

# Laboratory Response Network-Chemical (LRN-C)

## Level 3 Resource Handbook



FEBRUARY 2018

## **HANDBOOK UPDATES:**

### **March 2015**

- CDC blood and urine shipping guidelines and the specimen collection document (Appendix F, G, H)

### **February 2018**

- Updated information about the ERLN
- Added information about the WLA
- Updated LRN-C information from CDC website, including Appendix F, G, H
- Added an acronyms appendix (Appendix J)

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## Disclaimer

The information contained in this handbook reflects current observations of the chemical threat level 3 programs of the laboratories included in this report. These agencies and contributing workgroup members were not asked to represent the views of other level three programs in the nation and made no pretense of doing so. This handbook does not necessarily represent the official view of APHL or any of the laboratories included in this report. The URLs and links to reference materials or outside information contained in this handbook were verified to be accurate as of the publication date.

The original version was prepared November 2014 and is located in the LRN-C Toolkit SharePoint site hosted by APHL or [https://www.aphlweb.org/aphl\\_departments/Environmental\\_Health/Environmental\\_Health\\_Program/chemt/LRNCToolkit/default.aspx](https://www.aphlweb.org/aphl_departments/Environmental_Health/Environmental_Health_Program/chemt/LRNCToolkit/default.aspx). Updates to the LRN-C Level 3 Resource Handbook will be the responsibility of Josh Rowland ([josh.rowland@aphl.org](mailto:josh.rowland@aphl.org)).

## Introduction

The APHL Chemical Threat Collaborative Workgroup, in conjunction with state public health laboratories, has developed the Laboratory Response Network for Chemical Threats (LRN-C), Level 3 Resource Handbook. This guide may be used by LRN-C partners who provide Level 3 outreach and training to hospital clinicians, laboratorians, first responders and personnel of other agencies that would respond to an accidental or intentional chemical release resulting in human exposure. This document can assist chemical threat (CT) coordinators, Level 3 coordinators, assistant CT laboratory coordinators and others who are tasked with ensuring the proper collection, packaging and shipping of clinical specimens and subsequent testing by LRN-C laboratories following a chemical exposure event.

This document does not establish a one-size-fits-all model; rather, it addresses important areas of preparedness and response that may be tailored to meet the needs of individual jurisdictions. CT coordinators may use the information to build a robust preparedness program to identify and track the extent of exposure following a chemical release.

## Background: Laboratory Response Network for Chemical Threats (LRN-C)

The US Centers for Disease Control and Prevention (CDC), the Federal Bureau of Investigation (FBI) and the Association of Public Health Laboratories (APHL) formed the Laboratory Response Network or LRN in 1999, to respond to acts of bioterrorism. In 2003, federal funding became available to establish the Laboratory Response Network for Chemical Threats (LRN-C) to respond to chemical emergencies. Both the LRN and LRN-C provide collaborative and interconnected analytical testing abilities that enhance the national public health infrastructure and have become valuable resources for our national emergency preparedness capability.

The LRN-C structure is a three-tiered system that provides testing of clinical specimens collected from individuals who may have been exposed to chemical warfare agents or toxic industrial compounds that are not routinely tested for by healthcare-based laboratories. Each LRN-C member laboratory has Level 3 capabilities, which include expertise in clinical specimen collection, storage, packaging and shipping. Level 2 laboratories perform chemical agent/metabolite testing that can be used to respond to potential chemical release events within their jurisdiction. There are ten Level 1 laboratories that can provide testing for an expanded number of chemical analytes. They also serve as surge capacity testing laboratories for the CDC.

CT coordinators are important members of each LRN-C laboratory, providing the foundation of Level 3 activities by networking with hospitals and other sentinel laboratories, first responders, emergency planners, and other response groups. These efforts are vital in promoting relationships with response agencies necessary to effectively provide surge capacity laboratory services for chemical exposure events and related public health emergencies. In addition to Level 3 activities, CT coordinators may also be asked to perform duties associated with levels 1 and 2 testing capabilities.

## Funding for the LRN-C Program

Funding for public health laboratory chemical threat programs comes primarily from the CDC's Public Health Emergency Preparedness (PHEP) cooperative agreement. This agreement specifies core public health emergency functions that the CDC considers important for all states to possess. Laboratory preparedness is one of these elements.

PHEP funding is distributed based on the specific needs of each state, territory or major metropolitan area, such as Los Angeles, Chicago and New York City. Cooperative agreement funding is distributed over a five year cycle and each awardee must explain how their jurisdiction intends to meet the specified functions described in the agreement. After funding has been approved, the awardees must provide regular progress reports to the CDC detailing their status in completing the goals that were stated in the cooperative agreement application.

The PHEP cooperative agreement contains multiple capabilities that cover a variety of areas within a health department. Laboratory testing is one such capability and includes preparedness for responding to public health emergencies that include biological and chemical threats. Some jurisdictions work on these components together by partnering their LRN and LRN-C laboratories, while in others the two operate independently. Other functions defined under laboratory testing, such as proficiency testing and method validation are specific to each type of LRN laboratory.

There are several specific benchmark tasks designated by the CDC that every state must be able to demonstrate. These tasks are directly tied to funding, and if not performed appropriately, may adversely affect the entire state's PHEP funding. Historically, the majority of these benchmarks must be met by each public health laboratory. It is important to work with your local PHEP coordinator to understand these benchmarks and the expectations in the PHEP cooperative agreement to ensure your laboratory program is in-line with the expectations of the PHEP cooperative agreement coordinators.

In addition to the PHEP cooperative agreement, other grants and sources can be pursued to help further fund and expand the Level 3 program. Cooperative agreements for laboratory emergency preparedness activities may be available from local jurisdiction homeland security agencies, hospital organizations, and state and local governments. Biomonitoring grant opportunities may also be available to help further expand the analytical testing functions of the laboratory.

## Level 3 Outreach

Although the LRN-C has been in existence since 2003, increasing local and state medical community awareness of the network capabilities and their important role during a chemical emergency is a constant challenge that requires continuous effort, especially on the part of the LRN-C coordinators. By recognizing that each state has different characteristics such as geographical size, population density and diversity, industrial and transportation risks, and existing response capabilities, the requirements for terrorism preparedness and response efforts must inevitably be different.

Consequences of most natural disasters are tangible and are often measured in the cost of infrastructure destruction; however, the adverse effects of a chemical exposure event most likely will not be measured by infrastructure damage, but rather by the number of people impacted. A chemical exposure event's largest impact may be the worried well and economic issues and a large scale event may easily overwhelm the fragile healthcare infrastructure in many areas.

Justifying investments in increased chemical exposure event training can be difficult for those not immediately involved in the efforts to mitigate the effects of an event. As a result, preparedness capabilities may be below expected levels due to limited response capability, an understaffed healthcare system and limited knowledge of response plans. A renewed momentum in training and education about chemical threats and how to respond to them is encouraged for CT coordinators in order to reduce the potential for unnecessary exposures and morbidity as well as reducing the numbers of worried well and decreasing the economic impact.

State and local agencies take the lead in detecting and responding to chemical exposure events. These same agencies are the first to enact response measures to diminish the damage. It is important for all response agencies, including state and local public health to develop appropriate plans to respond to chemical exposure events. In addition to response plans, training and exercise programs strengthen and test interactions and capabilities necessary for response efforts.

Providing chemical exposure awareness education and trainings for all first responder and first receiver agencies is a crucial step toward building strong and responsive communities. A well-attended and effective training program will not only help communities identify chemical exposure events, but also minimize risks to responders, caregivers, and citizens. In addition, they will understand the important role that the LRN-C laboratory will play in determining who was exposed and how severe the exposure was.

An incident involving chemical exposure will tax healthcare facilities, especially those that have staffing shortages. Understaffed hospitals may not be able to adequately care for a large influx of patients who may have been exposed to a chemical agent. To alleviate healthcare worker deficits, LRN-C chemical awareness and response training provided to healthcare workers may help them be more responsive during a chemical threat, resulting in a more effective means of care and mitigation. CT coordinators are challenged to show agencies that by educating those that will respond during a chemical exposure event the whole community benefits and the healthcare infrastructure will be able to provide treatment for those who need it.

