

Evacuation/Shelter In Place Decision Guide

The decision to evacuate or shelter-in-place (SIP) will be driven by the circumstances of a given chemical, biological or radiological emergency.

IMMEDIATE concerns in the decision-making process are as follows:

- Evacuation-Potential for exposure to the people being evacuated.
- Exposure to those in the population that are vulnerable, i.e. nursing homes, hospitals, schools, child care centers, etc.
- Exposure to those who will not leave their homes.
- Exposure because of time lags, due to assisting those needing help to evacuate.
- Exposure because of time lag before alerting measures takes place.
- Exposure because of lack of direction to areas of safety.

Warnings

The community's responsibility during an event is to provide proper warnings to those facing potential harm. Some of the methods that communities may take to warn citizens are as follows:

1. Loudspeakers and bull horns on police cars and fire apparatus.
2. Handouts and other materials that can be brought door-to-door.
3. Telephone automatic dialers
4. Public broadcast media, cable override, or EAS
5. Outdoor sirens
6. Tone alert monitors and radio pagers

Training for the Public

The public must be trained to understand the warning systems:

1. The warnings must be heard
2. The public must understand the action they will take corresponding to the signal.
3. The public needs to believe the signals are accurate.
4. Individuals must believe the message is relevant to them personally.

Protective Action Decision-Making

General. Numerous factors affect the spread of hazardous materials. The decision-maker must carefully consider each of these factors in order to determine the areas that have been or will be affected, the health effects on people, and the appropriate protective action. The factors that affect public protective decisions include, but are not limited to:

- The hazardous material(s) involved, its (their) characteristics, amount, condition, configuration, and location;
- The population at risk, and its capability and resources to implement a recommended protective action;
- The time factors involved in the emergency and their effect on the selected protective action;
- The effect of the present and predicted meteorological conditions on the control and movement of the hazardous materials and the feasibility of the protective actions;
- The capability to communicate with both the population at risk and emergency response personnel before, during, and after the emergency; and
- The capabilities and resources of the response organizations to implement, control, monitor and terminate the protective action.

In deciding on the most appropriate protective action, two questions need to be answered:

1. Will shelter-in-place provide adequate protection? And
2. Is there sufficient time to evacuate?

Evacuation. Evacuation of people from certain areas to prevent injury or death is sometimes an appropriate protective action. These areas may include those directly affected and those areas that may be potentially affected during the course of the incident (e.g., through wind shift, a change in site conditions). Evacuation is a complex undertaking. The first evacuation consideration, determining whether an evacuation is necessary and possible, involves a comprehensive effort to identify and consider both the released hazardous material, its effect on people, and the community circumstances (e.g., winter storm in a highly urbanized area). For an area that is only threatened by a hazardous release, it should be determined whether potential evacuees can be evacuated before hazards reach the area. To safely evacuate the area, a significant amount of lead-time may be required. If the decision maker decides to evacuate an area, the evacuation must be conducted in a well-coordinated, thorough, and safe manner. Evacuation decisions are of necessity, very incident-specific, and good judgment is necessary.

Shelter-In-Place Protection. During some hazardous material releases, there will not be enough time to evacuate because airborne toxicants have been released and are moving downwind rapidly. There also may be many uncertainties as to what is being released, how

much, what are exposure levels now and what will they be, how dangerous are such levels, what areas will be affected, and who and what are in those areas. It may be that shelter-in-place protection is the only practical choice. For short-term releases, often the most prudent course of action for the protection of the nearby residents is to remain inside with the windows and doors closed and the heating and air conditioning systems shut off. An airborne cloud will frequently move past quickly. Vulnerable populations, such as the elderly and sick, may sustain more injury during evacuation than they would by staying inside and putting simple countermeasures in effect. Shelter-in-place protection, therefore, may be a sensible course of action when the risks associated with an evacuation are outweighed by the benefits of shelter-in-place protection. Even when a protective action decision has not yet been made, shelter-in-place protection could be the initial response while the emergency situation is being assessed.

