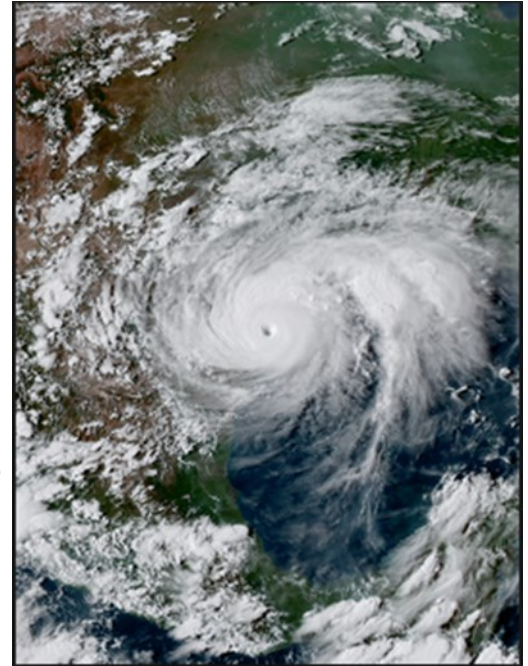




EMERGENCY MANAGEMENT FOR THE LABORATORY

Stephen White, MS, MLS(ASCP)*

On the evening of August 25, 2017 Hurricane Harvey hit the coast of Texas as a Category 4 storm. This storm unleashed an estimated 19 trillion gallons of rain over southeast Texas, with one jurisdiction recording almost 52 inches of rain. Over 30,000 people sought refuge at shelters. It has been estimated that the price of this storm could be as high as \$190 billion.¹



On September 7, 2017, a Category 5 hurricane, Irma, reached the Lesser Antilles, including the U.S. territories of Puerto Rico and the Virgin Islands, crossed the Greater Antilles and made landfall in south Florida on September 10, 2017 as a Category 4. Irma’s hurricane-force winds and related storm surges caused substantial damage in the Caribbean and Florida. Many areas in Texas, Louisiana, Florida, Georgia, South Carolina and the U.S. territories affected by these storms are still experiencing disruptions in essential services, including

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Special Points of Interest:

- **Sentinel Laboratory Guidelines have Updated**

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electricity, potable water, food and communications. Numerous health care and public health systems sustained damage. Environmental health impacts from the hurricanes included effects on industries, chemical plants and hazardous waste sites. Many displaced persons remain in temporary housing.²

The devastation caused by Hurricanes Harvey and Irma is a stark reminder that we must be prepared for potential disasters. According to the Federal Emergency Management Agency (FEMA), there are four phases of emergency management, each of which are closely related: mitigation, preparedness, response and recovery. Many larger laboratory systems have an individual or a group devoted to emergency preparedness, but some smaller laboratories may not. Regardless, as laboratorians, supervisors, managers and directors, we have an important role in providing input into these preparations and, ultimately, maintaining the services we offer during times of emergency.

Mitigation. Mitigation is defined as taking sustained actions to reduce or eliminate risk to people and property from hazards.³ Simply put, these are the long term safeguards the laboratory puts in place that minimize or reduce the effect of a disaster. These activities take place before or after emergencies. For a clinical laboratory, this can include things like hardening the building to withstand hurricane force winds, installing doors or systems to control the entry of flood waters, or installing or elevating a backup generator to maintain power during extended power outages. A hospital system in Houston, Texas installed a floodgate system that largely protected its campus from the flooding caused by Hurricane Harvey.⁴ Of course, many of these actions can be costly and time consuming, necessitating they be carried out well before such an event. For example, the floodgate system in Houston had a price tag of more than \$50 million.