**All CT coordinators should be prepared to help in the following areas:**

- **Planning:** The CT coordinator can provide valuable information to local health departments, hospitals and first responders on the existing LRN-C capabilities for providing clinical analysis of patient specimens. The coordinator can help these groups develop plans to incorporate the collection of patient specimens and the subsequent dissemination and interpretation of the results, if appropriate.
- **Training:** Medical personnel will be responsible for collecting specimens and ensuring they are delivered to the public health laboratory for testing. The CT coordinator should provide training on who to collect specimens from, the appropriate types of specimens to be collected, what kind of paperwork needs to be completed and how to get samples to the public health laboratory.
- **Drills and Exercises:** After response plans are developed and individuals are trained, the next appropriate step is to exercise those plans to ensure that they will work. A CT coordinator may play a minor or a major role in exercise development and participation. Exercises can be designed to practice specific processes, such as the collection and shipping of samples,

or they can be much larger events with multiple agencies, where the specimen collection portion is just a minor component.

- **Emergency Response:** The CT coordinator may spend the majority of their time planning, training and exercising, but they will also play an active role in a true response. The level of responsibility of the CT coordinator will vary in each jurisdiction, but in almost all cases they will be the contact person for laboratory analysis of specimens collected from patients potentially exposed to chemical agents. In addition, the CT coordinator may be responsible for accessioning samples delivered to the laboratory, packaging and shipping specimens to the CDC, reporting patient results back to the hospital and perhaps even performing analysis of the specimens themselves.

## Recommended Skills and Abilities for Level 3 Activities

The CT coordinator should be knowledgeable in a wide variety of areas. They should know the signs and symptoms of chemical exposures, understand the science behind the analysis of clinical specimens for a variety of chemical analytes, and know the internal work processes of first responders, hospitals, emergency medical professionals and epidemiologists. The CT coordinator should also learn the principles of incident command. Other essentials include effective public speaking, time management, communication and any technical skill crucial for networking with diverse professional agencies.

Developing and improving personal skills is very important to the success of the CT coordinator. Past experience has revealed that it is beneficial to follow a training plan for acquiring additional education to build CT coordinator abilities. [Appendix A](#) provides a non-exhaustive list of classes and professional development courses that may be beneficial to the CT coordinator. It is up to the discretion of each jurisdiction to determine which courses will be most applicable to suit their needs.

Other activities may include:

- Keeping a current list of all LRN-C Level 3 coordinators.
- Developing a system or join a mailing list that maintains the current contact list.
- Developing a close relationship with neighboring LRN-C Level 3 jurisdictions to participate in “round robin” style drills, emergency inventory exchange or to recruit “talent” when responding to real events (see the APHL member laboratory list at <https://www.aphl.org/membership/Pages/memberlabs.aspx>).
- Investigating the possibility of creating an official Memorandum of Understanding (MOU) with your public health department (PHD) and adjacent PHD jurisdictions participating in the LRN-C response.

## Additional Laboratory Resources Available to the CT Coordinator

Depending on the event, there may be many samples requiring analysis that originate from a variety of matrices. The LRN-C laboratories’ focus is on clinical samples, but it is quite possible that food, environmental or a variety of other matrices will need to be tested. While this may not be the primary focus of the CT coordinator, they could help coordinate the testing of these additional samples.

APHL has developed an unknown sample algorithm. The *Algorithm and Guidelines for Responding to an Incident Involving a Suspicious Non-Clinical Sample* can be found at: [https://www.aphl.org/aboutAPHL/publications/Documents/PHPR\\_2015June\\_AlgorithmandGuidelinesWhitepaper.pdf#search=algorithm%20and%20guidelines%20for%20responding](https://www.aphl.org/aboutAPHL/publications/Documents/PHPR_2015June_AlgorithmandGuidelinesWhitepaper.pdf#search=algorithm%20and%20guidelines%20for%20responding).

An important resource that the CT coordinator should be aware of is the Integrated Consortium of Laboratory Networks (ICLN). The ICLN, established in 2005, is comprised of six different laboratory networks, each with a specific focus. This network provides a coordinated response to acts of terrorism or other major incidents requiring laboratory testing capabilities. In addition to the LRN, the ICLN comprises:

- **NAHLN:** The National Animal Health Laboratory Network (NAHLN) is coordinated through the United States Department of Agriculture (USDA). The purpose of the NAHLN is to provide the capabilities to detect and respond to animal health emergencies that involve bioterrorist events or newly emerging diseases. For more information on NAHLN, please visit: <https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/lab-info-services/nahln>.
- **NPDN:** The National Plant Diagnostic Network (NPDN) was also established by the USDA. The mission of the NPDN is to detect and diagnose outbreaks of pests or pathogens with the potential to damage food, feed, fiber, fuel crops and forest trees. For more information on NPDN, please visit: <http://www.npdn.org/>.
- **FERN:** The Food Emergency Response Network (FERN) is co-managed by the USDA and the Food and Drug Administration (FDA). FERN is responsible for detecting and identifying biological, chemical and radiological agents in food. The primary objective of FERN is to help detect and prevent attacks on food. For more information on FERN, please visit: <http://www.fernlab.org/>.
- **ERLN and WLA:** The Environmental Response Laboratory Network (ERLN) and the Water Laboratory Alliance (WLA) are managed by the Environmental Protection Agency (EPA). ERLN's focus is on responding to chemical, biological or radiological terrorist attacks or natural disasters that affect human health and the environment. The focus of WLA is on the analysis of water samples for chemical, biological or radio chemical contaminants. For more information on ERLN, please visit: <https://www.epa.gov/emergency-response/environmental-response-laboratory-network>. For information on WLA, please visit: <https://www.epa.gov/waterlabnetwork>.
- **DLN:** The [Department of Defense Laboratory Network](#) (DLN) is managed by several offices within the Office of the Secretary of Defense. The DLN provides capabilities for early detection, confirmation, response and consequence management following acts of terrorism or warfare involving Chemical, Biological, Radiological, Nuclear (CBRN) agents, infectious agents and other hazards.

## The CT Coordinator's Role in Jurisdictional Planning

The CT coordinator is encouraged to understand their role and the role of their laboratory during a chemical response. This information may be found in a city, county or state chemical response plan. If a chemical response plan does not exist within their agency/jurisdiction then the coordinator may consider working with other interested emergency response partners to write one.

Partnering with peripheral agencies will help others understand the LRN-C laboratory's capabilities and assistance they can provide during a chemical response threat. It is advisable for the CT coordinator to maintain an easily accessible list of contact information for hospitals, the poison control center, the Civil Support Team and any other peripheral emergency response agencies in their state. If the relationship(s) the coordinator is developing are new, they may consider arranging conference room time for a meet-and-greet and a presentation of the LRN-C laboratory's role in a chemical incident.

Because federal, state (including public health and the LRN-C) and local jurisdiction disaster response plans follow the Incident Command System (ICS), it is important for the CT coordinator to be familiar with ICS, a standardized, on-scene, all-hazards incident management approach allowing for the integration of facilities, equipment, personnel, procedures and communications that operate within a common organizational structure. See [Appendix A](#) for ICS trainings.

## Training Program Design

A key mission of the LRN-C program is to identify and track the extent of exposure following a chemical release event. To do this, clinical specimens must be collected from individuals who have been exposed. Depending on the scale of the event this will likely not be an easy task. The LRN-C program depends on the cooperation of the medical and first responder communities for the collection of these specimens.

**Helpful Hint:** Partnering or coordinating with your bioterrorism (BT) coordinator may be advantageous when offering training. Often, BT or CT training has the same audience when conducting outreach activities.

In order for specimens to be analyzed by a LRN-C laboratory, they must first be collected, packaged and shipped by a hospital or first responder. Training should be provided on the proper specimen collection, packaging and shipping procedures outlined by the CDC. It is also helpful to explain the role of CDC, as well as the specific signs and symptoms that result from chemical exposure.

