III. RISKS AND HAZARDS TO CONSIDER

OBJECTIVES

At the end of this unit, you should be able to:

- Identify hazards that are most likely to affect special events.
- Identify the risks presented by the hazards.
- Identify strategies for overcoming and minimizing risks and hazards associated with a special event.
- Describe the elements of a contingency plan.

SCOPE

The scope of this unit includes:

- Unit Overview
- Hazard Analysis
- Identifying Mitigation Actions
- Contingency Plans
- Unit Summary

ADDITIONAL INFORMATION

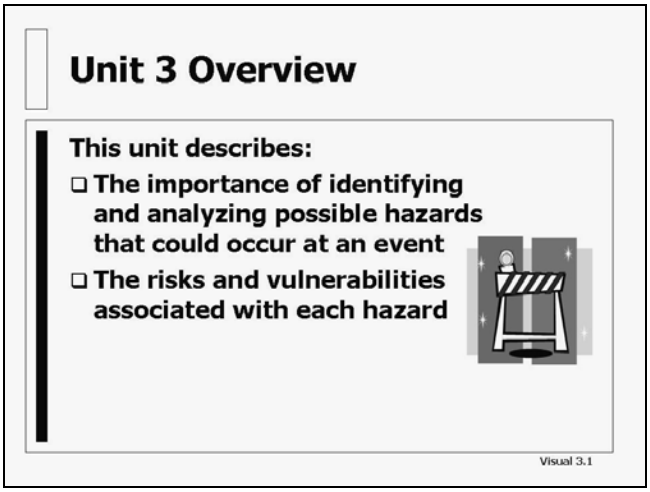
Information about this material is available by contacting:

FEMA Independent Study Program
Emergency Management Institute
National Emergency Training Center
16825 South Seton Avenue
Emmitsburg, MD 21727

UNIT OVERVIEW

UNIT OVERVIEW

In this unit, we explore how to go about identifying and analyzing possible hazards that could occur at an event. Also covered in this unit are the risks and vulnerabilities associated with each hazard.



YOUR NOTES:

UNIT OVERVIEW (CONT.)

OBJECTIVES

Review the unit objectives below. At the end of this unit, you should be able to:

- Identify hazards that are most likely to affect special events.
- Identify the risks presented by the hazards.
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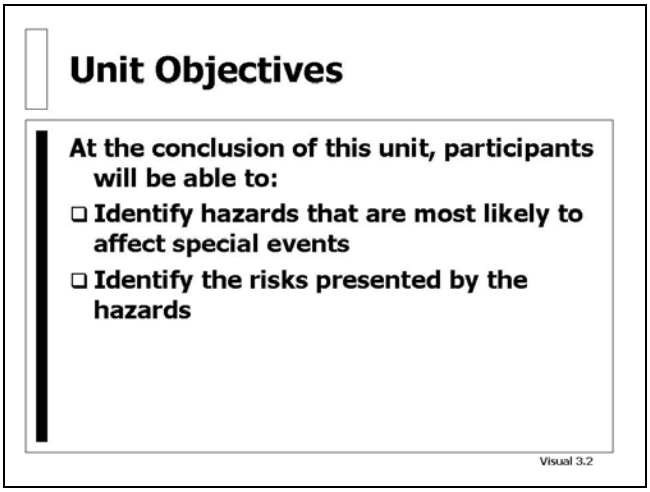
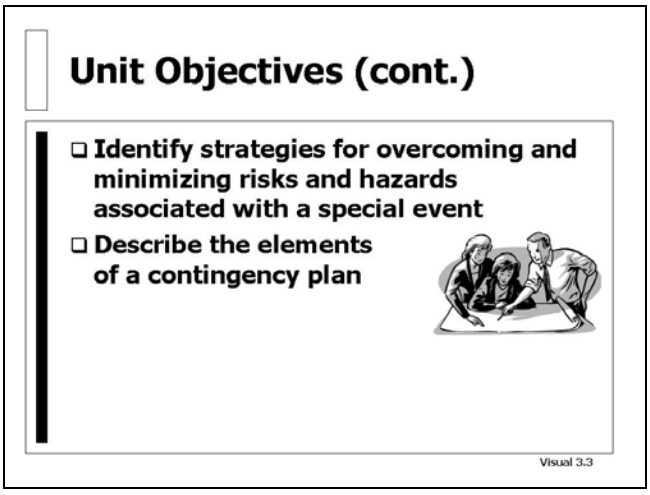


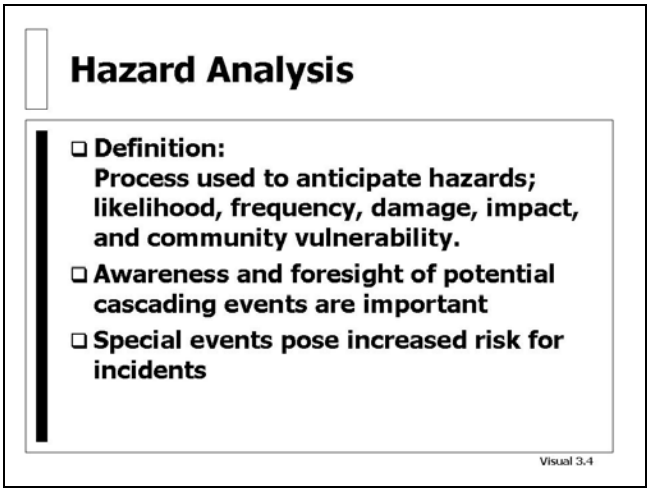


HAZARD ANALYSIS

Hazard analysis is the decision process used to anticipate what can occur, how often it is likely to occur, the damage it is likely to cause, how likely it is to affect the community, and how vulnerable the community is to the hazard.

