Environmental Emergency Response

The Role of Environmental Health in Emergency Response
Our prime objective is to prevent further disease and injury.

We are not first responders. Although we are first at the scene, our role is consultative, facilitative and supportive.
Environmental Health Practitioner's Role

We make it possible for all responders to do their jobs safely and with minimal risk to themselves and the community.
Disaster and Terrorism Response

We assist and advise other first responders in matters of public and environmental health and safety during an incident. Limit, and hopefully prevent further environmentally mediated injury and/or illness.
Facilitate emergency services and assist in restoring essential services.
Disaster and Terrorism Response

We make available all resources of our profession and office to assist other first responders. Liaison with other health departments.

Advise and direct matters of public health, environmental health and safety
- Fate and transport or biological and chemical agents
- Quarantine and embargo.
• How does Pittsburgh prepare for a snow storm?
Hazard Analysis

Looks at the Types of Hazards that Impact a Community
Types of Emergencies

- Natural Disasters
- Technological Emergencies
- National Security
Natural Disasters

- Flash / river flood
- Hurricane / Tropical Storm
- Earthquake
- Tornado / Microburst
- Landslide
- Volcano
- Tidal Wave
Technological Emergencies

- Man-made, probably unintentional
  - Hazardous Materials Incidents
  - Transportation Accidents
  - Nuclear Power Plants
Radioactive Materials Incidents

DANGER

CONTAMINATED AREA
Radioactive Materials Incidents
Nuclear Power Plant Incidents
National Security Emergencies

- War
- Terrorism
- Civil Unrest
Weapons of Mass Destruction

Nuclear
Biological
Chemical
Chemical
Phases of Emergency Management

- Preparedness
- Response
- Recovery
- Mitigation
Emergency Response

- Preparedness - planning for the effects of a disaster.
- Response - at the time of the disaster.
- Recovery - rebuilding after the disaster.
- Mitigation - limiting the effects of potential disasters.
The Role of Environmental Health In Emergency Response

- Protect the Health of Responders and the Public
- Provide Information on the Hazard
- Perform Plume Dispersion Analysis
- Assure Food and Drinking Water are Safe
- Assure Shelters and Institutions are Safe and Sanitary
The Role of Environmental Health In Emergency Response

- Conduct Hazard Analysis
- Insure that Health and Environmental Laws and Regulations are Complied With
- Issue Advisories and Warnings
- Monitor Air, Water, Food, Milk, Vegetation and Soil
The Role of Environmental Health In Emergency Response

- Assure Waste are Collected and Properly Disposed of
- Control Insects and Rodents
- Provide Information on Proper Cleanup and Disposal
- Respond to Incidents Involving Radioactive Materials and Nuclear Power Plants
Provide Information on the Hazard

Chlorine

- 2.47 Vapor Density
- -29.3 °F Boiling Point
- 10 ppm IDLH
- Odor Threshold 0.06-3.5 ppm (varies by source)
- 450-500:1 Expansion Ratio (Liquid-Gas)
- Contact escaping compressed liquid can cause frostbite and/or chemical burns to the eyes and skin
- Strong Oxidizer
- Extremely Water Soluble
- Non-Persistent
- 11.48eV Ionization Potential
## Chlorine Concentration Effects