When developing a training program, it may be helpful to design a training guide to outline the purpose, participant objectives, target audience and educational expertise for the program.

The training program should be in a format easy to present, with information applicable to your target audience, such as emergency preparedness coordinators, hospital laboratory workers, emergency room nurses and physicians, first responders, poison control, safety officers and others. PowerPoint presentations and on-line training programs should be considered as an acceptable format. Presentation time should satisfy both the objectives and target audience availability. Establish a laboratory resource guide that would include program specific information. The resource guide

should have answers to the frequently asked questions, contact information and reference websites. Additionally, a program material inventory database should be established to track the supplies needed for training.

## Training Program Accreditation

Accreditation is a way to entice participants to attend training. Consider who will be in the audience (physicians, nurses, pharmacists, EMTs and hospital laboratorians). There are different types of credits available based on the target audience; different professions require different credit. If there are several types of credit, more people at a given venue may attend. For more information about accreditation, please see [Appendix B](#).

## Training Preparation

Every CT coordinator will design their own training program based on their jurisdictional needs. Before making the presentation, consider the goals of the training. Three to five goals should be adequate. Design the actual training presentation around achieving these goals. Here are some recommendations for developing an effective presentation:

- If you have to use PowerPoint, spend no more than two minutes per slide, so for a half hour you would have 15 slides (any more and your audience can't absorb all the information and begins to feel lost).
- This does not mean fill your slides with text. Audiences will pay attention to the writing, not you. Try to use visual slides that reinforce what you're saying (graphs, photos, etc.)
- Imagine you're talking to a relative; keep them interested.
- Use humor and questions, if appropriate.
- Practice your presentation, so that you do not have to read the slides.
- Use inflection and vary the speed of your speech.
- Keep reiterating your main messages so that people walk away with a clear sense of what you wanted them to get.
- Have fun!

Other useful documents to develop are: 1) training guide, 2) pre-test (5-7 questions), 3) post-test (5-7 questions) and 4) program and speaker evaluation form. The evaluations will be useful for making improvements to the program and many accreditation agencies require a post-test evaluation and program/presenter evaluation.

Once the program is completed, it is a good idea to have co-workers and colleagues who represent members of the target audience to review the materials for clarity and understanding.

## Training Program Marketing

Effective marketing should draw the intended audience in with an eye-catching title that will make them want to learn more. Some marketing strategies and materials ([Appendix C](#)) include general

correspondence (e-mails and/or letters), a website and flyers or brochures that provide the following information:

- Purpose of the training
- Learning objectives
- Intended target audience
- Length of program
- Learning expectations
- Presenter qualifications, accreditation agencies and contact hours for attendance

Some additional legal information may be required:

- Commercial interests
- Conflicts of interest
- Commercial support or bias
- Endorsement of off-label product use

Create a Chemical Threat Response Kit to leave with the hospital after the training that may include ([Appendix D](#)):

- LRN-C facts
- Chemical Threat or Terrorism Laboratory Preparedness Response Guide
- Specimen shipping container with shipping components
- Packaging materials
- Level 1 laboratory information for region
- Resource guideline and references
- Website contact information
- Symptoms of given exposures

### **Target Audience**

The target audience may be identified based on the PHEP cooperative agreement criteria and on your agency/jurisdiction specific policies and procedures. Most of the target audience will be from hospital laboratories, but with good marketing, this could be expanded to include pharmacists, nurses, EMTs, emergency planners, etc.

### **Where to Market**

Deciding where to market the training program will vary based on the laboratory's location and agency needs. The marketing may also be conducted in conjunction with LRN-B staff.

## How Often to Market

When deciding on how often to market the training program (i.e., annually, semi-annually, etc.) consider budgetary needs for marketing materials, grant requirements, agency requirements, hospital staff turnover, etc.

## Training Program Literature

Developing training program literature is an effective way to market a specimen collection, packaging and shipping training program. The literature can be in any medium, but it is probably best to have materials such as a flyer and/or a brochure that can easily be distributed to prospective laboratories.

The literature created should include the following:

- LRN facts
- Learning objectives for the training
- Length of program
- Accreditation and/or contact hours offered
- Presenter/Trainers' qualifications
- Laboratory personnel contact information (e.g., CT coordinator, emergency on-call)
- Legal information (i.e., commercial interests, conflicts of interest, commercial support or bias, endorsement of off-label product use, etc.)
- Consider adding a funding source acknowledgment or disclaimer. Examples:
  - Funding for this seminar is provided by a grant from the US Department of Health and Human Services Office of the Assistant Secretary for Preparedness and Response.
  - Hospital Preparedness Program
  - Funding for this conference/material was made possible (in part) by the Centers for Disease Control and Prevention.
  - The views expressed in written conference materials or publications and by speakers and moderators do not necessarily reflect the official policies of the Department of Health and Human Services, nor does the mention of trade names, commercial practices or organizations imply endorsement by the US Government.
  - This project is funded 100% by federal funds.

## Training Kit for Hospital Laboratories

The hospital laboratory training kits should include all materials necessary to perform the training. Since each LRN-C laboratory conducts trainings in a different manner, materials needed may differ based on needs. See [Appendix D](#) for a list of materials used by one LRN-C laboratory.

## After Training Marketing

All participants should receive a certificate of completion for training, even if continuing education credits are not offered (check [Appendix B](#) for more guidance). Maintain a list of contacts for every

hospital, agency or other group and update the list on an annual or semi-annual basis. The update can be done when contacting a group to offer a refresher/renewal of certification training.

## Training Schedule

To help in planning a training schedule, create and maintain a facility contact and training schedule database. To schedule training, contact the hospital laboratory supervisor, emergency preparedness coordinators, safety officer or other point of contact. Consider sending some marketing materials during any initial contact that explains the purpose of the training.

## Exercises and Evaluation

Participation in drills can strengthen existing partnerships, create new partnerships, identify weaknesses in procedures, improve response plans and promote the importance of the LRN-C laboratory's role in a chemical response. Go to the Homeland Security Exercise and Evaluation Program (HSEEP) website to determine timelines, schedule meetings and obtain necessary documents. Prior to conducting a drill, determine the extent of the LRN-C laboratory's participation in the drill (e.g., providing chemicals or other materials, training drill participants, sample analysis). Maintain an adequate supply of items that might be requested from participants for the drill or have been used in previous drills, such as urine cups, manifests, shipping boxes, etc. When practical drills are not feasible consider using tabletop drills. Examples of drills (practical and tabletop) are listed in [Appendix E](#).

The Homeland Security Exercise and Evaluation Program is the foundation for emergency planning that has been adopted throughout federal, state and local governments, particularly those that receive funding through the PHEP Cooperative Agreement. It uses common methodology and vocabulary toward capability-based preparedness. The HSEEP Exercise Cycle (Figure 1) provides a common approach to building and maintaining emergency response capabilities: Design and Development, Conduct, Evaluation and Improvement Planning are represented in a cyclic approach, building on successive, continued efforts to improve planning and response actions.