For special events, it is important to have broad situational awareness and foresee any potential cascading events from identified hazards.

Because of the potentially large numbers of participants and attendees, special events may present a greater risk for incidents and provide targets of opportunity for criminal and/or terrorist elements.

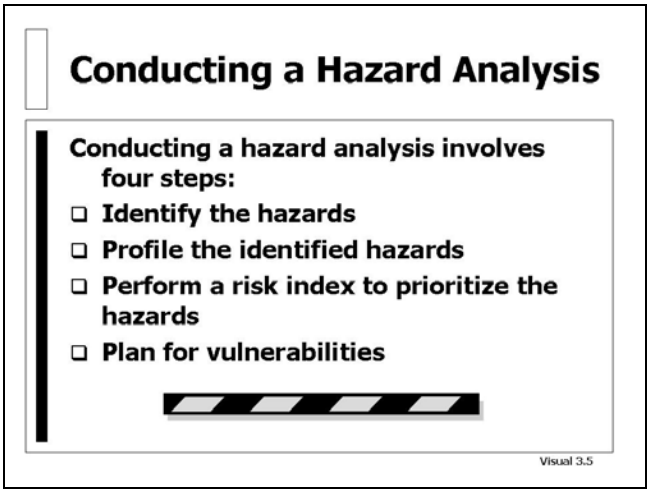


YOUR NOTES:

HAZARD ANALYSIS (CONT.)

The four steps for conducting a hazard analysis are:

- Identify the hazards.
- Profile the identified hazards.
- Perform a risk index to prioritize the hazards.
- Plan for vulnerabilities.



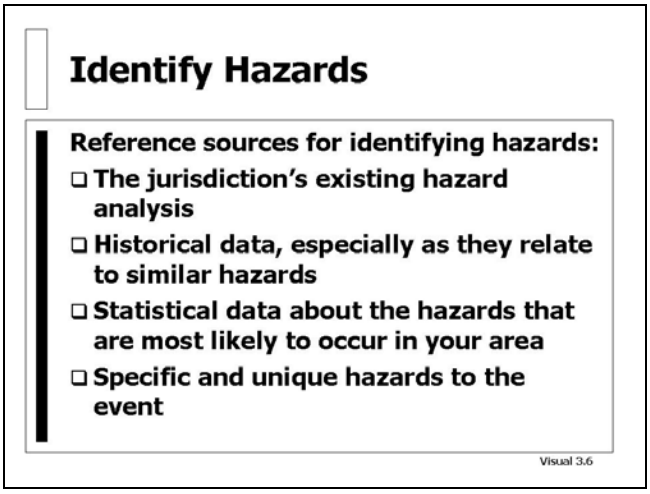
YOUR NOTES:

HAZARD ANALYSIS (CONT.)

Step 1 in a hazard analysis is to identify hazards.

There are several sources of information that will help you to identify natural, technological, or manmade hazards that may affect your event:

- The jurisdiction's existing hazard analysis
- Historical data, especially as they relate to similar hazards
- Statistical data (from government agencies) about the hazards that are most likely to occur in your area
- Specific and unique hazards to the event

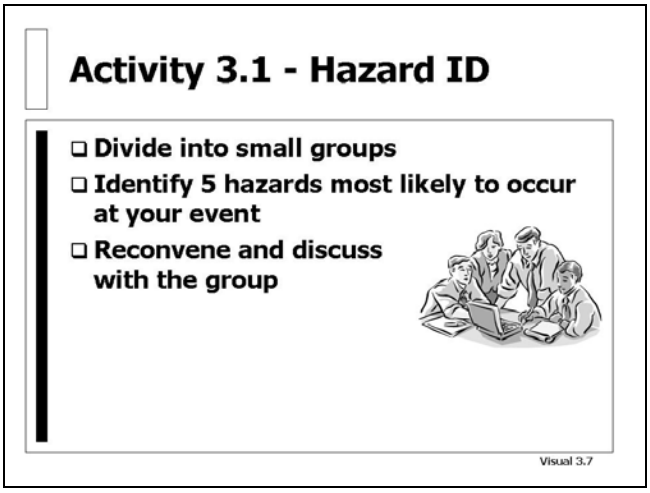


YOUR NOTES:

ACTIVITY 3.1 – IDENTIFYING HAZARDS

Instructions:

1. Divide into small groups – 5 or 6 per group (same groups in which you have been working).
2. The purpose of the exercise is to begin to identify potential hazards for the event you began planning in Unit 2.
3. Identify 5 of the most likely hazards associated with your event.
4. Use the Special Events Contingency Planning Job Aids Manual as needed.
5. Spend about 15 minutes on this portion of the exercise.
6. Reconvene and select a representative from your group to read your group's list of hazards.
7. Discuss each list as a group.

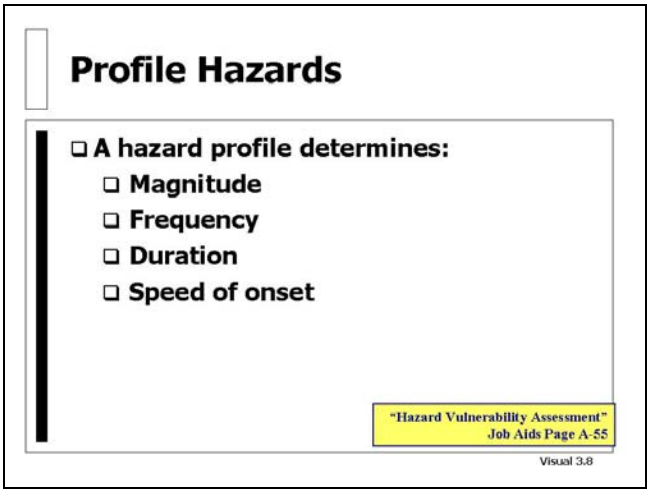


YOUR NOTES:

PROFILING HAZARDS

Step 2 is to profile the identified hazards. The hazard profile should address each hazard's:

- Magnitude. Magnitude deals with size. How strong a hazard is or the areas that a hazard could affect could dramatically change response plans. For example, a storm that drops two inches of rain over a small area very quickly requires a much different response than an extratropical storm that drops 20 inches of rain over a four-State area.
- Frequency (including whether a seasonal pattern exists). Frequency deals with how often a hazard can be expected to occur. In some areas of the United States, thunderstorms are nearly a daily occurrence during the summer months. Hurricanes, on the other hand, are seasonal and may or may not affect even high-risk areas for years at a time.
- Duration. Duration deals with how long a hazard event can be expected to last. For example, the duration of even a severe thunderstorm is much less than that of a hurricane.
- Speed of onset (for the purpose of determining the available time for warning). Speed of onset is critical to warning and response. The amount of damage and loss of life of even an extreme hazard can be mitigated if emergency personnel and the public have time to take protective action.



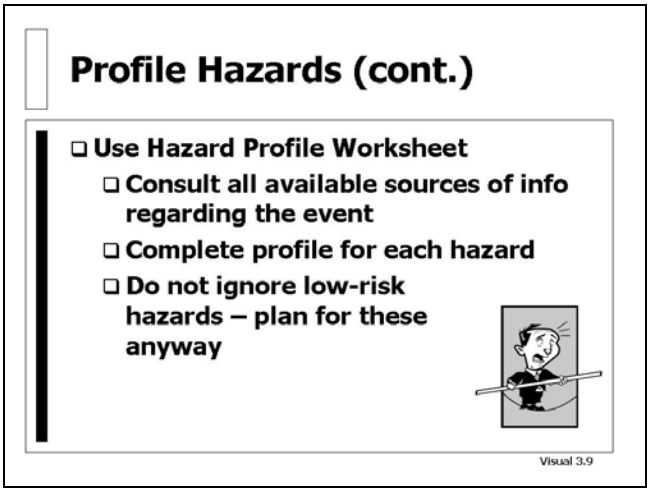
YOUR NOTES:

PROFILING HAZARDS (CONT.)

Review the Hazard Vulnerability Assessment, on page A-55 through A-57 in the FEMA Special Events Contingency Planning Job Aids Manual and the Hazard Profile Worksheet on page III-10 of your Student Manual. To complete the profile, you will need to consult all available sources of information regarding the event and the community on the hazard.

A profile should be completed for each hazard to which the event is subject, but note that some hazards may pose such a limited threat to the event that additional analysis is not necessary.

However, do not ignore low-risk hazards that have a high potential for damage should they occur. These low-risk hazards may not be the event planners' highest planning priority but must be planned for nonetheless.



YOUR NOTES:

Hazard Profile Worksheet

Hazard:

Potential magnitude (Percentage of the community that can be affected):

Catastrophic: More than 50%
Critical: 25 to 50%
Limited: 10 to 25%
Negligible: Less than 10%

Frequency of Occurrence:

- **Highly likely:** Near 100% probability in next year.
- **Likely:** Between 10 and 100% probability in next year, or at least one chance in next 10 years.
- **Possible:** Between 1 and 10% probability in next year, or at least one chance in next 100 years.
- **Unlikely:** Less than 1% probability in next 100 years.

Seasonal Pattern:

Areas Likely to be Affected Most:

Probable Duration:

Potential Speed of Onset (Probable amount of warning time):

- Minimal (or no) warning.
- 6 to 12 hours warning.
- 12 to 24 hours warning.
- More than 24 hours warning.

Existing Warning Systems:

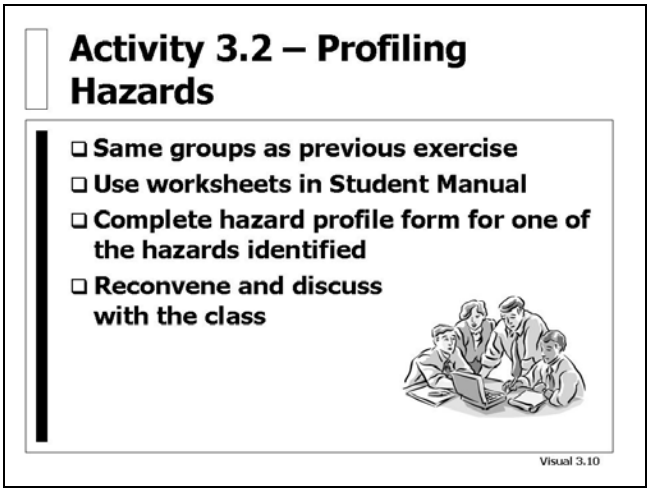
*Does a Vulnerability Analysis Exist?**

Yes ☐
No ☐

ACTIVITY 3.2 – PROFILING IDENTIFIED HAZARDS

Instructions:

1. Divide into small groups – 5 or 6 per group (same groups in which you have been working).
2. The purpose of the exercise is to begin to profile one of the hazards that you have just identified for your event.
3. Using the worksheet on page III-10 of your Student Manual, complete the form, profiling one of the 5 hazards you have identified.
4. Use the Special Events Contingency Planning Job Aids Manual as needed.
5. Spend about 20 minutes working on this portion of the exercise.
6. Reconvene and present one hazard profile to the class.
7. Discuss and give feedback regarding all the groups' hazard profiles.