Evacuation Checklist

- Determine area that must be evacuated by readily identifiable boundaries.
- Secure authority for evacuation.
- Choose evacuation routes.
- Identify traffic control procedures.
- Identify shelters.
- Identify access control procedures.
- Assign tasks (i.e., traffic control, warning, shelter, transportation, etc.)
- Activate alert warning devices (i.e., sirens, patrol cars, etc.)
- Issue specific instructions to population (i.e., activate EAS, door-to-door, etc.)
- Conduct the evacuation. Consider:
 - Permanent residents (day-time vs. night-time)
 - Transient population [tourists at marinas, parks, resorts, motels, etc.]
 - Special populations (hospitals, nursing homes)
 - Group quarters (prisons, jails, senior centers, care centers)
 - Handicapped (mental and physical)
 - Schools (public, private, parochial, pre-school)
 - Large facilities (factories, sports stadiums, etc.)
- Provide transportation for those needing it (on school buses, public transit).
- Establish reception centers and public shelters.
- Provide emergency medical care, as necessary.
- Provide traffic control.
- Provide door-to-door checks after evacuation, if possible, and provide for security for evacuated area..
- Provide for the care of pets and farm animals.
- Choose and implement policy for those refusing to evacuate.
- Monitor and inspect areas for safe re-entry.
- Issue all clear.
- Manage the return of evacuees.

Evacuation

PRO	CON
1. <u>Feel Safer</u> . Evacuees "feel" safer by traveling away from danger.	1. <u>Time Required</u> . Requires considerable time to accomplish successfully (may take 2 to 4 hours or longer).
2. <u>Vehicles Are Available</u> . Most evacuees (65-76%) use an available family vehicle and many others (11-19%) use a vehicle of a relative or friend.	2. <u>Lengthy Warning Message</u> . The public warning message may be very lengthy since it has to identify the danger, describe the area to be evacuated, list evacuation routes, identify public shelters list what can and cannot be taken to shelters, etc.
3. <u>Destinations</u> . Most evacuees (67% est.) go to homes or relatives and friends, or to cottages and second homes.	3. <u>Extensive Support Services</u> . Requires setting up public shelters, traffic controls and area security and providing special transportation for those without vehicles, handicapped, and on intensive care.
4. <u>Family Units</u> Nighttime evacuations are as family units (whereas daytime evacuations are usually without family unity, as many are at work, school, recreation, or shopping).	4. <u>Transient Populations</u> . Transient populations at parks, marinas, campgrounds, summer camps, and resorts may not be familiar with area to accomplish an evacuation.
5. <u>Effective Precautionary Evacuations</u> Precautionary evacuations are very effective when sufficient time is available or when the incident is under control (e.g., an overturned tank car accident where righting of the tank car or transfer of the chemical contents can be held off until the evacuation is completed, or where the population potentially affected s some distance away and the leak rate is slow.)	5. <u>Potential Exposure</u> . If toxic fumes are present during the evacuation and wind changes speed/direction, evacuees could travel unaware into or through dangerous gases.
6. <u>Long Term</u> . An evacuation is necessary when an accidental release could be long-term or when there is real potential for explosion.	6. <u>"Panic Flight"</u> . The evacuation must be well controlled and organized with frequent credible information provided, to prevent "panic" and erratic flight.
	7. <u>Multi-jurisdictional Problems</u> . Problems of coordination of effort exist when evacuees of one jurisdiction are sent to another, or where the area evacuated consists of parts of several Communities.
	8. <u>Liability</u> . The protective action decision-maker must have a sound decision -making process and act with

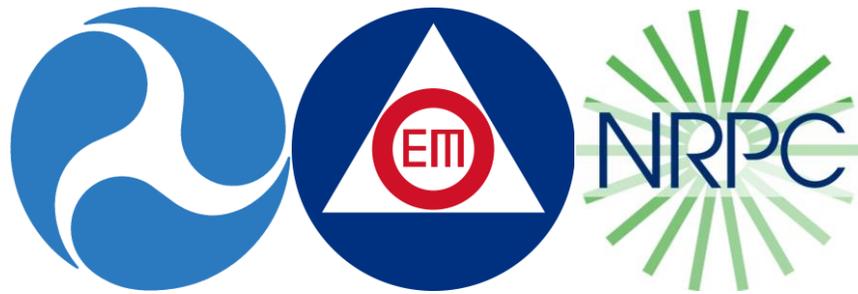
good faith effort to prevent being held liable for injuries and damages and loss of business and production.

