



Rogers Fire Department Standard Operating Procedures

Policy Title:	Hazardous Materials Response		
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PURPOSE

By definition, a hazardous materials incident is one in which any material, whether it is a liquid, vapor, or solid, escapes its intended containment and presents the potential for serious injury or harm to persons and/or the environment. The following procedures have been established for use in such incidents to ensure that each incident is managed appropriately.

POLICY

Hazardous Materials Classifications

Any incident involving any material in the following hazard classes will be classified as a hazardous material incident and subject to this policy:

- Flammable Liquids (inside a structure)
- Flammable Solids
- Radioactive Materials
- Organic Peroxides
- Cryogenics
- Poisons (gases, liquids, or solids)
- Flammable Gas
- Non-Flammable Gas
- Oxidizers
- Corrosives/Acids or caustics
- Biological Agents

- Environmentally Hazardous Substances (DOT Class 9 Materials)
- All Flammable or Combustible Liquids - over 20 gallons in an outside area.

Responsibility

All members of the department shall be trained to operate at a hazardous materials incident. The department's Special Operations Team (SOT) shall serve as subject matter experts at these incidents to provide:

- Technical expertise
- Assistance
- Specialized equipment

The shipper, spiller, and/or owner shall be financially responsible for the recovery, remediation, and clean up stages of the incident

Hazardous Materials Response Assignment – In City

The City Wide Tour Commander (CWTC) shall evaluate incidents dispatched that may have the potential of being a hazardous materials incident. Besides the CWTC, any company officer may call for a hazardous materials response in the event they find themselves in a situation requiring additional resources and expertise. Dispatchers shall be trained to quickly identify hazardous materials situations and dispatch them appropriately; however it is imperative that all members recognize that sometimes hazardous materials events may be hard to identify based on how they are reported to the 9-1-1 center. The 1st alarm assignment for a hazardous materials event inside the city includes the following:

2 Closest Fire Companies
Closest Medic Unit
Ladder 1
Ladder 5
Rescue 2
Battalion 1

The standing orders for these first alarm companies are as follows:

1st Company: Investigation, Scene Assessment, Immediate Control Actions

2nd Company: Establish Decontamination Group

Medic Unit: Establish Medical Group

Ladder 1: Establish Rapid Intervention

Ladder 5: Establish or Assist Recon/Entry Group

Rescue 2: Establish or Assist Recon/Entry Group

Battalion 1: Incident Command

The Incident Commander may return units they feel are not needed to safely control the incident after a complete size-up has been completed. Responding units should ensure that the response to such incidents meet the procedures contained within this document.

Hazardous Materials Response Assignment – Out of City

The requesting community shall as a minimum, have one engine company, one Incident Commander, and one local law enforcement officer at the scene of the incident.

The RFD shall work in conjunction with the local fire department, or agency requesting assistance. The requesting department, or agency, shall have control of the incident and the RFD shall assist as a technical resource. The mutual aid response shall be approved by the CWTC. The primary response for these incidents outside the city is a Class Z assignment which consists of Rescue 2, Ladder 5 and various other RFD resources depending on the exact location. These three resources shall respond together as “Rogers Haz-Mat Task Force” to positively affect span of control at the incident.

The officer-in-charge of any mutual aid assignment shall reserve the right to refuse any assignment that they deem too hazardous for the members. RFD personnel shall not act as the Incident Commander for incidents within other communities or jurisdictions, but may serve as part of a Unified Incident Command System.

Response Guidelines

Hazardous material emergencies can pose a great threat to both the public and emergency responders. Since it is impossible to eliminate all risks associated with the release of a hazardous material, there must be an effective incident action plan (IAP) in place. The IAP should be based upon information received and the type of hazardous material involved.