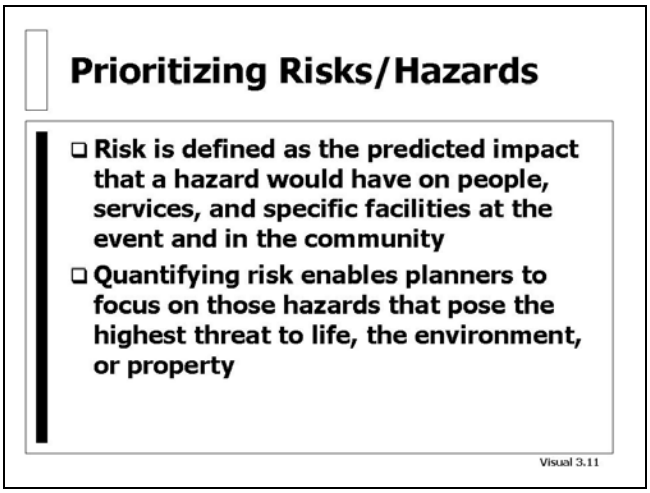


PRIORITIZING RISKS

After compiling hazard profiles, the next step is to quantify the risk and prioritize the hazards.

Risk is defined as the *predicted impact that a hazard would have on the people, services, and specific facilities at the event and in the community.* An example would be a specific road that is at risk of flooding during heavy rains, which may result in restricted access to a critical facility.

Quantifying risk enables planners to focus on those hazards that pose the highest threat to life, property, and the environment.

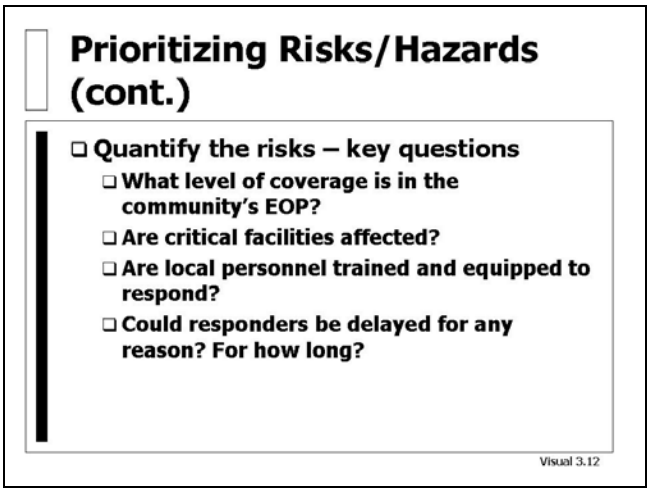


YOUR NOTES:

PRIORITIZING RISKS (CONT.)

Some questions to ask in determining vulnerability include:

- What level of coverage is this hazard given in your community's Emergency Operations Plan (EOP)?
- Are critical facilities (e.g., fire and police stations) likely to be affected?
- Are local personnel trained and equipped to respond safely?
- Could response personnel be delayed by traffic, debris, or other factors? For how long?



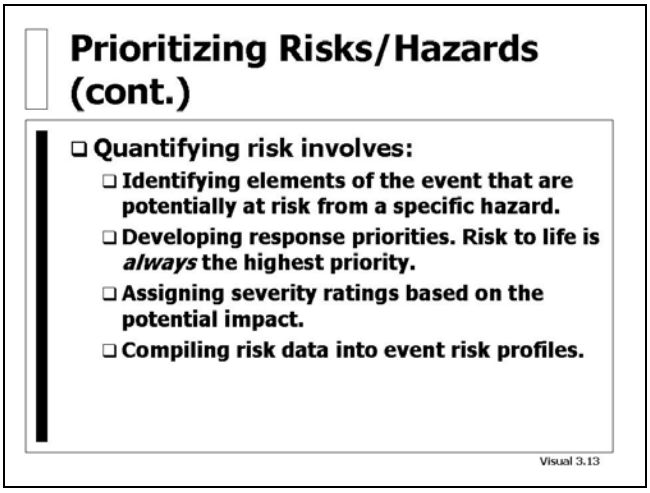
YOUR NOTES:

PRIORITIZING RISKS (CONT.)

Quantifying risk involves:

- Identifying the elements of the event (populations, facilities, and equipment) that are potentially at risk from a specific hazard.
- Developing response priorities. Risk to life is *always* the highest priority.
- Assigning severity ratings based on the potential impact to life, essential facilities, and critical infrastructure.
- Compiling risk data into event risk profiles that show the areas of the event and community that are at highest risk from the hazard.

In surveying risk, it is helpful to develop response priorities.

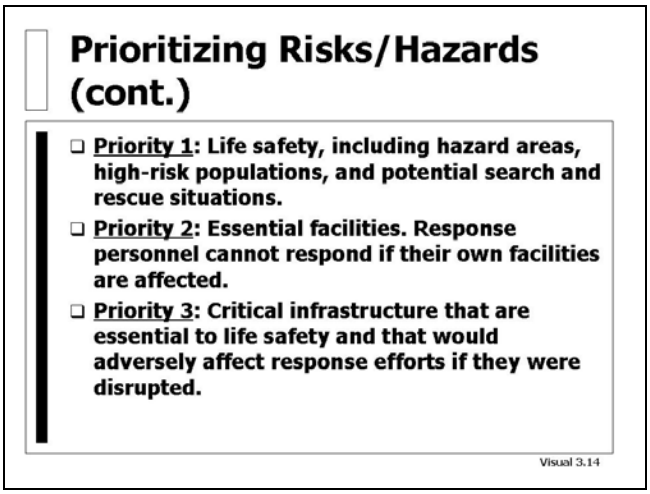


YOUR NOTES:

PRIORITIZING RISKS (CONT.)