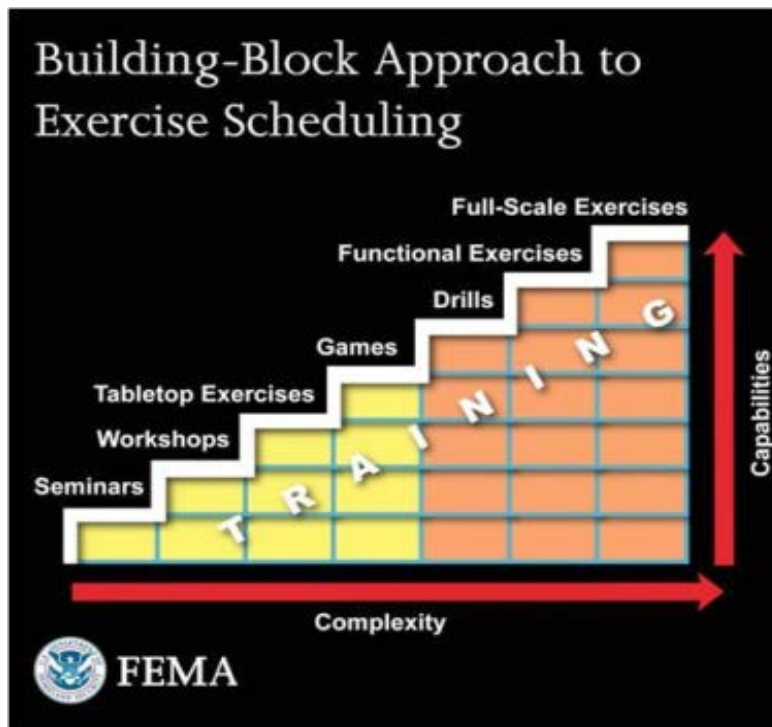
The Exercise Cycle is part of an overall Planning Cycle, which includes Planning, Training and Equipping, Exercising, and Improvement. With each iteration of these cycles, capabilities are improved. HSEEP says that the purpose of exercises/drills is to evaluate player actions against current response plans and capabilities for a public health emergency and evaluate the response actions for the purpose of improving future responses.

**Figure 1. Homeland Security Exercise Evaluation Program, planning cycle** (<https://preptoolkit.fema.gov/web/hseep-resources>)



The HSEEP model uses a building block approach to exercises, tiered from easier to more complex (Figure 2). The yellow blocks represent exercises where response activities are theoretical, and the orange blocks represent real response movements. For example, most specimen collection, packaging and shipping exercises are considered “Drills.”

**Figure 2. Building Block Approach to Exercise Scheduling**



Training and exercising conducted with HSEEP principles are focused around first building a clear plan or protocol, identifying the abilities required to complete tasks associated with the operational plan or protocol, and then testing it with exercises. A cornerstone of HSEEP is an After Action Report and Improvement Plan process to identify specific positive changes and refinements that can be implemented to make all parts of the system better – the plan, the abilities and trainings, the exercises, and therefore, the actual responses that the exercise simulates.

For Level 3 activities, a protocol may consist specifically of specimen collection and packaging and shipping guidance, or it could be built into an all hazard emergency operations plan for public health or sentinel labs. Next, training would be conducted with the plan elements, followed by a drill or other exercise.

An excellent introduction to HSEEP compliant exercises is FEMA's Emergency Management Institute's IS 120a, An Introduction to Exercises; IS-130, Exercise Evaluation and Improvement Planning; and IS 139, Exercise Design. These on-line independent study courses are highly recommended for those who intend to plan, conduct or participate in HSEEP exercises. Please refer to [Appendix A](#) for course website information.

Some basic principles for successful exercise planning and conduct include:

- Develop clear emergency plans that assign responsibilities during each stage of a response.
- Identify specific abilities needed to complete tasks associated with the operational plan or protocol.
- Implement effective training programs that support the abilities.
- Conduct exercises to meet specific PHEP requirements or alternatively, combine Level 3 activities in exercises planned for larger events.
- Start planning early, at least several months before the exercise.
- Keep it simple, especially when beginning development of exercises.
- Identify key people early and include them in planning, if possible.

## After Action

The following are recommended practices/actions to consider adopting for use after a training, exercise or drill:

- Send a participation certificate and a thank you note to the facilities that received training or participated in an exercise or drill.
- Distribute contact hour certificates and provide accreditation agency reports of training activities.
- Update facility contact and training schedule database. Enter contact information, training dates and other pertinent information concerning your program.
- Solicit laboratories for future drills and/or an exercise emphasizing that participation is essential to preparedness.

**NOTE:** ‘after action’ denotes a very specific AAR/IP (After Action Report/Improvement Plan) which is a fundamental and specific part of the HSEEP process – see above paragraph after “building block approach” diagram.

## Specimen Packaging and Shipping Exercise (SPaSE)

Every year the PHEP LRN-C awardees are required to participate in a Specimen Packaging and Shipping Exercise (SPaSE). This exercise is designed to demonstrate the awardees’ ability to properly transfer clinical specimens to the CDC. The exercise is graded based on the awardees’ ability to package and ship the specimens following the CDC’s guidelines.

Two documents found on the secure LRN website will be helpful in training and preparing for the SPaSE. The first document, Guidelines for SPaSE, provides information on how to register for an exercise, the sample requirements, shipping details, and other exercise information. The second document, Example SPaSE Evaluation Report, is an example exercise report providing details on exercise evaluation. While these documents provide information about the exercise and evaluation, they do not provide details for all aspects of specimen collection, packaging and shipping.

Information sheets on the public CDC-LRN website (<https://emergency.cdc.gov/chemical/lab.asp>) provide flow charts of specimen (blood and urine) collection, packaging, and shipping; instructions for shipping specimens to the CDC; shipping manifests; and other helpful information. The following documents on the public CDC-LRN website, as well as any others that might be recommended by the CDC or partner laboratories, are good documents with which to be familiar.

If you are instructed to ship your specimen to the CDC laboratory, follow the directions in these flowcharts:

- Instructions for Shipping Blood Specimens to CDC after a Chemical Event (<http://emergency.cdc.gov/labissues/pdf/chemspecimenshipping-blood1.pdf>)
- Instructions for Shipping Urine Specimens to CDC after a Chemical Event (<http://emergency.cdc.gov/labissues/pdf/chemspecimenshipping-urine1.pdf>)

You can find the required paperwork for urine and blood specimens below. Remember, blood tubes and urine cups cannot be shipped together in the same package.

- Chemical Exposure Blood Specimen Collection and Shipping Manifest (<http://emergency.cdc.gov/labissues/pdf/chemshippingform-blood.pdf>)
- Chemical Exposure Urine Specimen Collection and Shipping Manifest (<http://emergency.cdc.gov/labissues/pdf/chemshippingform-urine.pdf>)

## FAQ's for Level 3 Laboratories and First Responders

<b>Question</b>	<b>What is the public health laboratory's role in the LRN-C?</b>
<b>Answer</b>	<p>Public health laboratories are dependent on sentinel facilities or hospital laboratories to directly communicate with them during a chemical event and to properly label, collect and store patient specimens from potentially exposed individuals. Chain of custody begins with the facilities collecting patient specimens.</p> <p>LRN-C Level 3 laboratories are responsible for training, outreach, sample collection, and shipment. These laboratories assist in the development of coordinated response plans for the state and geographical regions. They assist with specimen collection by advising hospitals in clinical specimen collection, storage and shipment.</p> <p>LRN-C Level 2 laboratories are responsible for Level 3 activities and also perform analyses to detect chemical agents with moderate complexity such as cyanides, heavy metals, ricinine, volatile organic compounds, organophosphate nerve agents and tetramine. These laboratories may be requested to provide surge capacity analysis.</p> <p>Level 1 laboratories serve as surge-capacity laboratories for CDC, are able to detect not only the toxic chemical agents that Level 2 laboratories can detect but also can detect exposure to an expanded number of chemicals, including mustard agents, nerve agents, and other toxic industrial chemicals. Using unique high-throughput analysis capabilities, they expand CDC's ability to analyze large numbers of patient samples when responding to large-scale exposure incidents. Level 1 laboratories are also responsible for Level 3 activities.</p>
<b>Question</b>	<b>Who should be contacted in the event of a chemical threat?</b>
<b>Answer</b>	<p>State, territory, metropolitan and local public health laboratories should contact the CDC Emergency Operations Center (770.488.7100) and request to consult with the Division of Laboratory Services.</p> <p>Sentinel facilities, such as hospitals and first responders, may contact the poison control center, state epidemiologist, department of health, laboratory or a chemical threat coordinator. All chemical exposures should be reported to the regional poison center at 1.800.222.1222.</p>