Level I

Description:

- Posses a minimal danger to life, property, and the environment
- Container size may be a small drum, bucket, package or bag
- Has a low fire/explosive potential

Leak Severity:

- No release or small release from the container
- Personnel can contain, or confine with available resources
- No damage to the container

Environmental Impact:

- Minimal
- Non-life threatening

Suggested Response Level:

- 1st Alarm or less
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Level II

Description:

- Moderate danger to life, property, and the environment
- May have the potential of involving additional exposures
- Medium container size (i.e. 1- ton cylinder, portable container, multiple small containers)
- Medium fire/explosion potential

Leak Severity:

- Release may be controlled with special resources
- Medium amount of a corrosive, flammable, poison or toxin
- Medium release of any toxic vapors that may pose a life safety hazard
- Release of 40 pounds or more in a solid form
- Release of 100 gallons or more liquid

Environmental Impact:

- Moderate
- Localized area, limited evacuation area

Suggested Response Level:

- 1st Alarm or 1st Alarm + Mutual Aid
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Level III

Description:

- Extremely dangerous to life, property, and the environment
- Release is beyond the initial property and effects exposures
- Covers a large geographical area, and may be long term
- Involvement of multiple hazardous materials

Leak Severity:

- Release requires multiple agencies
- Release may not be controllable, even with special resources
- Major release of flammable, corrosive, or toxic vapors
- Material release that affects major waterways
- Large release (e.g. rail tank car, tank truck, stationary storage tank, multiple medium size containers)
- Damage so extensive that catastrophic rupture is possible

Environmental Impact:

- Severe
- Requires mass evacuation
- Activation of Crisis Emergency Plan

Suggested Response Level:

- 1st Alarm + Mutual Aid and the recall of off-duty members

Initial Actions

The initial action of the first responding company is critical to ensure a positive outcome of the incident. They must establish control of the incident scene and isolate the public from the problem.

Information to be gathered initially:

1. Obtain wind speed and direction.
2. Request the name of the hazardous material involved, if possible.
3. Determine the physical state of the material (Gas, Solid, Liquid)
4. Is there a vapor cloud present, and is it moving.
5. Plan your approach to the incident, Upwind, Uphill, Upstream.

Response considerations:

1. Obtain additional information from dispatch, if possible.
2. The use of Haz-Mat IQ is strongly suggested for first-due apparatus.
3. If the material is known, use the Haz Mat IQ process and other resources to determine the initial appropriate actions.
4. Reevaluate the response route if necessary.
5. If the material is in a fixed-facility, refer to the appropriate Target Hazard for additional information.

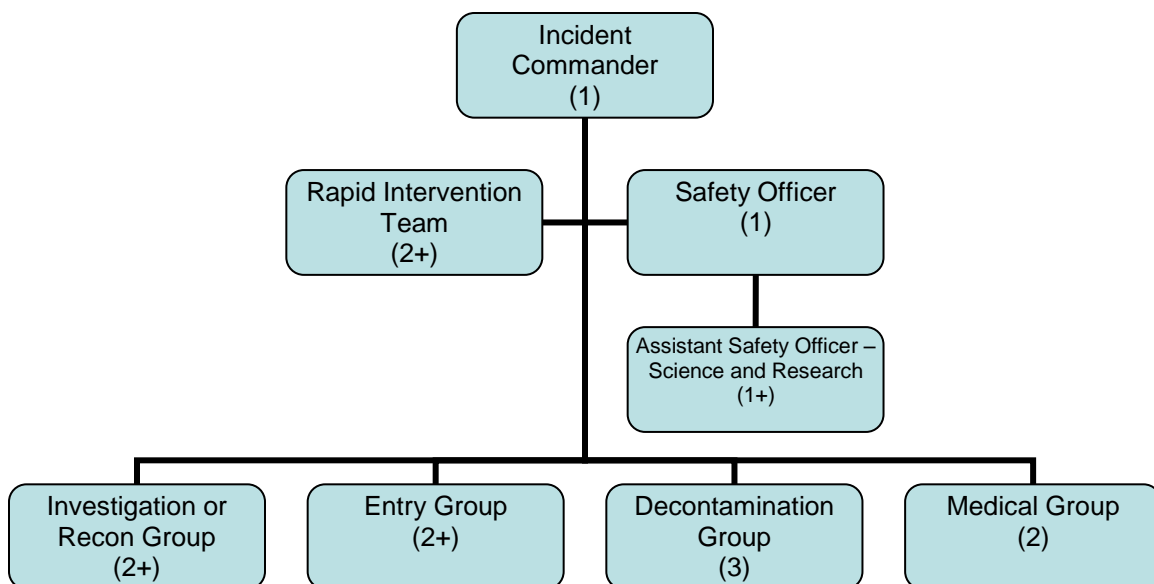
Scene Arrival:

1. Avoid committing to a dangerous situation without considering options. Take a defensive role initially by utilizing basic hazardous materials awareness techniques: establishing control zones, notification of additional resources, and denying entry to the area.
2. Initiate the Incident Command System with a strong and possibly unified command presence.
3. The command post should be established a safe distance from the incident in the cold zone.
4. Staging should be considered for large amounts of resources. Formal staging requires a Staging Area Manager, usually the company officer from the first arriving unit in staging.
5. Personnel accountability should be initiated by collecting passport identification cards and managing them at the command post.

