Blister Agent Tabletop Exercise

Tabletop Exercise
Jurisdiction/Coalition Name
Exercise Date

Situation Manual

ADMINISTRATIVE HANDLING INSTRUCTIONS

1. The title of this document is the *2023 Radiation Injury Treatment Network (RITN) Blister Agent Tabletop Exercise Situation Manual (SITMAN).*

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General Information

Purpose and Scope

The purpose of this tabletop exercise (TTX) is to examine the collective response of a healthcare coalition (HCC) to a blister agent scenario. *HCCs should be expected to address elements of their Chemical Annex during this exercise*, with particular emphasis on pre-hospital coordination, medical surge of chemical exposures, and the roles of public health and emergency management in supporting the healthcare system.

The scope of this exercise is relevant for any HCC and includes considerations for *hospitals, public health, emergency management, and emergency medical services (EMS).*

Exercise Objectives

1. HCCs can discuss *initial/preparatory actions* following awareness of a chemical mass casualty incident.
2. Public Health and Emergency Management can articulate their role in supporting hospitals during a chemical response, to include *provision of guidance, population monitoring, and available resources*.
3. Hospitals can identify *decompression and expansion* needs to accommodate a surge of chemical injuries.
4. Hospitals can address capabilities to *triage and care for chemical injuries* and discuss the process for transferring patients for appropriate levels of care.

Assumptions

In any exercise, assumptions and artificialities may be necessary to complete play in the time allotted and/or account for logistical limitations. Exercise participants should accept that assumptions and artificialities are inherent in any exercise, and should not allow these considerations to negatively impact their participation. During this exercise, the following apply:

- The exercise scenario is plausible, and events occur as they are presented.
- Many people will be contaminated only on their clothing, not directly on their skin. Expedient decontamination (i.e., clothing removal and heavy water spray before the

agent can penetrate through to the skin) will reduce contamination below the injury threshold for half of those exposed. *Since decontamination of skin and eyes must occur within 1 to 2 minutes in order to significantly reduce tissue damage, decontamination will not play a significant role in reducing injuries to those exposed on the skin or eyes.*

- No known antidote exists for Sulfur Mustard exposure. *Treatment consists of removing Sulfur Mustard from the body as soon as possible and providing supportive medical care in a hospital setting or by trained emergency personnel*.
- Treatment consists of removing Lewisite from the body as soon as possible and providing supportive medical care in a hospital setting. *An antidote for Lewisite (British Anti-Lewisite [BAL; dimercaprol])is available and is most useful if given as soon as possible after exposure*.
- Mustard-lewisite has properties of both sulfur mustard and lewisite. It causes blisters (is a vesicant) and binds to DNA and damages rapidly dividing cells (is an alkylating agent). *The alkylating properties of mustard-lewisite make it particularly toxic to the blood-forming tissues (e.g., the bone marrow).*
- Whole-body (systemic) absorption of mustard-lewisite mixture may result in bone marrow suppression and an increased risk for fatal complicating infections.
- The rate of detoxification of mustard-lewisite in the body is very slow, and repeated exposure is likely to cause a build-up of the agent in the body.

Additional Considerations and Artificialities

- Participants are asked to accept the details of the scenario, even if they believe that events would not necessarily unfold as outlined. The scenario is merely a tool to facilitate achievement of the exercise objectives by the group**.** Furthermore, the scenario is not intended to be comprehensive, since a number of operational response issues will not be addressed during this exercise.
- The exact timing of the exercise may not correspond to the timing of events as they would actually occur. There are jumps in time to meet all objectives in this scenario.
- The exercise is conducted in a no fault, learning environment wherein capabilities, plans, systems, and processes will be evaluated.

- Decisions are not precedent setting and may not reflect an organization's final position on a given issue.

Roles and Responsibilities

Players: Players will operationally respond to the situation presented and discuss tactics and strategy based on expert knowledge of response procedures, current plans and procedures, and insights derived from training and experience. Players should be familiar with hospital and health care coalition emergency response plans, medical surge plans, and incident specific annexes.

Facilitator: The facilitator will plan and manage exercise play, set up and operate the exercise site, and act in the roles of organizations or individuals that are not playing in the exercise. Facilitators direct the pace of the exercise, provide key data to players, and may prompt or initiate certain player actions to ensure exercise continuity. In addition, they issue exercise material to players as required, monitor the exercise timeline, and supervise the safety of all exercise participants.

