

Hazard Vulnerability Assessment

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PURPOSE

The purpose of the Hazard Vulnerability Assessment (HVA) tool is to assist in identifying the greatest threats and vulnerabilities within organisation, as well as using the tool to plan for emergencies and address resource gaps.

Information about the spreadsheet tool

Whenever possible, use the most appropriate and current data available to guide your assessment. In the absence of statistics, rely on the best judgment of local support partners. Calling on local partners will be helpful and is recommended. We recommend having representatives at a meeting with you while the assessment is being completed. However, if they cannot attend, a call or email asking a specific question will help you complete your analysis. Listed below are some partners you should consider:

1. Health Department
2. Fire and HazMat
3. Law Enforcement
4. Emergency Management
5. Human Services Department
6. Managed Care Organizations
7. Others

For each of the potential hazards listed in the blue column at the right of the HVA, evaluate the probability of its occurrence (pink column), its predicted impact for the areas listed (orange columns) and the planning and resources available (green columns) to address the hazard. Then, use the scales in the header of each column as a guide. The final yellow column displays the assessment results as a relative risk percentage. The higher the percent, the greater the relative risk.

Each of the pink, orange, and green heading boxes has three sections: the title, a brief description of the title, and a range of ranking numbers from 0-3 in the pink and orange columns and 1-3 in the green columns. More information on each title is provided in the instructions below.

To aid in selecting a ranking number (0-3) for each of the pink and orange titles, a text and numerical value is provided for each ranking number. The numerical value lends itself to applying historical or individual knowledge of the frequency of any of these situations. For example, under "Probability," the number 2 (moderate) is defined as "two to three" incidents within a 5-year period. The staff may have knowledge of this, or emergency management, fire or law enforcement partners may be able to provide information. If exact numbers are not known, select a number (0-3) that seems right for staff knowledge.

The range of numbers for the green columns is not as easy to define numerically. Based on staff and partners' experience and knowledge, a consensus should be reached on a range number that fits the status of your procedures and policies in place, as well as the completeness and accuracy of those procedures and policies.

PINK-colored column

Issues to consider for **probability** include, but are not limited to:

1. Known risk.
2. Historical data.
3. Manufacturer/vendor statistics.

ORANGE-colored columns

Issues to consider for **human impact** include, but are not limited to:

1. Potential for death.
2. Potential for injury requiring medical intervention.

Issues to consider for **services impact** include, but are not limited to:

1. Potential for interruption of direct resident care.
2. Potential for interruption of facility infrastructure.
3. Potential for interruption of professional and supporting staff.

Issues to consider for **community impact** include, but are not limited to:

1. Potential for contamination of outdoor air.
2. Potential for contamination of water supply (public and private).
3. Potential for contamination of food supply.
4. Potential for disruption of water supply.
5. Potential for disruption of food supply.

Issues to consider for **property impact** include, but are not limited to:

1. Cost to replace.
2. Cost to set up temporary replacement.
3. Cost to repair.
4. Time to recover

Issues to consider for **business impact** include, but are not limited to:

1. Business interruption.
2. Employees unable to report to work.
3. Company in violation of contractual agreements.
4. Imposition of fines and penalties or legal costs.
5. Interruption of critical supplies.
6. Reputation and public image.
7. Ability to weather financial impact or burden.

GREEN-colored columns

NOTE: Take the time to read and understand the four primary elements of emergency preparedness in the table below.

Element	Definitions
Mitigation	Mitigation means taking actions to reduce or prevent the impact of a disaster before it happens. Examples include: having an operational electric generator, having access to available alerting systems like a NOAA radio, stockpiling emergency supplies and equipment, or establishing a policy to require visitors with symptoms to wear masks during flu season.
Preparedness	Preparedness includes using a National Incident Management System (NIMS)-type emergency management organization with assigned roles and responsibilities. Examples include: having established procedures or job action checklists for key positions (administrator, incident commander) for event response to fire, tornado, hazardous material, and evacuation; having a training schedule on emergency policies and procedures; conducting periodic drills that implement established procedures and action checklists; conducting periodic drills that require the use and application of equipment like portable radios, evacuation sleds or chairs
Response	Response is the confident application of emergency procedures and use of communication equipment for an orderly and effective evacuation, tornado response, etc.
Recovery	Recovery is a procedural method to help determine when an emergency condition is over and planning for recovery can begin. It is a method for assessing damage to determine the scope of effort needed to return to normal operation and pre-identifying contacts for insurance providers, safety inspections, clean-up services, and skilled labor for repairs.

Assess the four primary elements of emergency preparedness (mitigation, preparedness, response, and recovery) from two different perspectives: internal and external.

Internal refers to the resources, capabilities, and capacities that come from within your facility and its management organization. Examples include, but are not limited to:

1. Types of supplies on hand.
2. Volume of supplies on hand.
3. Staff availability.
4. Staff knowledge of plans and procedures.
5. Ability to establish an incident management team.
6. Availability of back-up systems.