6. The problem should be confirmed and identified. Do not assume that the dispatch information was necessarily correct.
7. Identify the involved material, or materials.
8. Obtain information from the involved party.
9. Locate the shipping papers, MSDS sheets, label, or placard.
10. Notate the containers shape, size, and damage extent, if possible.
11. Isolate the area by establishing the Initial Safe Zone.
 - a. Use barrier tape, ropes, or natural barriers to keep people out.
12. Establish a separate holding area for contaminated civilians and response personnel.
13. Always wear protective clothing and SCBA anytime there is the possibility of exposure to the hazardous material.

Intervention Tactics

All hazardous materials incidents shall have a structured intervention system. This system, under NIMS, shall be group-based and have the responsibilities listed below. In large multi-strategy incidents, a hazardous materials branch may be enacted. Most incidents will involve an ICS setup similar to the chart below:



In addition to normal ICS functions conducted by the Rapid Intervention Team, Safety Officer, and Incident Commander, other specialized roles must be conducted.

Safety Officer

1. Required for all Haz-Mat incidents (OSHA 1910.120q).
2. Shall report directly to the Incident Commander.
3. Responsible for coordinating safety activities dealing with operations in the hazardous materials hot zone.

4. Has the authority to suspend, alter, or change any operation when deemed necessary to protect the safety of any responder.
5. Must have a high level of technical knowledge to anticipate a wide range of safety hazards associated with the Haz-Mat incident.
6. Shall be trained at the Hazardous Material Technician level.
7. Shall be responsible for ensuring:
 - a. The Site Safety Plan has been developed and implemented.
 - b. The protection of all entry personnel from physical, chemical, and/or environmental hazards and exposure.
 - c. Identify and monitor all personnel operating within the Hot Zone.
 - d. That EMS personnel and/or units are provided.
 - e. That the Health exposure logs and records are maintained.
 - f. That the Personnel Accountability System is in place
8. Radio designation shall be " Safety".
9. This position should be filled by the most qualified and appropriate member from either Ladder 5 or Rescue 2. If not enacted, this position shall also handle the responsibilities of the ASO – Science and Research.

Assistant Safety Officer - Science and Research

1. Shall be responsible for researching all forms of data pertaining to the hazardous material incident. This shall include, but not be limited to product information, product ownership, area maps, and weather.
2. Shall report directly to the Safety Officer but can serve as a Technical Specialist reporting to the Incident Commander, Operations Section Chief (if enacted), or Haz-Mat Branch Director (if enacted).
3. Shall be trained at the Hazardous Material Technician Level.
4. Shall interpret environmental monitoring information including the analysis of Haz-Mat samples and the classification and/or identification of unknown substances.
5. Shall provide recommendations for the selection and use of protective clothing and equipment.
6. Shall give the potential environmental impact of the Haz-Mat release.
7. Radio designation shall be "Science and Research"
8. This position should be filled by the most qualified and appropriate member from either Ladder 5 or Rescue 2.

Entry/Recon Group

1. Shall consist of all personnel responsible for entering and operating in the "Hot Zone" to accomplish the objectives as set forth in the Incident Action Plan.
2. Shall be trained at the Hazardous Materials Technician level.
3. Shall recommend actions to the Incident commander for controlling the emergency situation in the "Hot Zone".
4. Shall implement all offensive and defensive actions as directed.
5. Shall coordinate all entry operations with the Decontamination Group.