Evaluators. Evaluators observe and document performance against established capability targets and critical tasks, in accordance with the Exercise Evaluation Guides (EEGs).

Exercise Structure

Exercise Format

The exercise theater of play is primarily at each participating Health Care Coalition member's facility as well as the public health department, emergency management agency, and other response partners, as appropriate. **It is assumed that healthcare partners at a minimum, will activate their respective incident command groups in their command centers** in addition to any other personnel who will be participating in information sharing, resource coordination, and patient surge.

Health Care Coalition exercise players should follow the exercise agenda and either utilize the exercise slides to present and facilitate the exercise modules and tasks or can utilize the pre-recorded video for facilitation. Each individual hospital should assign evaluators to record observations and metrics using the Exercise Evaluation Guides (EEGs). These can be found as hardcopy PDF EEGs in the exercise materials. Each Health Care Coalition should consolidate the evaluation metrics into a single coalition level After Action Report (AAR) for the exercise. Facility level EEGs can be utilized to create an AAR for that specific organization (e.g., single hospital).

Player Instructions

Before the exercise:

- Review relevant emergency response, medical surge, or incident specific plans
- Ensure access to collaboration websites, conference lines, and contact lists
- Evaluators print or electronically access the EEG for the appropriate venue that you are evaluating. Review these in advance of the exercise to become familiar with the tasks.

During the exercise:

- The exercise will take place at individual facilities and appropriate spaces within each facility to coordinate response to certain tasks. All questions and tasks should be addressed on a discussion-basis.
- Respond to the exercise events and information as if the response were real unless otherwise directed by the exercise facilitator.

- Obtain other necessary information through existing emergency information channels.
- Recognize this exercise has objectives to meet and may require incorporation of unrealistic aspects (i.e., portions of the scenario may seem implausible). Note that every effort has been made to balance realism with an effective learning and evaluation environment.
- Document all exercise participants on a **sign-in sheet** for use in the After-Action Report.

Following the exercise:

- Participate in the exercise hot wash which is recommended to occur immediately following the conclusion of the exercise and will be facilitated by the exercise Controller.

Safety Considerations

General. Exercise participant safety takes priority over exercise events. All participating entities share the basic responsibility for ensuring a safe environment for all personnel involved in the exercise. Professional health and safety ethics should guide all participants to operate in their assigned roles in the safest manner possible. The following requirements apply to the exercise:

- Assign a Safety Officer for the exercise.
    - A Safety Officer is responsible for participant safety; any safety concerns must be immediately reported to the Safety Officer. A Safety Officer should be designated for each facility/theater of play. An individual facility Safety Officer will coordinate with the Exercise Director to determine if a real-world emergency warrants a pause in exercise play and when exercise play can be resumed.
- All exercise controllers and evaluators will serve as safety observers while the exercise activities are underway. Anyone who observes a participant who is seriously ill or injured will immediately notify emergency services and the closest controller, and, within reason and training, render aid.
- Participants are responsible for their own and each other's safety during the exercise. It is the responsibility of all persons associated with the exercise to stop play if, in their opinion, a real safety problem exists. Once the problem has been corrected, exercise play will resume.

- All entities will comply with their respective environmental, health, and safety plans and procedures, as well as the appropriate Federal, State, and local environmental health and safety regulations.

Real Emergency Procedures. For an emergency that requires assistance, the phrase will be *"Real-World Emergency"* and appropriate actions according to the rules, regulations, and policies of that facility apply and will be taken. If the nature of the emergency requires a suspension of the exercise, the on-site controller will immediately halt all exercise activities. Exercise play may resume once the *"Real-World Emergency"* situation has been addressed. Exercise play at other participating hospitals and facilities should not cease if one facility has declared a *"Real-World Emergency"* unless they are reliant on the affected facility. If a real emergency occurs that affects the entire exercise, the exercise may be suspended or terminated at the discretion of the exercise planning team and all facilitators will be notified to suspend or terminate exercise play.