<table>
<thead>
<tr>
<th>Concentration</th>
<th>Effects</th>
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<tbody>
<tr>
<td>0.2-3.5 ppm</td>
<td>Odor detection (some tolerance develops)</td>
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<tr>
<td>1-3 ppm</td>
<td>Mild mucous membrane irritation that can be tolerated for up to 1 hour</td>
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<tr>
<td>3 ppm</td>
<td>Extremely irritating to the eyes and respiratory tract</td>
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<tr>
<td>5 ppm</td>
<td>Severe irritation of eyes, nose, and respiratory tract; intolerable after a few minutes</td>
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<tr>
<td>14-21 ppm</td>
<td>Immediate irritation of the throat; Dangerous if exposed for 30-60 minutes</td>
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<tr>
<td>15 ppm</td>
<td>Irritation of the throat</td>
</tr>
<tr>
<td>30 ppm</td>
<td>Moderate irritation of the upper respiratory tract; Immediate chest pain, vomiting, dyspnea, cough</td>
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<tr>
<td>35-50 ppm</td>
<td>Lethal in 60-90 minutes</td>
</tr>
<tr>
<td>40-60 ppm</td>
<td>Toxic pneumonitis and acute lung injury; dangerous for even short periods</td>
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<tr>
<td>430 ppm</td>
<td>Lethal over 30 minutes</td>
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<tr>
<td>1,000 ppm</td>
<td>Fatal within a few minutes</td>
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Perform Plume Dispersion Analysis
Protect the Health of Responders and the Public

Evacuation

1 Mile Radius
Approx 5400 Residents
Curfew Between 1 and 2 Mile Radius
Lasted up to 14 days
Protect the Health of Responders and the Public

Human Health Issues

Decontamination
Transport and Treatment
Rapid Epidemiological Assessment

Follow-Up Investigations
Community Health Assessment
Animal Issues

- Pets
  - Feeding
  - Retrieval
Monitor Air, Water, Food, Milk, Vegetation and Soil
Monitor Air, Water, Food, Milk, Vegetation and Soil
Clean-Up and Remediation

Emergency Phase Plan included:
- Recovery of tank car inventories
- Removal of diesel affected soils and asphalt
- Removal of kaolin clay
- Removal of chlorine impacted soils
- Removal and disposal of debris and cross ties
- Removal and disposal of dead animals
Water Sampling

- Baseline data

Impact
- Total residual chlorine increased
- pH lowered

Recovery
Gradual reoccupation of evacuation areas.
Transitioned areas over multiple days
Control points allowed residents into areas
Roadblocks kept residents out of areas still evacuated
Re-Occupation

- Fliers handed out at town meetings, at traffic control points, by community liaisons, and building samplers

- Instructed residents on some precautions to take when returning home

- Coordination of multiple agencies

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**Things to Do Upon Your Return Home**

When you return to your home, we understand you will have concerns and questions about the safety of your home and belongings. Once you are allowed to go back into your home, the air that you breathe and the water that you drink and bathe in will be safe to use. Medications do not need to be discarded if stored in original, closed containers. The following are housekeeping steps that you should take:

**General**

- Notify Norfolk Southern (NS) System Claims Office at 1-800-238-7049 for:
  - Electrical problems
  - Arsonal or pet needs
- Open doors and windows or run your heater/AC system for 30 minutes to circulate air.
- Run water from your kitchen tap for 2 minutes and flush all toilets to clear stagnant water.
- Additional things you may want to do: change the air filter(s) in your home and air system; wash clothing and bedding that was in the home; wipe off walls and furniture; wash personal belongings, and wipe down kitchen counters with water or mild soap. No special actions are needed for children, elderly residents or pregnant women. All items can be disposed of with household trash.
- Mail delivery: The United States Post Office will resume regular mail delivery once the roads are re-opened. Therefore, nothing is required on your part.

**Food Items: When in Doubt, Throw it Out!**

- Keep canned, unopened pre-packaged, frozen and refrigerated foods.
- Throw out opened, unrefrigerated food items left out in the open and any other items that could have spoiled while you were not home. If you lost power, refrigerated foods may have spoiled and you should throw out frozen foods that have thawed.

For questions regarding the safety of a food item, you may contact SCDHEC at 642-1637 or the USDA Hotline at 1-800-535-4959.
Mission:

- Sample buildings to ensure no chlorine or hydrochloric acid or vapor present.
Re-Occupation
Community Outreach

Mission:

- Talk to residents and explain what has happened, home inspection procedures, answer questions, and provide assistance.

Photo: SCDHEC
Follow-up Health Investigations

- Secondary Mailed Survey
- Graniteville Train Wreck Registry
- Graniteville Community Health Assessments
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