Question	What specimens should be collected?
Answer	<p>Please see <a href="#">Appendix F</a>. <b>For the most recent version of this document and other related information, please follow this link and view related documents:</b>  <a href="http://emergency.cdc.gov/chemical/lab.asp">http://emergency.cdc.gov/chemical/lab.asp</a>.</p> <p><b>Whole Blood</b></p> <ul style="list-style-type: none"> <li>• Collect blood specimens from <b>adults only</b> unless you receive specific instruction from CDC to collect blood from pediatric patients.</li> <li>• All collection tubes for a single patient should be of the same lot number.*</li> <li>• Collect a minimum of 12 mL of whole blood.</li> <li>• Use three 4-mL or larger vacuum-fill only (unopened), non-gel, purple-top (EDTA) tubes.</li> <li>• Use four tubes if using 3-mL tubes.</li> <li>• Using indelible ink, mark each purple-top tube of blood in the order collected, e.g., # 1, # 2, # 3.</li> <li>• In addition, collect another blood specimen using one 3-mL or larger, vacuum-fill only (unopened), non-gel, green (sodium heparin or lithium heparin)- or gray-top tube (sodium fluoride/potassium oxalate).</li> <li>• Allow the tube to fill to its stated capacity.</li> <li>• Refrigerate specimen at 1–10 °C after collection.</li> <li>• <b>DO NOT FREEZE BLOOD SPECIMENS!</b></li> </ul> <p><b>Urine</b></p> <ul style="list-style-type: none"> <li>• Collect at least 40-60 mL from exposed and potentially exposed adults and children.</li> <li>• All urine cups should be of the same lot number (if possible).*</li> <li>• Use a sterile, screw-cap plastic container; do not overfill.</li> <li>• <b>Freeze urine specimen</b> as soon as possible to -70 °C or use dry ice.</li> <li>• If other than “clean catch”, note method of collection on the specimen cup, e.g., obtained by catheterization.</li> </ul> <p><b>*NOTE:</b></p> <ul style="list-style-type: none"> <li>• Blank cups and tubes must be included in the specimen shipping container!</li> <li>• For each lot number of tubes and urine cups used for collection, provide the following to be used as blanks for measuring background contamination: <ul style="list-style-type: none"> <li>–Two (2) empty, unopened purple-top tubes.</li> <li>–Two (2) empty, unopened green- or gray-top tubes.</li> <li>–Two (2) empty, unopened urine cups.</li> </ul> </li> </ul>

<b>Question</b>	<b>When should the specimens be collected?</b>
<b>Answer</b>	<p>Blood specimens should be collected as soon as a chemical exposure is realized.</p> <p>Ideally, urine specimens should be collected seven to eight hours post exposure (keeping in mind that the hospital may have to estimate the time of exposure).</p>
<b>Question</b>	<b>What are the forensic requirements for specimen collection and shipment?</b>
<b>Answer</b>	<p>A chain of custody form should be started with specimen collection. The specimen collector's initials and the collection date and time should be included on the specimen labels. All specimens should be stored in a secure location with restricted access.</p> <p>Evidence tape is critical in detecting/preventing tampering (see question "What are the packaging and shipping requirements").</p> <p>Forensic handling requirements of the specimens are extremely important since cases may require prosecution of perpetrators.</p>
<b>Question</b>	<b>What are the specimen labeling requirements?</b>
<b>Answer</b>	<p>Label specimens with labels generated by your facility and follow your facility's procedures for proper specimen labeling.</p> <p>In addition to unique patient identifiers, e.g., medical records number or specimen identification number, labels should convey the collector's initials, date and time of collection.</p> <p>If bar-coded labels are used, place the labels on blood tubes and urine cups so that when these containers are upright, the bar code looks like a ladder.</p>
<b>Question</b>	<b>What are the specimen temperature requirements?</b>
<b>Answer</b>	<p><b>Whole Blood</b> Refrigerate and keep specimens at 2–8°C at all times. Ship on cold packs.</p> <p><b>Urine</b> Freeze specimens immediately at -70°C or keep on dry ice. Ship using pelletized dry ice only!</p>

<b>Question</b>	<b>What are the packaging and shipping requirements?</b>
<b>Answer</b>	<p>Please see <a href="#">Appendix G</a> and <a href="#">H</a>. For the most recent version of these documents and other related information, please follow this link and view related documents: <a href="http://emergency.cdc.gov/chemical.lab.asp">http://emergency.cdc.gov/chemical.lab.asp</a>.</p> <p><b>Sentinel Laboratories</b> State specific requirements:</p> <p>Follow the state specific instructions in accordance with IATA and DOT shipping regulations and requirements for UN 3373 “Biological Substance, Category B” and UN 1845 Class 9 Miscellaneous hazardous materials.</p> <p>Secondary packaging must have its closure secured with a single strip of overlapping evidence tape initialed half on the packaging and half on the evidence tape by the person making the seal.</p> <p><b>Territory, Metropolitan, Local or State Public Health Laboratories</b> Follow the Centers for Disease Control and Prevention Shipping Instructions in accordance with IATA and DOT shipping regulations and requirements for UN 3373 “Biological Substance, Category B” and UN 1845 Class 9 Hazardous materials.</p>
<b>Question</b>	<b>Where do we ship the collected specimens?</b>
<b>Answer</b>	<p>Sentinel laboratories will ship specimens to their territory, metropolitan, local or state public health laboratory unless directed otherwise.</p> <p>State, territory, metropolitan and local public health laboratories will ship specimens to the Centers for Disease Control and Prevention (CDC) or to another LRN-C laboratory as directed by CDC.</p>

## Appendix A: Recommended Courses for the CT Coordinator

Courses	Host Organization	Contact Information
IS-100.b-Introduction to Incident Command System, ICS-100	FEMA or state training center	<a href="http://training.fema.gov/IS/NIMS.aspx">http://training.fema.gov/IS/NIMS.aspx</a>
IS-100.HCb-Introduction to the Incident Command System (ICS 100) for Healthcare/ Hospitals	FEMA or state training center	<a href="http://training.fema.gov/IS/NIMS.aspx">http://training.fema.gov/IS/NIMS.aspx</a>
IS-200.b-ICS for Single Resources and Initial Action Incidents	FEMA or state training center	<a href="http://training.fema.gov/IS/NIMS.aspx">http://training.fema.gov/IS/NIMS.aspx</a>
IS-200.HCa-Applying ICS to Healthcare Organizations	FEMA or state training center	<a href="http://training.fema.gov/IS/NIMS.aspx">http://training.fema.gov/IS/NIMS.aspx</a>
IS-700.a-National Incident Management System (NIMS) an Introduction	FEMA or state training center	<a href="http://training.fema.gov/IS/NIMS.aspx">http://training.fema.gov/IS/NIMS.aspx</a>
IS-701.a-MIMS Multiagency Coordination System (MACS) Course	FEMA or state training center	<a href="http://training.fema.gov/IS/NIMS.aspx">http://training.fema.gov/IS/NIMS.aspx</a>
IS-703.a-NIMS Resource Management	FEMA or state training center	<a href="http://training.fema.gov/IS/NIMS.aspx">http://training.fema.gov/IS/NIMS.aspx</a>
IS-706-NIMS-Intrastate Mutual Aid –An Introduction	FEMA or state training center	<a href="http://training.fema.gov/IS/NIMS.aspx">http://training.fema.gov/IS/NIMS.aspx</a>
IS-800.b-National Response Framework, An introduction	FEMA or state training center	<a href="http://training.fema.gov/IS/NIMS.aspx">http://training.fema.gov/IS/NIMS.aspx</a>
ICS-300-Intermediate ICS for Expanding Incidents	FEMA or state training center	<a href="http://training.fema.gov/IS/NIMS.aspx">http://training.fema.gov/IS/NIMS.aspx</a>
ICS-400-Advanced ICS	FEMA or state training center	<a href="http://training.fema.gov/IS/NIMS.aspx">http://training.fema.gov/IS/NIMS.aspx</a>
K146 Homeland Security Exercise and Evaluation Program (HSEEP) Training Course	FEMA or state training center	<a href="http://training.fema.gov/IS/NIMS.aspx">http://training.fema.gov/IS/NIMS.aspx</a>

## Appendix B: Training Program Accreditation

Massachusetts obtains credit for physicians, nurses, pharmacists, EMTs and laboratory staff. We have found that offering different credits for the course has doubled our participation rate. If you have any questions about accreditation, please contact Nicole Gethin at 617.983.6695 or [nicole.gethin@state.ma.us](mailto:nicole.gethin@state.ma.us). It should be noted that fees are sometimes associated with providing CEU.