External refers to the resources, capabilities, and capacities that come from your local response organizations or industry partners. These include, but are not limited to:

1. Notification method to reach responders and partners.
2. The resources and authority responders bring to handle a given emergency.
3. Responder knowledge of your facility's special needs.
4. Types of agreements or memorandum of understanding that are in place and pre-signed.

Issues to consider for **mitigation** include, but are not limited to:

1. Emergency power and lighting.
2. On-hand stockpile of food, water, supplies, and equipment.
3. Active warning systems in the facility (NOAA).
4. Fire suppression.
5. Building air handling isolation capability.
6. Partner agreements or memorandums of understanding.
7. Insurance.

Issues to consider for **preparedness** include, but are not limited to:

1. Pre-established incident management team organization.
2. Status of current plans and procedures for staff.
3. Internal and external communication systems.
4. Frequency of drills.
5. Training status of staff.
6. Availability of alternate sources for critical supplies/services.
7. Ability to assess the effectiveness of a response or drill and incorporate identified changes into plans and procedures.

Issues to consider for **response** include, but are not limited to:

1. Quick access to response procedures and action checklists.
2. Efficient use of communication systems.
3. Access to response supplies and equipment.
4. Availability of alternate sources for critical supplies/services.
5. Time needed to organize an on-scene response.
6. Scope of response capability.

Issues to consider for **recovery** include, but are not limited to:

1. A current business continuity plan.
2. A process for determining when your facility is no longer under an emergency condition.
3. A process for assessing damages and steps needed to return the facility to normal operation.
4. Insurance coverage.
5. Availability of alternate sources for critical supplies/services.
6. Availability of temporary facilities.
7. Availability of access to safety inspection services, professional cleaning services, skilled labor for repairs, etc.

YELLOW-colored column

The yellow column of the spreadsheet contains the calculations that will provide the **risk or relative threat**. This risk is presented as a percent value, such that the higher the number, the higher the relative risk of threat from a given hazard scenario. The numerical values from each of the column cells for a given hazard scenario are automatically inserted into the risk formula to produce the relative risk value.

Once the relative risk for each hazard is determined, the hazards with the highest relative risk can be addressed by applying available resources to policies, procedures, emergency preparedness planning and training that will reduce the high risk value of a given hazard scenario. The overall goal is to change the relative risks of all hazards to as low a value as possible, then focus periodic training and exercises on those hazards that remain the highest probability.

Reasoning of HVA

There is no question that there is time and cost associated with developing and maintaining a good emergency preparedness program. It is also well understood that all facilities have limited resources. The HVA is to assess where individual facilities are most at risk, and based on a calculated risk scale, put resources toward those potential scenario incidents that pose the most likely or severe impact.

Time allowance for HVA

It's hard to say exactly how much time you should allow for completing the HVA. Many agencies have completed the process in half a day. It is not something that has to be completed in one sitting. Breaking it up to include partners as they are available may in fact be helpful and provide a better HVA in the end.

Partner Requirements of HVA

No. It is up to organization to determine which partners to involve in completing the HVA. We encourage you to consider including partners such as emergency management, fire, local law enforcement, human services departments.

HAZARD SCENARIO DESCRIPTIONS

Introduction

A Federal interagency workgroup developed a list of all-hazards planning scenarios (the National Planning Scenarios) for use in national, federal, state, and local preparedness planning activities. This list of scenarios was modified to use under two categories: natural and man-made. Note: if your facility has a unique situation or feel free to add hazard scenarios to the list and assess them with the rest.

Natural Disasters

Blizzard:

A blizzard means that the following conditions are expected to prevail for a period of four hours or longer: sustained wind or frequent gusts to 35 miles an hour or greater; and considerable falling and/or blowing snow (i.e., reducing visibility to less than a quarter of a mile).

Cold (extreme and prolonged):

A period of unusually cold weather that lasts two or more days.

Earthquake:

An earthquake is the sudden release of stored energy; most earthquakes occur along a fracture within the earth, called a fault. The shaking caused by this sudden shift is often very small, but occasionally large earthquakes produce very strong ground shaking. It is this strong shaking and its consequences – ground failure, landslides, liquefaction – that damages buildings and structures and upsets the regional economy. The Richter scale is logarithmic, so a recording of 7, for example, indicates a disturbance with ground motion ten times as large as a recording of 6. A

quake of magnitude 2 is the smallest quake normally felt by people. Earthquakes with a Richter value of 6 or more are commonly considered major; great earthquakes have magnitude of 8 or more.

Flash Flooding:

A rapid and extreme flow of high water into a normally dry area or a rapid water level rise in a stream or creek above a predetermined flood level; beginning within six hours of the causative event (e.g., intense rainfall, rapid melting snow). However, the actual time threshold may vary in different parts of the country.

Heat (extreme and prolonged):

A period of abnormally, uncomfortably hot and unusually humid weather; typically a heat wave lasts two or more days.