6. Shall have one individual appointed as the "Entry Supervisor."
7. Radio designation shall be "Entry Group".

Decontamination Group

1. Determine the appropriate level of Decontamination to be used.
2. Shall be trained at the Haz-Mat Operations or Technician level.
3. Provide the appropriate decontaminations procedures, including the area, set up, methods, procedures, staffing, and appropriate clothing.
4. Coordinate the decontamination operations with the Entry Officer and others in the hot zone.
5. Coordinate the transfer of decontaminated patients to the Medical Group.
6. Establish the decontamination area before any members enter the "Hot Zone".
7. Monitor the effectiveness of the decontamination operations.
8. Shall have one individual designated as the "Decon Supervisor".
9. Radio designation shall be "Decon Group".

Hazard Control Zones

The purpose for establishing control zones is to assure the highest level of control and personnel accountability. Defined zones also assure that workers do not inadvertently enter areas where they may become contaminated or overcome by the hazardous material. Hazard control zones are designated from the most dangerous to the least dangerous. The zones shall be established as the Hot Zone, Warm Zone, and Cold Zone.

Considerations in establishing Control Zones

- Weather conditions (current and forecast)
- Air monitoring and sampling
- Air dispersion calculations
- Physical, chemical, and toxicological characteristics of the material
- Potential for fire and explosion
- Physical and topographic features of the incident site
- Proximity to populated areas
- Zone shape and size adequate for the conditions present

Hot Zone

This is the area immediately surrounding the hazardous material. This zone may also be referred to as the "Exclusion Zone". This zone is potentially Immediately Dangerous to Life and Health (IDLH) and may contain physical or chemical hazards. All personnel entering this zone must wear the appropriate level of protection. Entry and Exiting from the Hot Zone may only be done through protected corridors. These corridors shall be set forth in the site safety plan.

Warm Zone

This zone is directly outside of the “Hot Zone”. This area is where personnel and equipment Decontamination takes place. This is also the area in which the support for the “Hot Zone” operations takes place. This zone controls the “Hot Zone” corridors and perimeter.

Cold Zone

This zone is considered the “Safety Control Zone”. This zone contains the command post and support functions. The “Cold Zone” also contains the Staging and EMS functions.

Monitoring and Detection

Monitoring and detection is vital in establishing and controlling of the emergency scene. Monitoring provides for the evaluation of real time data. This data is used to determine the appropriate level of personal protective equipment to be used by hazardous materials responders and the appropriateness of control zones.

Monitoring Procedure

1. Use the appropriate level of protective clothing
2. Approach from Up Wind, Up Hill when possible
3. Use the appropriate monitoring equipment
4. Personnel should have an idea of what the reading should be
5. Never assume the presence of only one chemical
6. Interpret the readings in more than one manner
7. Establish action levels based upon instrument readings
8. Document all monitor readings or report readings to the incident commander

Response Tools and Equipment

Hazardous material incidents require a diverse set of tools and equipment for containment, control and monitoring. These tools may range from hand tools, to specialized tools that will be required to bring the incident to a controlled state. Other equipment that may be required is patch kits, absorbents, and packaging containers. Each member, especially those assigned to the Special Operations Team, must be familiar with all equipment and its use.

Tool and equipment care

1. Tools and equipment shall be inspected for damage and or missing components during the weekly check and after each hazardous materials incident.

2. All broken and damaged tools and equipment shall be taken out of service.
3. All contaminated tools and equipment must be decontaminated before being placed back into service.
4. All tools and equipment shall be inventoried weekly according to the apparatus inspection policy.

Medical Evaluations

Medical monitoring is the systematic, ongoing evaluation of the SOT Team. Medical monitoring allows for the obtaining of the pre-medical and post-medical conditions of all personnel performing activities at the incident scene. Medical monitoring also allows for early recognition of any adverse physiological effects resulting from the on scene activities.

Pre-Entrance Medical Monitoring

1. Pre-Entrance monitoring shall be performed on all members that must wear any type of chemical entry suit (Level A, Level B).
2. A designated and trained individual shall perform all pre-entrance medical evaluations.
3. Pre-Entrance monitoring shall consist of:
 - a. Blood Pressure.
 - b. Pulse.
 - c. Respiratory rate.
 - d. Temperature.
 - e. EKG rhythm strip (if available).
 - f. Skin evaluation (rashes, open sores/wounds, etc.).
 - g. Mental status (alert and oriented to time and place).
 - h. Medication use in the last 72 hrs.
 - i. Alcohol consumption in the last 24 hrs.
 - j. Weight
4. All medical information shall be recorded on the "Medical Evaluation Form". Post Medical Monitoring.
5. Upon completion of decontamination and suit removal all participants shall be medically monitored.
6. The Post Medical Monitoring shall consist of:
 - a. Any immediate effects from the contact with the hazardous material.
 - b. Vital signs.

