Montgomery County, Maryland
Fire and Rescue Service

Managing the Consequences of a Chemical Attack
A Systematic Approach to Rescue Operations (SATRO)

The purpose of this Quick Reference is to give first responders a *guide* to help them develop an action plan to safely and effectively rescue **live victims** during the extraordinary and extreme conditions of a chemical release. **Saving live victims is the rescue mission**, while minimizing the risk of harm to the rescuers.

Although Level A affords the highest level of protection to members of the Hazardous Incident Response Team (HIRT), its use to quickly rescue live victims is impractical. The Incident Commander must consider the immediate use of firefighters who are wearing their personnel protective equipment (turnout gear, SCBA and butyl gloves).

Note: First responders must initially consider dispatch information, approach and position units upwind, and continue gathering pertinent information after arriving on the scene. Important considerations include signs and symptoms of victims, comments from victims and onlookers, site-specific information, and information through available intelligence provided by law enforcement officers. ***Consider that a mustard agent may be present***, until otherwise ruled out.

Note: First responders are cautioned not to "automatically" assume that the incident involves a super toxic chemical agent. The released material could be a substantially less toxic industrial chemical or a riot control agent such as pepper spray.

Key Factors and Steps to Help Decide whether Rescue is a "Go" or a "No Go" Situation:

- Weather Conditions: Consider the impact of wind direction and speed, temperature, humidity, and precipitation on the behavior and spread of the chemical agent(s). Use on-scene weather monitoring equipment if available.

- Scene Hazard Assessment: Avoid "tunnel vision." Don't just assume chemical-related hazards. Responders must also consider the possible presence of biological agents, radiological materials, and/or explosive devices.

- Reconnaissance (Recon): Conduct Recon to determine if live victims are still in the area of the chemical agent release. Immediately isolate and deny entry to civilians and unprotected first responders. Unless wearing Level A Protection, only view the contaminated area through a closed window, an entrance doorway, or other reasonably safe location, to gather information about victims. The Recon team must wear at least their protective clothing, preferably with openings taped, and using SCBA. (Review the Quick Reference Guide for taping procedures.)

Victim Information:

- Location: Initially, determine if there are live victims outside the contaminated building who are in need of immediate assistance. Next, determine if there are live victims visible and readily accessible inside the building.

- Rescue and Standby Teams: Choose ***at least*** two personnel per team, with the selected, appropriate personal protection. Ensure that all personnel are hydrated.

- Chemical Agent Hazard Reduction: Consider the use of portable fans to reduce or redirect vapor or aerosol concentration. First**,** be sure that using these fans will not spread the chemical agent or endanger other unaffected people. If the use of fans is evaluated to be acceptable, they should be placed inside the building blowing air to the outside, in the downwind direction. However, it is important to ensure that suitable air intake has already been established.

  If available, consider the benefit of shutting off the building's ventilation system or redirecting airflow to be consistent with the flow of the portable fans.

  Note: The U.S. Army Soldier and Biological Chemical Command (SBCCOM) test results indicated that within 10 minutes of portable fan(s) use, blowing air into the contaminated building from the outside decreased the chemical concentration by 50-70% in open areas. However, concentrations inside the surrounding rooms increased.

- SCBA (positive pressure): SCBA **must** be used for all rescue missions. SCBA provides an inhalation Protection Factor (PF) of 10,000, which is the highest level of respiratory protection.

- Personal Protective Equipment (PPE): For initial on scene quick rescue of live victims, first responders should wear their turnout gear, SCBA, and butyl gloves. However, later into the incident and where rescue may still be required, first responders should wear Level B Protection or the appropriate chemical suit (with SCBA and butyl gloves) as indicated by the site safety plan (per 29 CFR 1910.120).

- Rescue Team Chemical Agent Exposure Time: The initial entry exposure time should be limited to 2-3 minutes. Repeated exposure to a nerve or blister agent will have cumulative effects. Therefore, no entry team will re-enter the contaminated area unless authorized and extreme life saving circumstances clearly warrant doing so.

Based on the chemical agent(s) released, the quantity, its properties, the circumstances surrounding its release, and vapor suppression measures used, the Incident Commander may allow the rescue personnel to operate in the contaminated area for a longer period.

- If possible, victims should be removed through doors or windows that lead directly to the outside. Evacuation through other areas may expose victims to a higher chemical agent concentration than what they had already experienced.

  Caution: Face Piece Removal. After leaving the rescue area and reaching the outside, rescuers must continue using their SCBA to prevent respiratory exposure to chemical agent "off-gassing" from their clothing. The regulator and face piece must be the last items removed after the emergency decontamination process is complete.

- Emergency Decontamination: Unless the delay would compromise rescue, set up the decontamination area before entry is made. Locate it as close as practicable to the rescue entry point and monitor operations using chemical agent detectors.

- Rehabilitation (REHAB): After decontamination, it is important to provide rest, ensure re-hydration and check vital signs of all rescue personnel. Consider the need for Critical Incident Stress Debriefing.

Remember this Quick Reference is just a guide. Existing conditions, knowledge of chemical agent properties, along with the Incident Commander's good judgment, will help determine the rescuers' level of protection. The safety of both the rescuers and victims is of paramount concern.

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