### Continuing Education Units (CEU)/Continuing Medical Education (CME)

Physicians, nurses and pharmacists typically want obtain CEUs or CMEs.

#### Obtaining Accreditation

In many states, a Department of Public Health Bureau will contain a Continuing Medical Education Program that coordinates CEU/CME accreditation for training; for instance in Massachusetts the CME program falls under the Bureau of Infection Disease Prevention. To obtain this credit for training, the CME coordinator typically requires a completed application form, marketing brochure, program description, objectives, agenda and a list of presenters.

#### Issuing the Credit

It is important to know all of the requirements for issuing the CEU/CME. Prior to conducting the training, make sure the CME coordinator has issued the certificates and sign-in sheets. In Massachusetts, the CME coordinator is contacted one week prior to the training. After the training has occurred, the completed sign-in sheet is sent back to the CME coordinator so that the proper credits are put into their system for the training participants.

#### Special Requirements

Typically, the required CME verbiage is provided by the accreditation agency and should be used for marketing purposes:

**“For Physician CME (REQUIRED):**

The Bureau of Infectious Disease Prevention, Response and Services, Massachusetts Department of Public Health, designates this educational activity for a maximum of XX AMA PRA Category 1 Credit(s)<sup>™</sup>. Physicians should only claim the credit commensurate with the extent of their participation in the activity.”

### Office of Emergency Medical Service (OEMS) Credit

Emergency Medical Technicians prefer to earn OEMS credits.

#### Obtaining Accreditation

Most states have a continuing education section within their Emergency Medical Services Office that handles accreditation for training programs. To obtain this credit for Level 3 training, the OEMS requires a completed application form, marketing brochure, program description, objectives, agenda and a list of presenters.

#### Issuing the Credit

Be familiar with the requirements to issue OEMS credit. Contact the OEMS coordinator to issue the certificates and sign-in sheets prior to the training date. In Massachusetts, the OEMS coordinator is contacted one week prior to the training to obtain the blank certificates and a sign-in sheet; once the training is complete, the filled in sign-in sheet is sent back to the OEMS coordinator within five working days so that the credits that were issued to course participants are put into their system.

## American Society for Clinical Pathology (ASCP), Continuing Education Credit

Hospital laboratorians prefer to earn ASCP credit.

### Obtaining Accreditation

Contact the secretary of the American Society of Microbiology (ASM) and request the requirements for obtaining accreditation for the training program. The Northeast Branch requires that a copy of the training material be kept by the training laboratory for three years. The ASM will provide specific sign-in, evaluation and speaker information forms.

### Issuing the Credit

Be familiar with the requirements. Contact the ASM secretary to issue the certificates, sign-in sheets and evaluation forms prior to the training date. At the completion of the training, provide the ASM with the completed sign-in sheet, evaluations, speaker information forms and a list of all attendees, as well as a copy of the program showing each of the training dates so that the credits issued to course participants are put into the ASM system.

### Special Requirements

[Branch]-ASM must appear as a sponsor on each program that provides ASCP credits. The following phrase recommended by ASCP should appear in the training announcements:

“This continuing medical laboratory education activity is recognized by the American Society for Clinical Pathology as meeting the criteria for xxx of CMLE Credit. ASCP CMLE credit hours are acceptable to meeting the continuing education requirement for the ASCP Board of Registry Certification Maintenance Program.”

Michigan has credentialing mechanisms in place for most career paths. Training program maintenance of standards for quality and professional acceptability plus, the offer of continuing education contact hours for attendees, are just two of the reasons for seeking program accreditation. If you have any questions about program accreditation, email our Michigan contact at [mdhhsrab@michigan.gov](mailto:mdhhsrab@michigan.gov).

## P.A.C.E.<sup>®</sup>, Professional Acknowledgment for Continuing Education

In 1977, P.A.C.E.<sup>®</sup> was created to provide a mechanism for recording credits for clinical laboratory professionals earned by attending continuing education programs to maintain and enhance their competence. P.A.C.E.<sup>®</sup> is an administrative system established to act as a quality assurance mechanism for continuing education programs offered to clinical laboratory professionals by ASCLS (American Society for Clinical Laboratory Science) constituent societies, laboratory industry, government agencies, hospitals and educational organizations. This program has helped to maintain standards of quality and professional acceptability.

P.A.C.E.<sup>®</sup> offers contact hours as the basis for documentation of attendance, assures the approved activities meet the needs of the profession, conducts review and evaluation of approved providers and their programs for continual education activities.

### Obtaining Accreditation

The provider application and manual can be obtained through the American Society for Clinical Laboratory Science, 1861 International Drive, Suite 200, Tysons Corner, Virginia, 22102. Approved Provider Status for the P.A.C.E.<sup>®</sup> Program does not automatically indicate that an organization is approved to offer continuing education credits valid for licensure renewal for the licensees of

the states of California and Florida. Continuing education providers may seek California approval separately from P.A.C.E.<sup>®</sup>. For information on becoming an accredited agency for California, separate from the P.A.C.E.<sup>®</sup> Program, contact CA Department of Health Services, Laboratory Field Services – CE Office, at 510.620.3834 or visit their website <http://www.cdph.ca.gov/programs/lfs/Pages/default.aspx>. The Florida Board of Clinical Laboratory Personnel requires an application by each individual organization providing continuing education. To become an approved provider of continuing education for Florida, go to the website <http://floridasclinicallabs.gov/licensing/training-program/>.

### **Issuing the Credit**

A certificate of attendance or completion is given to a participant after a P.A.C.E.<sup>®</sup> approved program. P.A.C.E.<sup>®</sup> certificates must contain specific required elements as determined by the P.A.C.E.<sup>®</sup> program and must display a current provider P.A.C.E.<sup>®</sup> validation sticker.

## Appendix C: Example Training Flyer



# HOSPITAL RESPONSE TO CHEMICAL EMERGENCIES

A Massachusetts Department of Public Health  
Preparedness Initiative

**Date Offered:**

**Sessions Offered:**

**Location:**

Please see attached flyer for all available  
training dates and locations.

*Sponsored by:*

[Massachusetts Department of Public Health](#)

[Northeast Branch American Society  
for Microbiology](#)

[Poison Control Center of MA & RI](#)

This continuing medical laboratory education activity is recognized by the American Society for Clinical Pathology as meeting the criteria for **1.5** CMLE credit.

This program has been offered by the Bureau of Infectious Disease Prevention, Massachusetts Department of Public Health. A maximum of **1.5** contact hours for this program will be provided in accordance with the regulations governing continuing education requirements for the following Boards of Registration:

Board of Registration in Nursing (CMR 244 5.00),  
Board of Registration of Social Workers (258CMR  
31.00et seq),  
Board of Mental Health Professions (262CMR 7.00),  
Board of Certification of Health Officers (241CMR  
4.03),  
Board of Registration of Sanitarians (255CMR 5.02).

Pharmacists may receive up to **1.5** *AMA PRA  
Category 1 Credit*<sup>TM</sup> in accordance with  
247CMR 4.00.

EMT credits in the amount of **1.5** hours have  
been approved by the OEMS – #XXXXXX

Program funded by CDC Public Health Pre-  
paredness and Response for Bioterrorism  
#2U90TP116997-10

### **Who will benefit from this program?**

This program is designed for **health care providers, emergency medical professionals, and laboratory staff** who may provide patient care during a chemical emergency.