- c. Blood pressure.
- d. Respiratory rate.
- e. Temperature.
- f. EKG strip (if available).
- g. Skin evaluation.
- h. Mental status.
- i. Weight

If the following symptoms are present, transport to a medical facility immediately.

- a. Body weight loss greater than 3%.
- b. Increase in pulse greater than 20 beats per minute.
- c. A temperature greater than 101°F (oral) 102°F (core).
- d. Nausea, vomiting, diarrhea.
- e. Altered mental status.
- f. Respiratory, cardiac, or dermatological complaints.
- g. Systolic blood pressure decrease by 20mm of Hg at two minutes standing.

7. All the information shall be recorded on the "Medical Evaluation Form".

Decontamination

Each hazardous materials incident has the potential of personnel, equipment, and the general public coming into contact with the hazardous material and becoming contaminated. This contamination not only becomes a threat to the one that has become contaminated, but also to those individuals that have contact with the contaminated individual. For this reason, it is the responsibility of the incident commander to confine all effected individuals in the "Hot Zone". This must be done until an appropriate method of decontamination has been chosen and a decontamination corridor has been established.

Decontamination Site Selection

The site selection should be located in an accessible area in the "Warm Zone". Consideration should be made as to the ability for a water supply, run off potential, and environmentally sensitive areas. Always place the decontamination site uphill and up wind of the contaminated area.

Decontamination Corridor

The decontamination corridor is the area that leading from the "Hot Zone" into the decontamination area. This corridor shall be established by the Decontamination Group and shall be identifiable by all personnel on the scene.

Decontamination Methods

This involves the contaminant's physical removal from the exposed person and allows for proper disposal. This method only reduces the concentration of the product and does not reduce the hazard potential.

Physical Methods of Decontamination

1. Absorption and Adsorption.
2. Brushing and scraping.
3. Isolation and Disposal.
4. Vacuuming.
5. Washing.
6. Dilution

Chemical Methods of Decontamination

1. Chemical degradation.
2. Neutralization.
3. Solidification.
4. Disinfections or sterilization.

Chemical Decontamination Solutions

Solution A 5% Sodium Carbonate (soda ash) + 5% Trisodium Phosphate
(2 pounds + 5 gallons of water)

Solution B 10% Calcium Hypochlorite (Swimming Pool Chlorine) solution
(4 pounds two bags in 5 gallons of water)

Solution C 5% Trisodium Phosphate solution (can be used as a general rinse)
(2 + 5 gallons of water)

Solution D Dilution of Hydrochloric Acid
(Mix 1 pint of Hydrochloric Acid in 10 gallons of water)

Solution E Concentrated solution of liquid detergent and water. Form a paste
and use scrub brush. Rinse with water

Guidelines for Solution Use

- | | |
|--|-----------------|
| 1. Inorganic acids, metal processing wastes | Solution A |
| 2. Heavy metals such as Mercury, Leads, Cadmium, etc. | Solution B |
| 3. Pesticides, chlorinated phenols, dioxins, PCP's | Solution B |
| 4. Cyanides, ammonia and other non-acidic inorganic waste. | Solution B |
| 5. Solvents and organic compounds such as trichloroethylene, chloroform and toluene. | Solution A or C |

6. PBB's and PCB's	Solution A or C
7. Oily, greasy, unspecified wastes not suspected to be contaminated with pesticides.	Solution C
8. Inorganic Bases, Alkali and caustic wastes	Solution D
9. Radioactive Materials	Solution E
10. Etiologic Materials	Solution A then B
11. Biological and chemical agents	See Jane's Chem-Bio Handbook

Decontamination Site Set-up

Decontamination shall consist of the following elements at a minimum:

1. Entry and exit lanes
2. Tool drop area (Hot Zone)
3. Single wash and rinse station with the use of a liquid recovery pool. The "Decontamination Group" shall use P.P.E. equal to or one step under those used by the "Entry Group".
4. SCBA removal station and reclamation site
5. Suit doffing area with disposal or reclamation drum
6. Medical monitoring station