Exercise Schedule

Time	Item
9:00 AM	Introductions, Overview, Instructions
9:15 AM	Module 1: Pre-hospital Actions
10:00 AM	Module 2: Patient Surge
10:45 AM	Module 3: Resources and Transfers
11:30 AM	Hot Wash
12:00 PM	Adjourn

****This agenda above is using a 9:00 AM start time as an example. Please adjust accordingly based on your start time.*

EXERCISE SCENARIO

- A domestic terror cell has been able to acquire 18 gallons of agent Yellow (*a 50/50 blend of blister agents Sulfur Mustard and Lewisite*).
- Members of the terror cell conduct a *covert operation at a local outdoor concert* where they utilize an *aerial drone* with an 18-gallon capacity to circle the concert grounds for 5 minutes from about 120 feet above to disseminate the agent Yellow.
- The agent *Yellow is released over a crowd of 5,000 people*. The mildly warm temperature along with a light breeze aided an effective release.
- Many participants begin to feel the effects of the exposure within minutes with some experiencing respiratory distress and burning eyes. Venue security and EMS decide to end the event and evacuate. The HAZMAT team has been notified and are enroute. *The scene is considered a mass casualty incident and multiple transports to local hospitals should be expected*.

EXERCISE TASKS

Module 1: Pre-Hospital Actions

Scenario Update:

- The concert was ended with event officials calling for an immediate evacuation. Many people self-evacuated and in the chaos, there were multiple trampling and crush injuries in addition to the chemical exposures.
- EMS has arrived and has begun the process of patient triage and transport. Many victims can be seen loaded into cars and pickups by good Samaritans to take them directly to local hospitals.
- Initial scene assessment indicate that an overwhelming amount of people may report to local hospitals. In addition, "worried-well" should be expected.
- Fire/HAZMAT has arrived on the scene and identified the agent released as a mixture of Lewisite and Mustard (agent Yellow).

Public Safety Questions:

1. Does your Fire/HAZMAT/EMS department have the capability to provide victim decontamination at the scene?
   - How long would this take to begin?
   - What is the process and throughput?
   - What type of personal protective equipment (PPE) is required for this decontamination?
2. Describe the medical control at the scene.
   - What considerations need to be made for transporting victims exposed to agent Yellow? Are there concerns of ambulance contamination?
   - What is the patient distribution strategy? To what facilities will they primarily be sent?
   - How does EMS coordinate from the scene with hospitals?

3. What is the role of emergency management at this point in this chemical incident?
4. What is the role of public health at this point in this chemical incident?

Hospital Questions:

1. Does your hospital address the threat and impact of a chemical incident in your annual Hazard Vulnerability Analysis (HVA)? How does a chemical incident rank in your HVA?
2. What are your team's initial priorities and objectives for this incident?
3. How will your team organize for this incident (i.e., as if this were a real incident)?
   - Does your team have access to medical specialists such as toxicologists or chemical experts?
4. Given that patients may have not been decontaminated at the scene, what are the hospital's decontamination capabilities? Who conducts the decontamination? How long would it take to setup? What is the throughput?
   - What specific considerations for Mustard and Lewisite need to be taken into account for decontamination?
   - What type of PPE is necessary for this type of decontamination?
   - Does the HCC or hospital have test strips that can be used to measure decontamination?
5. Are there specific units or patient care departments that can be decompressed to make room for high acuity patients?

Module 2: Patient Surge

Scenario Update:

- Your hospital has steadily been receiving patients for the past 60 minutes. As a result, the emergency department is immediately overwhelmed. Patients are arriving as a mix of EMS transports and self-transports.
  - While there will be immediate patient arrivals, given that some symptoms may not present until several hours later, your hospital is expected to surge with patients for at least the next 24 hours. Many of the patients went home and to other areas before going to the hospital, potentially contaminating those areas.
- Most of the patients were at the concert and are complaining of upper respiratory difficulty, burning eyes, runny noses, and difficulty with vision. Some, more severe patients are convulsing. Some are reporting with lesions from Lewisite exposure.
- The word of the agent Yellow release has spread widely. As a result, dozens of "worried well" in neighborhoods adjacent to the concert venue have arrived at your hospital.

Hospitals:

1. Would your hospital confer with the Poison Control Center (PCC) in your jurisdiction? In this scenario, what informational requests would you have for your PCC?
2. Does your hospital have access to a medical toxicologist? How would they be utilized in this scenario?
3. What are the most effective courses of treatment for Mustard and Lewisite?
4. How would your hospital treat the more severe (e.g., convulsing) patients while balancing the need for decontamination?
5. Would your hospital establish any type of forward triage or alternate care area for this incident? Describe.
   - Would the HCC or jurisdiction establish any type of centralized alternate care?
6. What could your hospital and HCC do to ease the impact of the "worried well" on emergency department surge?

7. Does the health department or HCC have access to any supplies or caches to respond to a chemical incident?
8. What role does the health department or emergency management agency play in addressing cross-contamination of the agent in the home and other areas?
9. Does your HCC have any Chempacks? If yes, are those contents of the Chempack applicable in this scenario?