### **What is this program about?**

This program provides an overview of public health response, roles and procedures during a suspected or known chemical exposure event. An overview of signs and symptoms of, and treatment for chemical exposures will be discussed. Appropriate clinical specimen collection and shipping procedures during a chemical exposure event will be provided. The role of the Center for Disease Control and Prevention (CDC) and the William A. Hinton State Laboratory Institute will be highlighted.

### **Why is this training important?**

In an era of potentially threatening chemical emergencies, knowing when and how to respond is essential for health care clinicians, emergency medical responders and laboratory specialists.

### **Program Objectives**

At the conclusion of this program, participants should be able to:

- Identify their role, and the role of others, during a chemical exposure event
- Access contact information and available clinical resources
- Recognize the clinical signs and symptoms related to chemical exposure
- Properly collect, package and ship clinical samples for chemical analysis

### **Faculty:**

**Jennifer Jenner, Ph.D.,**  
Coordinator - Chemical Threat Response Laboratory,  
William A. Hinton State Laboratory Institute,  
MA Department of Public Health

**Nicole Clark, M.S.,**  
Assistant Coordinator - Chemical Threat Response Laboratory,  
William A. Hinton State Laboratory Institute,  
MA Department of Public Health

Registration is free, but space may be limited.

Please call (617) 983-6695 or  
email [Nicole.gethin@state.ma.us](mailto:Nicole.gethin@state.ma.us) to register.

**FREE Training Opportunity**

## Appendix D: List of Training Kit Materials Used by Other LRN-C Laboratories

### Michigan

We provide a kit for each sentinel entity after training. Our kit has two units, Chemical Threat Response and Shipping.

#### Our Chemical Threat Response unit contains:

File Tote w/Bonus Project Case
Label the File Tote with Chemical Threat Response Toolkit- sticker.
Manual, Training
Bag, Plastic, Ziploc, 10X12"
Directions, Chemical Terrorism
Kit order form
Label, Combination-UN3373-Biological Substance
Label, Combination, UN 3373, Dry Ice and Biological Substance
Jacket, Paper File
Form, Chain of Custody
Sharpie
BIC Round Stic Medium Point Ballpoint Pen
6 Grid Urine Box
Strip, absorbent 50ml
Strip, absorbent 100ml
Bag, Plastic, 4X8
Label, Absorbents for Urine, Blood
Kit, Foam Rack 40 place

#### Our Chemical Threat Response Shipper unit contains:

Ice, blue – 8 ounces
Packaging, Secondary – two part system biohazard bag and tyvek bag
Tape, Forensic Evidence
Tape, Package strapping/filament
Box, Corrugated, Overpack, with Styrofoam

Label the exterior of the shipping box with a CT Packaging Sticker.

## **Appendix E: Examples of Drills**

Ideas for exercises and drills can come from many well documented sources such as Homeland Security Exercise and Evaluation Plan (HSEEP). PHEP guidelines have specific targets for exercises and drills for each budget period. This document could act as a guide for target areas for your own drills.

Independent of established resources, below are some very simple drills that should test operational process preparedness for chemical event response.

- 1. Do you know where your chemical response kit is?**
- 2. Test your courier.**
- 3. Test specimen accessioning.**
- 4. Test telephone communication.**

# Appendix F: CDC Specimen-Collection Protocol for a Chemical-Exposure Event

From: <https://emergency.cdc.gov/chemical/lab.asp>

## CDC Specimen-Collection Protocol for a Chemical-Exposure Incident

See "Chemical Agents: Shipping Instructions for Specimens Collected from People who May Have Been Exposed to Chemical Agents" [http://emergency.cdc.gov/labissues/specimens\\_shipping\\_instructions.asp](http://emergency.cdc.gov/labissues/specimens_shipping_instructions.asp)

**Collect blood and urine samples for each person involved in the chemical-exposure incident.**

**Note: For children, collect only urine samples unless otherwise directed by CDC.**

### Blood-Sample Collection

For each person, collect blood in glass or plastic tubes in the following order: 1<sup>st</sup>: collect specimens in three (3) EDTA (purple-top) 4 mL or larger plastic or glass tubes; 2<sup>nd</sup>: collect another specimen in one (1) gray- or green-top tube. Collect the specimens by following the steps below:

- 1** Collect a minimum of 12 mL of blood in three (3) 4 mL or larger glass or plastic tubes. If using 3 mL tubes, use four tubes.



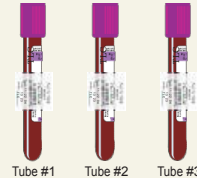
Do not use gel separators.

- 2** Mix contents of tubes by inverting them 5 or 6 times.



Label tubes in order of collection. #1, #2, #3

- 3** Place bar-coded labels on each tube, so that when the tubes are upright, the barcode looks like a ladder.



Store samples at 1°C to 10°C.  
Do not freeze.

- 4** After collecting samples in the purple-top tubes, collect one (1) sample in a gray- or green-top tube (gray-top tube shown). Allow the tube to fill to its stated capacity.



Do not use gel separators.

- 5** Mix contents of the tube by inverting it 5 or 6 times.



- 6** Place bar-coded labels on the tube, so that when the tube is upright, the barcode looks like a ladder.



Store samples at 1°C to 10°C.  
Do not freeze.

### Urine-Sample Collection

For each person, collect 40 mL- 60 mL of urine in a screw-cap urine cup.



Label the urine cup with the appropriate bar-coded label as shown. Indicate on the cup how the sample was collected if the method was other than "clean catch" (i.e., catheterization).

Freeze samples (optimally at -70°C).



Place bar-coded labels on all cups so that when the cup is upright, the barcode looks like a ladder.

09 / 2015



Department of Health and Human Services  
Centers for Disease Control and Prevention



# Appendix G: Instructions for Shipping Blood Specimens to CDC after a Chemical Exposure Event

From: <https://emergency.cdc.gov/chemical/lab.asp>

## Chemical Agents:

### Instructions for Shipping Blood Specimens to CDC after a Chemical Exposure Incident

Guidance in Accordance with Packaging Instructions International Air Transport Authority (IATA) 650 Biological Substance Category B. See "Chemical Agents: Shipping Instructions for Specimens Collected from People who May Have Been Exposed to Chemical Agents" [http://emergency.cdc.gov/labissues/specimens\\_shipping\\_instructions.asp](http://emergency.cdc.gov/labissues/specimens_shipping_instructions.asp)



Place purple- and gray- or green- top tubes by patient number into a gridded box lined with an absorbent pad.



Seal gridded box with one continuous piece of evidence tape. The individual making the seal must initial half on the tape and half on the packaging.



Wrap gridded box in absorbent pad and tape to seal. Seal gridded box inside a Saf-T-Pak clear inner, leak-proof polybag (or equivalent).



Place the sealed Saf-T-Pak inner leak-proof polybag (or equivalent) inside a white Tyvek® outer envelope (or equivalent).

**Note: Or equivalent packaging must meet USDOT Regulations (49 CFR 173.199) and IATA Packing Instruction 650 for transporting Biological Substance, Category B Specimens.**



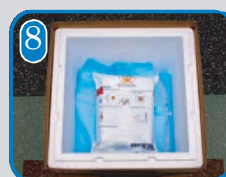
Seal the opening of this envelope with a continuous piece of evidence tape. Write initials half on the evidence tape and half on the envelope.



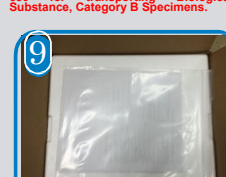
Use polystyrene foam-insulated, corrugated fiberboard shipper to ship boxes to CDC. Place absorbent material in the bottom of the shipper.



Place refrigerator packs in a single layer on top of the absorbent material.



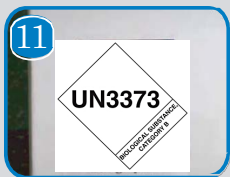
Place the packaged specimens in the shipper. Use cushioning material to minimize shifting while box is in transit. Place additional refrigerator packs on top of samples.



Place the blood shipping manifest in a sealable plastic bag and put on top of the Styrofoam lid of the shipper. Keep your chain-of-custody documents for your files.