Use the following hierarchy for setting priorities:

- Priority 1: Life safety (including hazard areas, high-risk populations, and potential search and rescue situations).
- Priority 2: Essential facilities. Remind the group that response personnel cannot respond if their own facilities are affected.
- Priority 3: Critical infrastructure (utilities, communication, and transportation systems) that are essential to life safety and that would adversely affect response efforts if they were disrupted.



YOUR NOTES:

PRIORITIZING RISKS (CONT.)

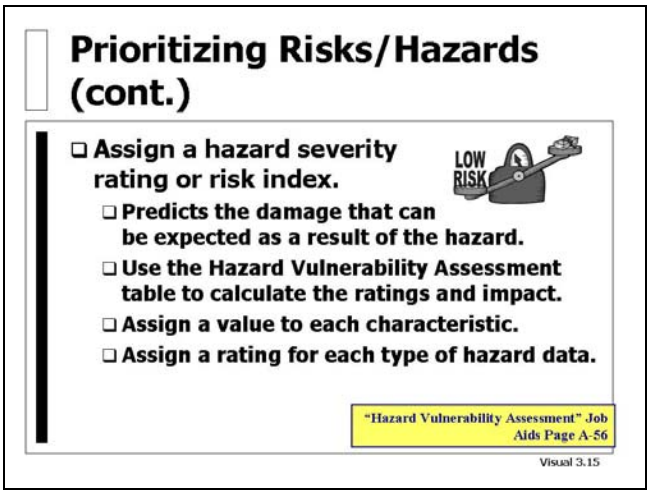
You should assign each hazard a *severity rating*—or *risk index*—that will *predict, to the degree possible, the damage that can be expected at the event and in the community as a result of that hazard.*

This rating quantifies the expected impact of a specific hazard on people, essential facilities, property, and response assets.

Review the Hazard Vulnerability Assessment table on page A-56 of the Special Events Contingency Planning Job Aids Manual. The ratings and the expected impact are calculated at each level. Planners should develop a risk index for each hazard by assigning a value to each characteristic (using the following values):

- 3 = catastrophic
- 2 = critical
- 1 = limited
- 0 = negligible

Hazard Severity Ratings	
Severity	**Expected Impact**
Catastrophic (3)	▪ Multiple deaths ▪ Complete shutdown of critical facilities for 30 days or more ▪ More than 50 percent of property severely damaged
Critical (2)	▪ Injuries and/or illnesses result in permanent disability ▪ Complete shutdown of critical facilities for at least 2 weeks ▪ More than 25 percent of property is severely damaged
Limited (1)	▪ Injuries and/or illnesses do not result in permanent disability ▪ Complete shutdown of critical facilities for more than 1 week ▪ More than 10 percent of property is severely damaged
Negligible (0)	▪ Injuries and/or illness treatable with first aid ▪ Minor quality of life lost ▪ Shutdown of critical facilities and services for 24 hours or less ▪ Less than 10 percent of property severely damaged


Prioritizing Risks/Hazards (cont.)
Assign a hazard severity rating or risk index.
LOW RISK
Predicts the damage that can be expected as a result of the hazard.
Use the Hazard Vulnerability Assessment table to calculate the ratings and impact.
Assign a value to each characteristic.
Assign a rating for each type of hazard data.
"Hazard Vulnerability Assessment" Job Aids Page A-56
Visual 3.15

YOUR NOTES:

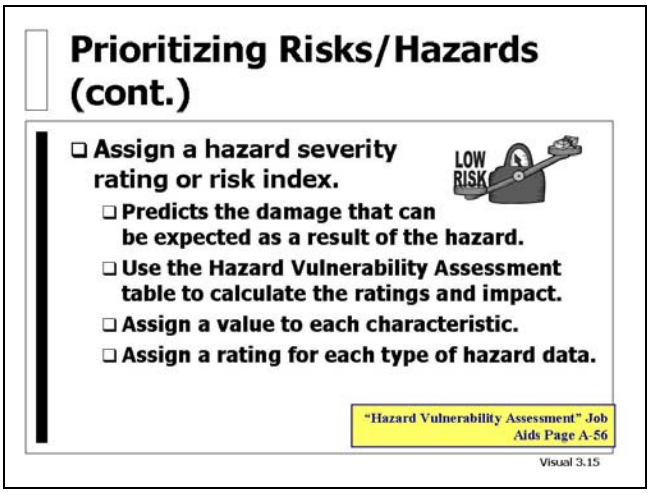
PRIORITIZING RISKS (CONT.)

You should average the value of each factor to determine the overall risk level for that hazard.

Prioritizing Risks:

- Select a hazard.
- Assign a value of 0, 1, 2 or 3 to each of the characteristics.
- Add the values.
- Divide by 4 to arrive at an overall risk value.

The result of this process will be a prioritized list of hazards that pose the greatest risk to the community. The planning team should develop plans for each hazard for which the risk index exceeds a pre-determined threshold.



YOUR NOTES:

Hazard Vulnerability Assessment

Using the severity and frequency distribution definitions, the planning team should identify potential hazards for the event and rank them in the Rating Worksheet.

