide, mustard agents, nerve agents, fourth generation agents, and phosgene.

Medical Countermeasures | CHEMM

- This database provides comprehensive details on mechanism of action, studies, pharmacokinetics, formulations, adverse effects, and more.

Toxidrome cards | CHEMM

- Reference cards designed to aid in identifying and managing toxidromes, which are clusters of signs and symptoms indicative of exposure to specific classes of toxic substances. These cards provide concise information on clinical presentations, treatment approaches, and decontamination procedures to assist in rapid and accurate decision-making during chemical incidents.

Medical Management Guidelines - Toxic Substance Portal | ATSDR

- The Medical Management Guidelines (MMGs) for Acute Chemical Exposures were developed by ATSDR to support healthcare professionals involved in emergency response efforts to effectively decontaminate patients while protecting themselves and others from contamination.

Environmental Health

Environmental Sampling and Analytical Methods (ESAM) Program | EPA

- ESAM is a comprehensive program to facilitate a coordinated response following an intentional or accidental homeland security-related contamination incident. This site provides information that supports field and laboratory efforts to characterize contaminated sites and to remediate contamination.

Emergency Response Guidebook | EPA

- EPA's Emergency Response Guidebook provides first responders with a manual intended for use during the initial phase of a transportation incident involving hazardous materials/dangerous goods.

Communication

What Should you do in a Chemical Emergency? | CDC

- CDC has a webpage dedicated to safety tips for the public during chemical emergencies. The steps for how the public can protect themselves, their family, and pets are outlined on this webpage.

Crisis and Emergency Risk Communication (CERC) manual | CDC

- This manual is for public health response officials and communicators and provides guidance for understanding the psychology of a crisis, successful messaging, community engagement, and media interaction.

5.2. Response Communication Guidelines | FEMA

- Guidelines for communicating effective warning messages to the public.

Chemicals and Hazardous Materials Incidents | Ready.gov

- Guidelines for the public on what to do before, during, and after an incident.

Communicating in a Crisis: Risk Communication Guidelines for Public Officials | SAMHSA

- Provides basic principles of effective risk communication, information dissemination, and message delivery for public officials.

Public Safety and Crisis Communication in an Emergency or Disaster | Rural Health Information Hub

- This webpage provides an overview of crisis communication, developing a crisis communication plan, case studies, and extra resources.

Psychological Support

A Guide to Managing Stress for Disaster Responders and First Responders | SAMHSA

- This guide provides a framework for general principles of stress management strategies for disaster, crisis, and first responders. These responders include police, fire, and emergency medical services personnel, public health workers, transportation workers, utility workers, crisis counselors, and volunteers. It also provides preventive perspectives for responders and their organizations to anticipate stressors and plan responses for a crisis.

Mental Health First Aid for Fire/EMS (training) | Mental Health First Aid

- This training teaches firefighters and EMS personnel about mental health and substance use literacy and how to safely address mental health or substance use challenges for themselves, colleagues, and on-scene during an emergency.

F. Contact List of Partners

CONTACT LIST OF PARTNERS			
LOCAL PARTNERS			
Agency/ Organization	**Department/ Division**	**Point of Contact**	**Response Role**
Fire Department(s)			
Emergency Medical Services (EMS)			
HAZMAT			
Hospitals and Healthcare Facilities			
Emergency Management Agency/Office			
Veterinary Health Services			
County/Municipal Government Social Services			
STATE PARTNERS			
Agency/ Organization	**Department/ Division**	**Point of Contact**	**Response Role**
State Department of Health (DOH)			
State Emergency Management Agency			
Department of Environmental Protection (DEP)			
Department of Transportation (DOT)			
Department of Agriculture (DAG)			

Fish and Wildlife Services (FWS)			
Poison Control			
State Laboratories			
FEDERAL PARTNERS			
Agency/ Organization	**Department/ Division**	**Point of Contact**	**Response Role**
Centers for Disease Control and Prevention (CDC)			
Agency for Toxic Substances and Disease Registry (ATSDR)			
U.S. Department of Agriculture (USDA)			
U.S. Environmental Protection Agency (EPA)			
Federal Emergency Management Agency (FEMA)			
Administration for Strategic Preparedness & Response (ASPR)			
Federal Bureau of Investigation (FBI)			
NON-TRADITIONAL RESPONSE PARTNERS			
Agency/ Organization	**Department/ Division**	**Point of Contact**	**Response Role**
Community Organizations and Non-			

Governmental Organizations (NGOs)			
Businesses and Corporations			
Faith-Based Organizations			
Academic Institutions and Research Centers			
Volunteer Organizations (e.g., Community Emergency Response Teams - CERT and Medical Reserve Corps - MRC)			
Utilities and Infrastructure Companies			
Environmental and Conservation Groups			

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The *Chemical Preparedness Handbook for Local Health Departments* was developed by local health departments for local health departments.

Please share your experience with this handbook by answering a few user satisfaction questions.

NACCHO
National Association of County & City Health Officials

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Public Health

The mission of the National Association of County and City Health Officials (NACCHO) is to improve the health of communities by strengthening and advocating for local health departments.

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