Ice Storm:

An ice storm is used to describe occasions when damaging accumulations of ice are expected during freezing rain situations. Significant accumulations of ice pull down trees and utility lines resulting in loss of power and/or communication lines or disrupt the movement of supplies and materials. An accumulation of ice may make walking and driving extremely dangerous. Significant ice accumulations are usually of about a quarter of an inch or greater.

Landslide:

Landslide is the movement of rock, soil and debris down a hillside or slope. Landslides take lives, destroy homes, businesses and public buildings, interrupt transportation, undermine bridges, derail train cars, cover marine habitat and damage utilities. The term landslide includes a wide range of ground movement, such as rock falls, deep failure of slopes, and shallow debris flows. Ground failures that result in landslides occur when gravity overcomes the strength of a slope.

Landslides are activated by storms, earthquakes, volcanic eruptions, fires, alternate freezing or thawing, and steepening of slopes by erosion or human modification.

Tornado:

Tornadoes are nature's most violent storms. Spawned from powerful thunderstorms, tornadoes can cause fatalities and devastate a

neighborhood in seconds. A tornado appears as a rotating funnel-shaped cloud that extends from a thunderstorm to the ground, with whirling winds that can reach 300 miles per hour. Damage paths can be in excess of one mile wide and 50 miles long. Every state is at some risk from this hazard.

Wild fire:

A wildfire is an uncontrollable fire spreading through vegetative fuels, exposing and possibly consuming structures. They often begin unnoticed, spread quickly and are usually signaled by dense smoke that fills the area for miles around.

Man-Made

Airplane Crash:

The impact of an airplane crash should be considered on two levels; first, the epicenter of the crash site and second, an extended debris field. The question to ask is, "Is our facility along the take-off or landing flight path of a regional airport?"

Biological Disease Outbreak-Pandemic Flu:

Influenza pandemics occur unpredictably, with four occurring in the 20th century (1918-1919, 1957-1958, 1968-1969 and 2011). Influenza pandemics may occur when a new influenza A virus subtype emerges and causes infection in people (termed genetic shift). If this new virus subtype, for which there is little to no immunity in the population, spreads efficiently between people, it can cause a pandemic. While influenza outbreaks occur annually, a pandemic is a unique event. Rates of influenza illness, as well as its severity, are likely to be high because most (or all) of the human population will be susceptible, having had no prior exposure to this new influenza subtype. In addition, persons not generally at high risk may develop severe or fatal disease.

Civil Demonstration (adjacent to your facility):

A large number of people gather peacefully in one place in support of their civil liberties. This could block traffic patterns, thus disrupting staff and supply movement to or from your facility.

Communications Disruption (major and prolonged):

There is major failure in any type of communications infrastructure through a variety of mechanisms, including physical destruction of transmission or broadcast components, disruption in supporting infrastructure and system congestion for greater than four hours. This excludes computer network or internet access failure.

Computer Failure (system):

Loss of computer network or Internet access for greater than four hours.

Explosives Attack-Improvised Explosion:

In this scenario, agents of the Universal Adversary (UA) will employ a multiple prong attack to funnel personnel into predetermined locations, utilizing multiple devices such as vehicle bombs, suicide bombers, and man-delivered IEDs to inflict the greatest number of casualties.

Flooding:

Any high flow, overflow, or inundation by water which causes or threatens damage.

Fuel Shortage:

An energy emergency or fuel shortage may involve any one or more of various types of energy resources. It might involve natural gas, heating oil, gasoline, coal, or electricity. No matter which type of resource is involved, it is the inability to produce or to transfer sufficient quantities of the resource at an acceptable cost to businesses, industry, and the public that creates the emergency. When this disrupts the normal day-to-day lives of citizens, it can become an energy emergency. This is especially true during periods of inclement weather where heating is necessary for individual safety.

HazMat Release / Explosion (fixed site):

An incident resulting in the unintentional release of a hazardous material or agent (biological, chemical, physical) which has the potential to cause harm to humans, animals, or the environment, either by itself or

through interaction with other factors at a fixed site.

Hazmat Release / Explosion (transport):

An incident resulting in the unintentional release of a hazardous material or agent (biological, chemical, physical) which has the potential to cause harm to humans, animals, or the environment, either by itself or through interaction with other factors during the loading, unloading, transportation or temporary storage of hazardous materials.

Nuclear Facility Incident (fixed site):

For the purposes of this vulnerability assessment tool, this is defined as a larger scale radiological incident at fixed location. This includes incidents at a nuclear power plant.

Power Outage:

Loss of residential or commercial electrical service for greater than 4 hours.

Supply Disruption:

This refers to a disruption that happens at one time, due to some type of major event, excluding fuel power, water. Crucial supply distribution is interrupted for more than three days, impacting citizen health and safety.

Water System Failure:

Damage to public water supply systems that impact the delivery of potable water for greater than four hours.

Municipal Water Contamination:

The presence of biological, chemical, or radiological contamination of a municipal potable water system.

Review and Revision

The **Hazard Vulnerability Assessment emergency** will be reviewed and revised

Recommended: _____

Signature

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Approved: _____

Signature

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