Hazard	Frequency (Likelihood)	Potential Impact on Population	Potential Impact on Property	Level of Coverage in EOP	Point Total
	0 = Unlikely 1 = Possible 2 = Likely 3 = Highly Likely	0 = Negligible 1 = Limited 2 = Critical 3 = Catastrophic	0 = Negligible 1 = Limited 2 = Critical 3 = Catastrophic	0 = None 1 = Limited 2 = Sufficient 3 = Compre-hensive (annex)	
	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	
	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	
	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	
	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	
	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	
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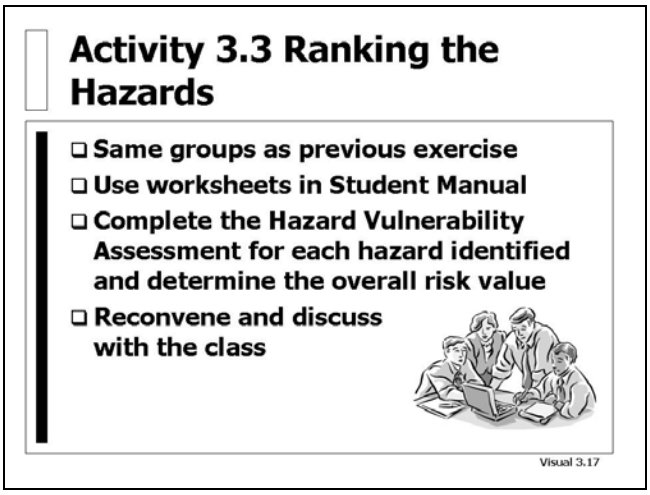
	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	
	0 1 2 3	0 1 2 3	0 1 2 3	0 1 2 3	

ACTIVITY 3.3 – RANKING THE HAZARDS

Instructions:

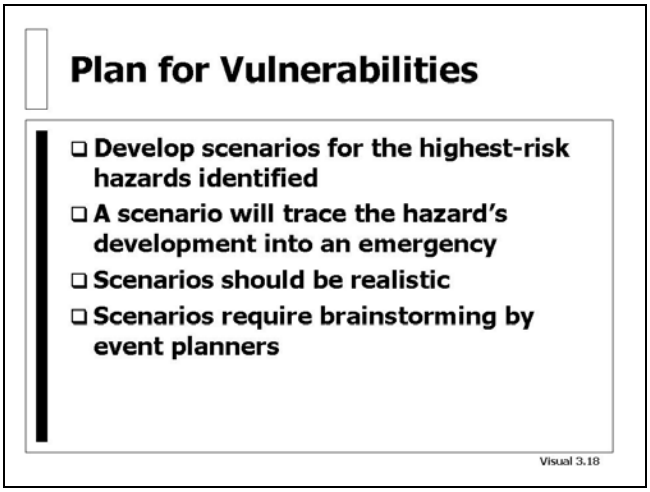
1. Divide into small groups – 5 or 6 per group (same groups in which you have been working).
2. The purpose of the exercise is to assess and rank the risk associated with each hazard you have just profiled.
3. Using the hazard severity ratings from page III-16 and the worksheet on page III-19 of your Student Manual, complete the risk index and rank each hazard identified.
4. Use the Special Events Contingency Planning Job Aids Manual as needed.
5. Spend about 5 minutes on this portion of the exercise.
6. Reconvene and give group feedback and discussion.



Plan for Vulnerabilities

The final step in the hazard analysis process is to develop scenarios for the highest-risk hazards (or those that rank above a specified threshold). These scenarios trace the hazard's development into an emergency. Scenarios should be realistic and based on the community's hazard and risk data.

To create a scenario, event planners should brainstorm to track the development of a specific type of emergency.

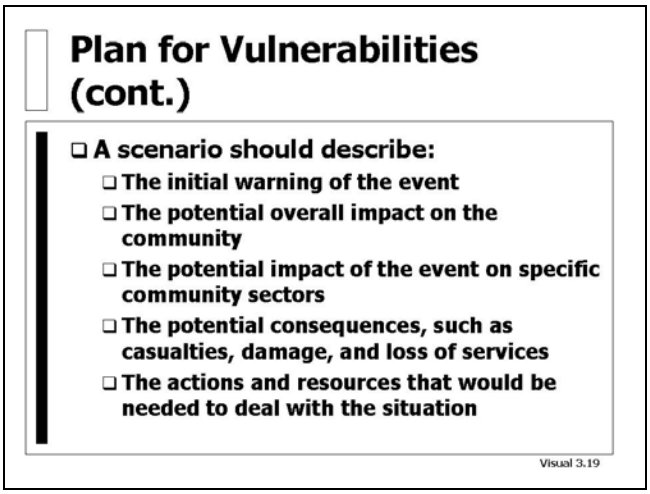


YOUR NOTES:

Plan for Vulnerabilities (cont.)

A scenario should describe:

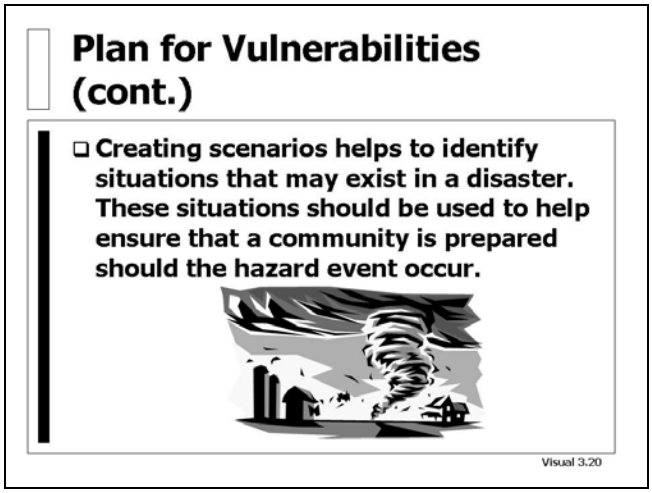
- The initial warning of the event.
- The potential overall impact on the community.
- The potential impact of the event on specific community sectors.
- The potential consequences, such as casualties, damage, and loss of services.
- The actions and resources that would be needed to deal with the situation.



YOUR NOTES:

Plan for Vulnerabilities (cont.)