Shelter-In-Place Protection Checklist

- Determine area to be sheltered in-place by readily identifiable boundaries.
- Activate alert warning devices.
- Issue specific instructions to population (through EAS, cable TV).
- Implement in-place protection, including:
 - Stay inside house or building, or go inside immediately,
 - Close windows and doors,
 - Turn off air conditioners and heating system blowers,
 - Close fireplace dampers,
 - Gather radio, flashlight, food, water, medicines, duct tape,
 - Go to inside **leeward area or basement of building and seal cracks and openings to provide extra protection (particularly if inside stay is to be longer than 2 hours),**
 - Do not use basements if toxic gases are heavier than air, and
 - Provide protective breathing, if necessary (may be wet towel).
- Provide special sheltering for transient populations (people in campgrounds, marinas, parks, etc).
- Provide special instructions to special populations (hospitals, nursing homes, etc.).
- Provide special instructions to group quarters (prisons, jails, senior centers, and care centers).
- Provide special instructions/aid to handicapped (mental and physical).
- Once conditions have stabilized, monitor and inspect affected areas for safe exit.
- Issue all clear.
- Instruct residents to go outdoors, air out house or building.

Shelter-In-Place Protection

PRO	CON
<p>1. <u>Immediate Protection.</u> Protection can be provided immediately with little or no time required after warning.</p>	<p>1. <u>Public Training Needed.</u> The general public needs to be trained on shelter in-place actions and acceptance, as this action may be contrary to normal human nature, which is to run from danger.</p>
<p>2. <u>Short Warning Message.</u> The public warning message is short since it is only necessary to identify the danger, describe the area affected, describe expedients to reduce air infiltration to the home or building, etc.</p>	<p>2. <u>Indoor Air Uncertainties.</u> Uncertainties may exist about whether indoor air concentrations will remain sufficiently low for a sufficiently long period.</p>
<p>3. <u>Little Preparation Time.</u> Little or no preparation time is necessary for shelter (only possible if room is "sealed" by expedient improvements).</p>	<p>3. <u>Explosive/Flammable Materials.</u> Inappropriate where releases of explosive or flammable gases could enter structures and be ignited by furnace and water heater ignitions.</p>
<p>4. <u>Ideal Life Support System.</u> The home is an ideal life support system with food, water, sanitation, medicines, bedding, clear air, communications (TV, radio, telephone), and familiar surroundings.</p>	<p>4. <u>Long-term Exposures.</u> May be very inappropriate for long-term exposures ("plume" potential) of 12 hours or more.</p>
<p>5. <u>Short-term Exposures.</u> May be very appropriate for short-term exposures (particularly "puff" releases) of 2-4 hours duration.</p>	<p>5. <u>Need to Air Out.</u> Infiltration of containment air into the structure over a period of time could result in high cumulative inhalation exposures unless the Structure is vacated and "aired out" after the plume outdoors has passed on or dispersed.</p>
<p>6. <u>Little Staff Support.</u> Requires considerably less emergency staff support than evacuation, as public shelter, traffic security personnel are not needed.</p>	<p>6. <u>Transients.</u> Those in parks, marinas, campgrounds, and outdoor sporting events may not have suitable shelter available and would need controls and special transportation to take them to such.</p>
<p>7. <u>Reduced Liability.</u> An in-place public protection action issued for a chemical leak may not be as liable as an evacuation order if the protective action decision was made using a sound decision-making process with good faith effort.</p>	



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