Module 3: Resources and Transfers

Scenario Update:

- All hospitals in your HCC have surged from this incident with patients exposed to agent Yellow. There is one hospital in the HCC that does not have a decontamination capability. As a result, they have made a resource request for decontamination support.
- Your hospital has received and *admitted a volume of patients (see chart to the right)* that are considered "severe" and will require close medical management for Mustard and Lewisite poisoning.
- Many people are showing up at the hospital looking for their family members who were at the concert. The hospital switchboards are also becoming overwhelmed with inquiries.

Size Hospital	Amount of patients
Small (<100 beds)	10
Medium (100-499 beds)	20
Large (500 or more beds)	40

Hospitals:

1. How can the HCC coordinate the need for decontamination support at a hospital that doesn't have that capability?
2. What other resources do Emergency Management and Public Health have that can support the HCC in a chemical incident such as this?
3. Are there any needs for long-term population monitoring for chemical victims such as in this scenario? What is the process?
4. Can your hospital accommodate the volume of patients for admission?
   - If yes, to what units would they be admitted?
   - If no, what options exist for transferring those patients out?
5. Does the HCC or EMA have any plans or resources to support family reunification in this scenario?
   - What resources are available?

– Who is the lead agency?

Learn More About RITN

ACRONYMS

Acronym	Meaning
BAL	British Anti-Lewisite
CDC	Centers for Disease Control and Prevention
EEG	Exercise Evaluation Guide
EMA	Emergency Management Agency
EMS	Emergency Medical Services
HCC	Healthcare Coalition
HHS	Health and Human Services
HVA	Hazard Vulnerability Analysis
IND	Improvised Nuclear Device
NDMS	National Disaster Medical System
NMDP	National Marrow Donor Program
PCC	Poison Control Center
PPE	Personal Protective Equipment
RITN	Radiation Injury Treatment Network
SITMAN	Situation Manual
SME	Subject Matter Expert

SULFUR MUSTARD (CDC)

https://www.cdc.gov/chemicalemergencies/factsheets/sulfur-mustard-mustard-gas.html
(September 15, 2023)

What Sulfur Mustard is:

- Sulfur mustard is a human-made chemical warfare agent that causes blistering of the skin and mucous membranes on contact. This type of chemical warfare agent is called a vesicant or blistering agent.
- Sulfur mustard is known as “mustard gas,” “mustard agent,” or by the military designation “H” or “HD.”
- Sulfur mustard can be clear to yellow or brown when it is in liquid or solid form.
- Sulfur mustard sometimes smells like garlic, onions, or mustard, or it may have no perceivable odor.
- Sulfur mustard can be a vapor (gas), an oily-textured liquid, or a solid. At room temperature, it is usually a liquid. Sulfur mustard is usually a solid when the temperature is less than 58° Fahrenheit.

How people can be exposed to Sulfur Mustard:

- After a release of sulfur mustard into the air, people can be exposed through skin contact, eye contact, or inhaling (breathing in) the sulfur mustard
- Following release of sulfur mustard into water, people can be exposed by touching or drinking water that contains sulfur mustard.
- People can also be exposed to liquid sulfur mustard by swallowing it, getting it on their skin, or getting it in their eyes.
- Eating, drinking, or touching food or drink contaminated with sulfur mustard can expose people to sulfur mustard.
- Touching or inhaling sulfur mustard vapor from contaminated clothing can expose anyone who touches the clothes or inhales sulfur mustard vapors from the clothes.
- Because sulfur mustard vapor is heavier than air, it will sink to low-lying areas, increasing the risk of exposure there. Avoid low-lying areas.
- Sulfur mustard can last 1–2 days in the environment in average weather conditions and weeks to months in very cold conditions.

Signs and symptoms of Sulfur Mustard exposure:

Signs and symptoms vary depending on how the person was exposed, the amount of sulfur mustard (mass), and the length of time of the exposure.
Typically signs and symptoms **do not occur immediately**. It may take up to 24 hours for some symptoms to occur. Sulfur mustard can have the following effects on specific parts of the body:

- Abdominal pain
- Blistering of skin, yellow in color
- Bloody nose
- Cough
- Decreased formation of blood cells
- Decreased red and white blood cells and platelets (pancytopenia) leading to weakness, bleeding, and infections
- Diarrhea
- Difficulty breathing
- Eye irritation
- Eye swelling
- Eye pain
- Eye tearing
- Fever
- Hoarseness
- Nausea
- Pain at site of exposure
- Runny nose
- Shortness of breath
- Sinus pain
- Skin itching
- Skin pain
- Skin redness
- Sneezing
- Temporary Blindness
- Vomiting
- Wheezing

Exposure to large doses of sulfur mustard may result in the following harmful health effects:

- Convulsions
- Light sensitivity

- Insomnia
- Permanent or temporary blindness
- Respiratory failure leading to death

What to do if exposed to Sulfur Mustard:

1. **Get away** from the area where the sulfur mustard was released and breathe fresh air. Make sure you understand your local emergency notification system if you have one. Refer to emergency broadcasts and local authorities for instructions.

- If the sulfur mustard release was outdoors, go indoors and shelter in place. Make sure windows are closed and ventilation systems are turned off to make sure the contamination does not come inside. If you cannot go indoors, leave the area where the sulfur mustard was released.
- If you cannot get away from the area where sulfur mustard was released, go to the highest ground possible because sulfur mustard is heavier than air and will sink to low-lying areas.
- If the sulfur mustard release was indoors, get out of the building and seek higher ground.

2. **Get it off** your body right away!

Taking off all layers of clothing (including jewelry and accessories), blotting any liquid, and showering is the best method for removing sulfur mustard from your body. Ideally, undress, blot, and shower **immediately or as soon as you can**, as described below. If you cannot take off all layers, take off as many clothes as you can.

- Avoid pulling clothing over your head. If you must pull clothing over your head, close your eyes and mouth, and hold your breath so you don't get sulfur mustard in your eyes, nose, or mouth. Place items in a designated area, preferably in a plastic bag.
- If you wear contact lenses, take them out and place them with your clothing. Do not put contact lenses back in.
- Use separate, dry, clean cloths or paper towels to blot each part of your body where you feel liquid, beginning with your head and hair, and then your face, hands, body, arms, legs, and feet. Blot your skin for 10 seconds, then rub for 10 seconds any places on your skin or in your hair where you can see or feel liquid.
- Continue blotting and rubbing, with clean, dry cloths or paper towels, dropping used things to the floor. Repeat the process several times if you continue to feel liquid on you. Use a separate clean cloth or paper towels for each part of your body, and for each time you repeat the process.
- First wash your hair, face, and hands, and then wash the rest of your body. Wash from your head to your feet, including armpits and groin, with lukewarm water and mild soap

(if available), for about 90 seconds. Use soapy water for a minute, followed by a 30 second plain water rinse. Try not to let the water run into your eyes, nose, or mouth. Do not scrub!

- If your eyes are burning or you can't see normally, flush your eyes for 10–15 minutes with lukewarm water. Do not use eye drops.
- Dry your face, then tilt your head back and dry your hair, and then down your body. Use anything that will soak up water. Drop used things to the floor. Dress in any available clean clothes to prevent hypothermia. This is especially important if temperatures are cool.
- If emergency response services are available, leave used items on floor and report their location to emergency personnel. Move as far from the used items as possible. Otherwise, put on waterproof or heavy gloves that won't let liquid seep through. Gather all used things from the floor including your clothes and put in a plastic bag. Remove gloves and put in plastic bag. Close the plastic bag and place it in a second plastic bag. Close up the second bag also.
- Do not put the bags in the regular trash! Place the bags in an area where other people are unlikely to disturb them and come in contact with sulfur mustard. Inform local authorities of the location of the bags for pick up.

3. **Get help.** Call 911, go to a hospital if local officials say it is safe to leave your home. If you need more information, call the Poison Control Center at 1-800-222-1222.

Treatment for Sulfur Mustard:

No known antidote exists for sulfur mustard exposure. Treatment consists of removing sulfur mustard from the body as soon as possible and providing supportive medical care in a hospital setting or by trained emergency personnel.
If someone has ingested sulfur mustard, do NOT induce vomiting.

Long-Term Health Effects:

Exposure to sulfur mustard usually is not fatal. When sulfur mustard was used during World War I, it killed fewer than 5% of the people who were exposed and got medical care.
Skin exposure to sulfur mustard may produce second- and third-degree burns, skin scarring, pigment changes, and skin cancer. Eye exposure may result in temporary or permanent eye injury or chronic eye infections. Inhalation may result in loss of taste and smell, chronic respiratory disease, recurrent respiratory infections, and possibly respiratory cancers.