Creating scenarios helps to identify situations that may exist in a disaster. These situations should be used to help ensure that a community is prepared should the hazard event occur.



YOUR NOTES:

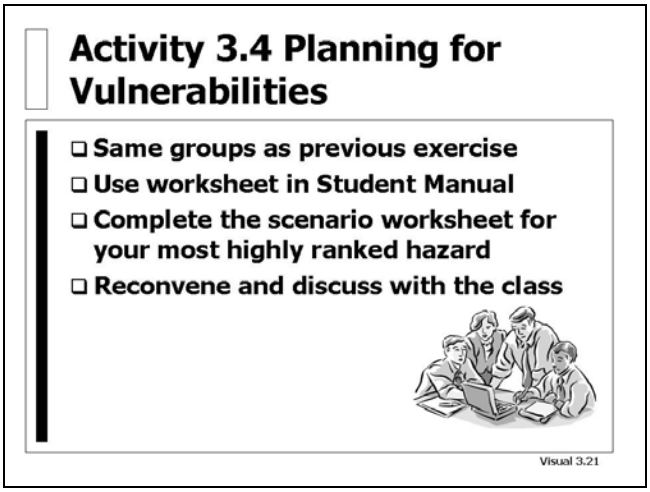
Hazard Scenario Planning Worksheet

Hazard:
Initial warning of the event:
Potential overall impact on the community:
Potential impact of the event on specific community sectors:
Potential consequences, such as casualties, damage, and loss of services:
The actions and resources that would be needed to deal with the situation:

ACTIVITY 3.4 – PLAN FOR VULNERABILITIES

Instructions:

1. Divide into small groups – 5 or 6 per group (same groups in which you have been working).
2. The purpose of the exercise is to practice brainstorming scenarios associated with your highly ranked hazards.
3. Use the worksheet on page III-28 of your Student Manual, select your most highly ranked hazard and brainstorm some scenarios that might occur during the event.
4. Use the Special Events Contingency Planning Job Aids Manual as needed.
5. Spend about 10 minutes on this portion of the exercise.
6. Reconvene and give group feedback and discussion.



TERRORISM HAZARDS

Special events sometimes attract hundreds of thousands of people, and receive extensive publicity.

These conditions make special events in every community prime targets for terrorists. Terrorist groups may have the following motives:

- Political
- Religious
- Racial
- Environmental
- Special interest

YOUR NOTES:

TERRORISM HAZARDS (CONT.)

When assessing the risk of a terrorist incident, effective planning and intelligence gathering can lessen the likelihood of a surprise emergency incident.

Descriptive intelligence with predictive interpretation that forecasts the probability of the threat and the target can enhance operational readiness in training, equipping, and practicing to respond to emergency incidents.

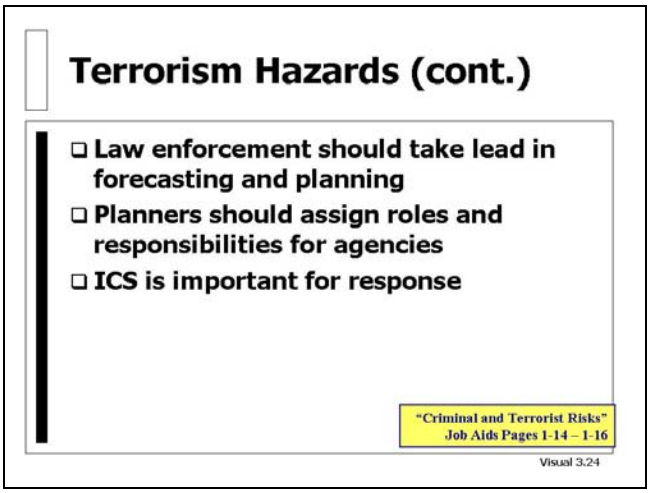
YOUR NOTES:

TERRORISM HAZARDS (CONT.)

State law enforcement agencies should take the lead in pre-incident threat forecasting and planning.

Roles and responsibilities of the various stake-holding agencies for the event need to be determined and an incident chain of command put in place, so that, if a terrorist threat materializes, confusion and duplication of response can be diminished.

Refer to the Special Events Contingency Planning Job Aids Manual, pages 1-16 through 1-17, and review the information about critical infrastructure and key asset areas.



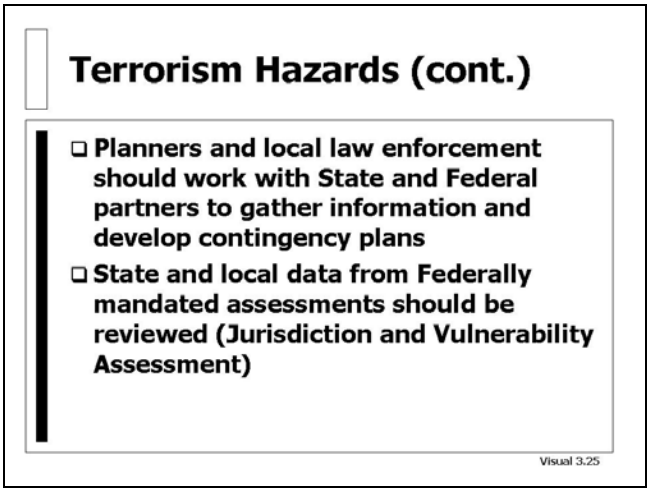
YOUR NOTES:

TERRORISM HAZARDS (CONT.)

Every jurisdiction in the country has conducted a jurisdiction threat and vulnerability assessment, which was required by the Federal Government as part of the national homeland security preparedness effort.

When you as event planners formulate contingency plans for special events, you should work together with State and Federal partners to ensure that State and local data from these Federally mandated assessments are reviewed.