Secure the shipper lid with filamentous shipping tape. Place your return address in the upper left-hand corner of the shipper top and put the CDC Laboratory receiving address in the center.



Add the UN 3373 label and the words "Biological Substance Category B" on the front of the shipper. UN 3373 is the code identifying the shipper's contents as "Biological Substance, Category B."



Send shipment via FedEx (or equivalent) to:  
Centers for Disease Control and Prevention  
CDC Warehouse  
3719 N. Peachtree Rd.  
Chamblee, GA 30341  
ATTN: Charley Sapp - (770) 488-0343

For questions concerning this process, please contact:

Centers for Disease Control and Prevention  
Attn: Charley Sapp  
(770) 488-0343



U.S. Department of  
Health and Human Services  
Centers for Disease  
Control and Prevention

# Appendix H: Instructions for Shipping Urine Specimens to CDC After a Chemical Exposure Event

From: <https://emergency.cdc.gov/chemical/lab.asp>

## Chemical Agents: Instructions for Shipping Urine Specimens to CDC after a Chemical Exposure Incident

Guidance in Accordance with Packaging Instructions International Air Transport Authority (IATA) 650 Biological Substance Category B. See "Chemical Agents: Shipping Instructions for Specimens Collected from People who May Have Been Exposed to Chemical Agents" [http://emergency.cdc.gov/labissues/specimens\\_shipping\\_instructions.asp](http://emergency.cdc.gov/labissues/specimens_shipping_instructions.asp)



Place urine cups in a gridded box lined with absorbent material, or alternatively place each cup inside a leak-proof biohazard polybag (or equivalent) and then place wrapped urine cups into a box.



Use one continuous piece of evidence tape to seal the gridded box or the box containing wrapped urine cups. Write initials half on the evidence tape and half on the box.



Wrap the box with absorbent material and secure with tape. Seal the box inside a Saf-T-Pak inner leak-proof polybag (or equivalent).



Place the sealed Saf-T-Pak inner leak-proof polybag (or equivalent) inside a white Tyvek® outer envelope (or equivalent).



Seal the opening of this envelope with a continuous piece of evidence tape. Write initials half on the evidence tape and half on the envelope.

**Note: Or equivalent packaging must meet USDOT Regulations (49 CFR 173.199) and IATA Packing Instruction 650 for transporting Biological Substance, Category B Specimens.**



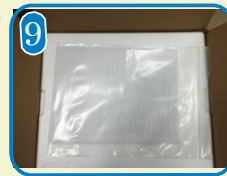
Use polystyrene foam-insulated, corrugated fiberboard shipper to ship boxes to CDC. Place absorbent pad in the bottom of the shipper.



Place a layer of dry ice in the bottom of the shipper on top of the absorbent material. **DO NOT** use large chunks or flakes of dry ice.



Place the packaged urine cups in the shipper. Use absorbent material or cushioning material to minimize shifting while box is in transit. Place additional dry ice on top of samples.



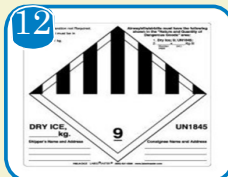
Place the urine shipping manifest in a sealable plastic bag and put on top of the styrofoam lid of the shipper. **Keep your chain-of-custody documents for your files.**



Secure the outer container lid with filamentous shipping tape. Place your return address in the upper left-hand corner of the shipper top and put the CDC Laboratory receiving address in the center.



Add the UN 3373 label and the words "Biological Substance Category B" on the front of the shipper. UN 3373 is the code identifying the shipper's contents as "Biological Substance, Category B."



Place a Class 9/UN 1845 label on the front of the shipper. This label for dry ice **MUST** indicate the weight of dry ice (in kg) in the shipper and the proper name (either dry ice or carbon dioxide, solid).



**Send shipment via FedEx (or equivalent) to:  
Centers for Disease Control and Prevention  
CDC Warehouse  
3719 N. Peachtree Rd.  
Chamblee, GA 30341  
ATTN: Chariety Sapp - (770) 488-0343**

**For questions concerning this process, please contact:**  
Centers for Disease Control and Prevention  
Attn: Chariety Sapp  
(770) 488-0343



## **Appendix I: Access to CDC's LRN Website and Results Messenger**

### **LRN Website**

CDC's LRN website is a secure private access website that contains various information including previous conference call presentations, QC material information, method information, program information and other documents. This website is also the location for maintaining your inventory of QC materials and where reports sent from the LRN Program staff to the member laboratories can be found.

### **Access to LRN Website**

1. Go to the Laboratory Response Network website (obtain a URL from a supervisor or coworkers at your laboratory).
  - If a supervisor or a coworker does not have a copy of the URL, contact a partner jurisdiction CT coordinator or the LRN Program staff.
2. Click on the "Request Access to the LRN Website" link.
3. Obtain a facility code from your supervisor or use the facility name option.
4. Complete the information requested in the form and click "Register."
5. A request will be sent to the CDC and to someone in your agency (e.g., director) for approval.
6. When approval is granted a notification will be received with the temporary password.

### **Results Messenger**

Results Messenger is the site used to upload results from PTs, material characterizations, surge exercises and other functions that are to be sent to the LRN. Training on results messenger is offered on a regular basis by the CDC.

### **Access to Results Messenger**

1. Ask your supervisor for access to Results Messenger.
2. Either your supervisor or someone else in your agency will have administrative permissions which allows them to grant staff access to Results Messenger.
3. Once permission is granted, obtain the URL and password from your supervisor.
4. If your agency does not have a Results Messenger training procedure check with the CDC for their next available training session.
5. Note: administrators cannot review data in Results Messenger.

## Appendix J: Important Acronyms

AAR	after action report
AAR/IP	after action report/improvement plan
AMA	American Medical Association
APHL	Association of Public Health Laboratories
ASCLS	American Society for Clinical Laboratory Science
ASCP	American Society for Clinical Pathology
ASM	American Society of Microbiology
BT	bioterrorism
CBRNE	chemical, biological, radiological, nuclear and explosive
C	Celsius
CA	California
CDC	Centers for Disease Control and Prevention
CEU	continuing education units
CME	continuing medical education
CMLE	continuing medical laboratory education
CT	chemical threat
DLN	Department of Defense Laboratory Network
DOT	Department of Transportation
EMT	Emergency Medical Technician
EDTA	ethylenediaminetetraacetic acid
EPA	Environmental Protection Agency
ERLN	Environmental Response Laboratory Network
FAQ	frequently asked questions
FBI	Federal Bureau of Investigation
FDA	Food and Drug Administration
FEMA	Federal Emergency Management Agency
FERN	Food Emergency Response Network
HSEEP	Homeland Security Exercise and Evaluation Program
IATA	International Air Transport Association
ICLN	Integrated Consortium of Laboratory Networks
ICS	incident command system
kg	kilograms
LRN	Laboratory Response Network
LRN-B	Laboratory Response Network for Biological Terrorism

LRN-C	Laboratory Response Network for Chemical Threats
MACS	multiagency coordination system
mL	milliliter
MOU	memorandum of understanding
OEMS	Office of Emergency Medical Service
NAHLN	National Animal Health Laboratory Network
NIMS	National Incident Management System
NPDN	National Plant Diagnostic Network
P.A.C.E.®	Professional Acknowledgment for Continuing Education
PHD	public health department
PHEP	Public Health Emergency Preparedness
PRA	Physician's Recognition Award
PT	proficiency testing
SPaSE	Specimen Packaging and Shipping Exercise
UN	United Nations
URL	uniform resource locator
US	United States
USDA	United States Department of Agriculture

# Notes

# Notes

## **Association of Public Health Laboratories**

The Association of Public Health Laboratories (APHL) works to strengthen laboratory systems serving the public's health in the US and globally. APHL's member laboratories protect the public's health by monitoring and detecting infectious and foodborne diseases, environmental contaminants, terrorist agents, genetic disorders in newborns and other diverse health threats.

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