Preparedness. Similar to the mitigation phase, the preparedness phase is the process of developing plans and taking action to ready the laboratory for a disaster. The laboratory should perform a risk assessment to determine what facilities and resources could be affected by a variety of disasters. Laboratories should also examine what services could be disrupted and determine which services are critical to maintain or bring back online as soon as possible. Based on this assessment, the

laboratory can develop internal plans and procedures to counteract these potential effects. These plans should be drilled regularly to ensure staff members are familiar with their roles and responsibilities and that there are no unidentified gaps. If you are developing these plans for your laboratory, perform some thought experiments and try to break your plans to make them stronger. It is critical to ensure that these

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EMERGENCY MANAGEMENT FOR THE LABORATORY (CONTINUED)



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plans are updated regularly; facilities change, new staff members join, and hazards evolve - all potentially necessitating updates to your plans.⁵

The preparedness phase also includes actions to prepare for an anticipated disaster. Of course, Florida is no stranger to the threat of hurricanes. As a tropical system approaches, we fill up our cars with gas, stock up on food and water, and shutter our windows. The same is true for the laboratory. Things for the laboratory to consider include unplugging and covering instruments, securing hazardous or reactive chemicals and biological agents, moving critical reagents to refrigerators and freezers that are on a backup generator or have a built-in battery, relocating supplies to a higher floor, and backing up the laboratory information management system. It is also critical to consider your staff during this time. Does the laboratory have a place for staff members to stay, if needed? Is food and water available? How do you maintain communication with your employees in times of a disaster?⁶

Response. Following a disaster, the response phase is entered. In this phase, emergency operations to save lives and property are conducted. Of course, the type of response is largely dependent on the type and scale of the disaster experienced. Internal disasters, such as a fire or explosion, warrant an immediate response by the laboratory. This could include using a fire extinguisher to control a small fire or simply evacuating the laboratory. For larger, external disasters, you may play a vital role in the larger response of the community. Re-establishing testing services that are critical to your institution's mission, such as typing and cross-matching for the emergency department, may be part of the laboratory's immediate response to an external disaster. Laboratory staff may also be temporarily reassigned to other departments if additional manpower is needed. In large disasters, the laboratory would also likely play a role in public health. In the weeks immediately following Hurricane Katrina,



evacuees and rescue workers were diagnosed with respiratory, diarrheal, and skin infections.^{7,8} Effective clinical diagnosis and public health surveillance relies heavily on the testing that the laboratory provides.

Recovery. Once the situation has been stabilized and the threat to life and property has diminished, the recovery phase is entered. During this phase, the laboratory's goal is to safely return to normal operations. During the recovery phase,

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the laboratory must assess the disaster's effects on the laboratory. Is the facility safe to enter? Were any instruments destroyed? Did refrigerators and freezers maintain temperature or is there a question of integrity? It may be helpful to contact your vendors to see what assistance they can offer with instruments and supplies. If damage is severe enough, such as during an extensive facility fire, the laboratory may need to work with other laboratories to provide diagnostic services.

Understanding the four phases of emergency management is helpful for laboratories as they prepare and respond to emergencies. It is impossible to create a response plan for every single scenario and the points above are merely a starting point, but the laboratory should have plans and preparations for those disasters it is most likely to encounter. These should also be flexible enough to handle elements that were not originally accounted for. Laboratories are encouraged to seek further guidance from their institution, accrediting organization, or other national organizations, such as the Clinical and Laboratory Standards Institute.

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The American Society for Microbiology (ASM) Sentinel Level Clinical Laboratory Guidelines for Suspected Agents of Bioterrorism and Emerging Infectious Diseases for *Bacillus anthracis* was revised August 2017 to include *Bacillus cereus* biovar *anthracis*. Please update your reference binders.

In coordination with CDC and the Association of Public Health Laboratories (APHL), the ASM has updated protocols designed to offer Laboratory Response Network (LRN) Sentinel Level Clinical Laboratories standardized, practical methods and techniques to rule out microorganisms suspected as agents of bioterrorism, or to refer specimens to public health laboratories for confirmation.

The current edition is compliant with the Clinical Laboratory Standards Institute (CLSI) format based on current information and recommendations of the APHL Sentinel Laboratory Partnerships and Outreach Subcommittee. These protocols reflect the standard practices for specimen processing as well as agent specific guidance. In addition to promoting standardization and uniformity of testing, adherence to, and maintaining the highest level of safety practices is emphasized in the respective protocols. Updated guidelines can be found at the ASM website: <http://www.asm.org/index.php/science-skills-in-the-lab/sentinel-guidelines>.



BIOSAFETY RISK ASSESSMENT AND LAB BIOSAFETY TRAINING



The Bureau of Public Health Laboratories biosafety outreach officers (BOOs) are currently offering a course in biosafety risk assessment and laboratory biosafety to clinical laboratory institutions. The training consists of two sessions that are approximately one hour each and offered on-site at no charge to the facility. The first session discusses biosafety risk assessment and the second session focuses on biosafety in the clinical laboratory.

Biosafety risk assessment is a systematic process of evaluating the potential risks involved in a laboratory procedure and determining the measures needed to manage any gaps or risks identified. The BOOs have created standard operating procedures and resource documents to assist clinical hospital laboratories in biosafety risk assessment and laboratory biosafety. This session will train clinical laboratory personnel how to use these documents to perform risk assessments in their laboratory.

The second session is for anyone who works in the laboratory or is responsible for a safe working environment. Topics include general laboratory biosafety, the use of biological safety cabinets (BSCs), choosing correct personal protective equipment, proper use and removal of gloves, and spill cleanup. This training awards Florida clinical laboratory and nursing continuing education credits.

For more information or to schedule training, contact Ed Kopp at 813-233-2260 (Edgar.Kopp@flhealth.gov) or Lylah Seaton at 904-791-1569



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Editor - Betty Wheeler

The CT laboratory coordinators continue to reach out to the health and medical community by offering training for CT preparedness at hospitals and county health departments (CHDs). This training covers chemical terrorism awareness and the collection of clinical specimens after a chemical terrorism event. Hospital and CHD staff play an important role in the response to a chemical exposure event when clinical specimens are collected for analysis. For your convenience and to increase participation, this training can be presented at your facility. Each course lasts approximately one hour with one 15-minute break between courses. Florida clinical laboratory and nursing continuing education credits will be offered. Training manuals, “hands-on” exercise materials, and CT preparedness kits will be provided. This training is recommended for physicians, nurses, epidemiologists, emergency department personnel, phlebotomists, hospital and health department laboratory personnel and others who may collect clinical specimens. Contact the CT laboratory coordinators in your region for more information (see the Bureau of Public Health Laboratories Directory for contact information).

LABORATORY RESPONSE NETWORK (LRN) TRAINING—BIOLOGICAL DEFENSE

The Bureau of Public Health Laboratories is currently offering an LRN sentinel laboratory training course at no cost to you at your facility. This training follows the American Society for Microbiology (ASM) Sentinel Level Clinical Laboratory Protocols for Suspected Biological Threat Agents and Emerging Infectious Diseases. Scheduling the training at your facility is a relatively easy process. Determine when you would like to have the training and how many people will be attending. A time will be set up that is convenient for all. The training materials are provided, as well as the biodefense reference manuals for your laboratory.

The training syllabus includes: 1) an overview of the LRN; 2) the ASM protocols for ruling out potential bioterrorism agents and how to refer a sample to the state LRN Public Health Reference Laboratory when a bioterrorism agent cannot be ruled out; 3) the role of the sentinel laboratory in responding to pandemic influenza; 4) a brief introduction to packaging and shipping of infectious substances; 5) an introduction to the CDC Select Agent Program; and 6) the College of American Pathologists Laboratory Preparedness Exercise (CAP LPX).

This class awards Florida clinical laboratory continuing education credits based on five hours of instruction. Please contact Betty Wheeler at 904-791-1568 (Betty.Wheeler@FLhealth.gov) to schedule a class for your facility.

**FLORIDA DEPARTMENT OF HEALTH
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