Local law enforcement officials should consult the FBI and State law enforcement intelligence specialists on current threat and vulnerability data as part of the planning and risk assessment process.



YOUR NOTES:

HAZARD MITIGATION

Hazard mitigation is any sustained action taken to reduce or eliminate long-term risk to life and property from a hazard event.

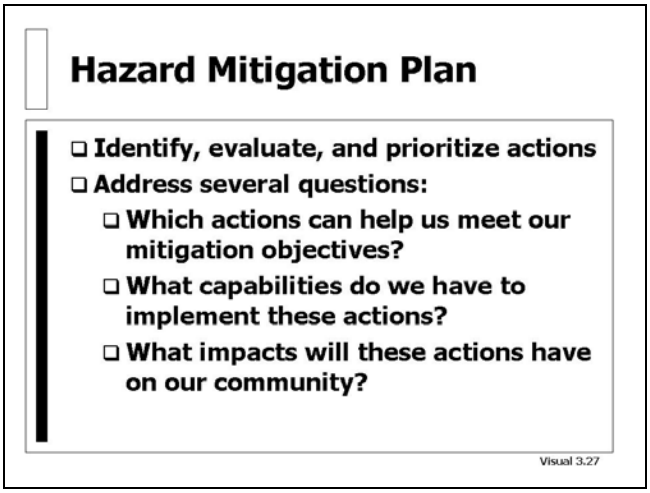
Mitigation planning is a process for systematically identifying policies, activities, and tools that can be used to implement those actions. The process has four steps:

1. Organizing resources
2. Assessing risks
3. Developing a mitigation plan
4. Implementing the plan and monitoring progress

HAZARD MITIGATION (CONT.)

When you are developing a mitigation plan, you must identify, evaluate, and prioritize a list of recommended mitigation actions to incorporate into the mitigation plan. When you complete an evaluation of the pluses and minuses for each potential action, you address several questions:

- Which actions can help us meet our mitigation objectives?
- What capabilities do we have to implement these actions?
- What impact will these actions have on our community?



YOUR NOTES:

HAZARD MITIGATION (CONT.)

Mitigation actions can be grouped into six broad categories:

1. Prevention
2. Property protection
3. Public education and awareness
4. Natural resource protection
5. Emergency services
6. Structural projects

YOUR NOTES:

HAZARD MITIGATION (CONT.)

Once the mitigation activity has been identified, it is important to implement the strategies and monitor progress.

It is important to identify how mitigation actions will be implemented by identifying resources and timeframes, confirming partners, and defining responsibilities.

YOUR NOTES:

CONTINGENCY PLANS

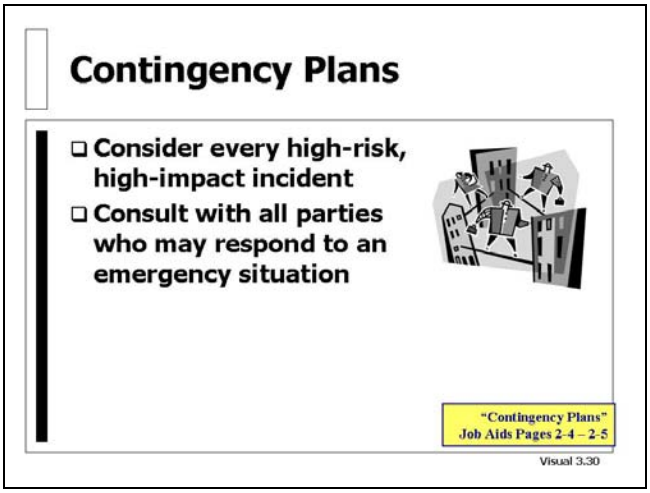
As a class, discuss your experience and understanding of contingency plans.

- What is a contingency plan?
- If you are planning a cookout for the neighbors at your house and you have an alternate menu in case it rains, is that a contingency plan?
- If your kid is applying to Harvard and you insist he or she also apply to the state university in case he or she isn't accepted at Harvard, is that a contingency plan?
- Why do we develop contingency plans?

Contingency plans can be for everything from what we will do if the trash cans are overflowing an hour after the event begins to what we will do if there is a bomb threat.

Event planners should consider every high-risk, high-impact incident, and consult with all parties who may respond in each emergency situation identified in the hazard analysis.

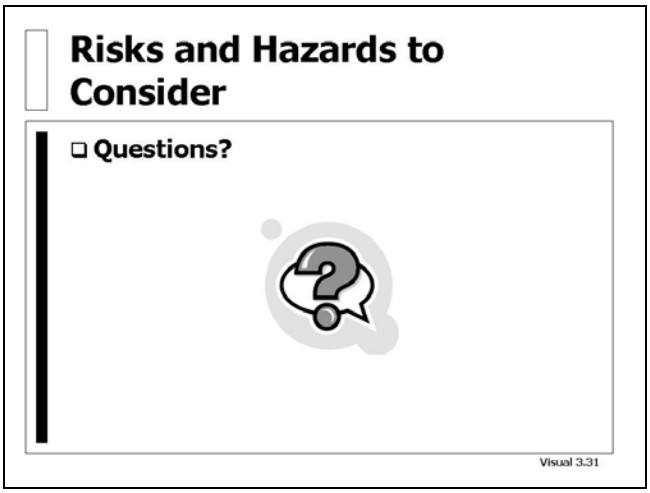
Refer to the Special Events Contingency Planning Job Aids Manual, pages 2-4 through 2-5 and review the information about contingency plans.



YOUR NOTES:

UNIT SUMMARY

Discuss any outstanding questions about risks and hazards to consider with the instructor.



YOUR NOTES: