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BEST PRACTICE

School Emergency Management Planning: Hazard Vulnerability Assessments

PURPOSE

Provides an overview of planning concepts for conducting a school hazard vulnerability assessment (HVA).

SUMMARY

HVAs are essential elements of school emergency management planning. Schools can utilize HVAs to identify potential hazards and to prioritize prevention and mitigation efforts. HVAs are typically conducted by risk assessment teams that include school personnel and representatives from the local emergency management community.

DESCRIPTION

HVAs are vital to the prevention and mitigation phases of emergency management planning. If properly identified, many hazards can be eliminated or their potential consequences reduced. HVAs help emergency planners identify risks, determine vulnerabilities, and estimate the consequences of incidents. Community officials, including school administrators, can utilize HVAs to identify hazards and to minimize the impact of potential disasters.

This Best Practice provides information and resources to assist school administrators in organizing HVAs. There is no standard methodology for HVAs. Some schools utilize their own staff while others rely on district assessments or emergency management agencies. Regardless of the methods adopted, the concepts presented in this document are relevant when conducting an HVA at school. The document consists of four components:

- Risk Assessment Teams
- Hazard Identification
- Risk Analysis
- Mitigation Plans

Risk Assessment Teams

An effective school HVA requires the input of experts with experience in identifying potential hazards. For this reason, school principals and district superintendents, who are typically responsible for organizing hazard assessments, should consider developing risk assessment teams. Risk assessment teams provide experience and multiple perspectives, minimizing the risk of bias in identifying hazards. Risk assessment team members are typically drawn from school personnel, school resource officers (SRO), fire department personnel, and representatives of the local emergency management community. Representatives of private industries may also be included on risk assessment teams.

School Personnel

School personnel can assist risk assessment teams in accounting for day-to-day school hazards. School personnel may have encountered hazards in their daily work and can help risk assessment teams to identify similar hazards. School personnel also are in frequent contact with students and can identify hazards that students may have discovered. Teams should include a variety of school personnel (e.g. general and special educators, coaches, cafeteria staff, and facilities personnel) to promote comprehensive assessments.

School-Based Law Enforcement Officers

Risk assessment teams should include a school-based law enforcement officer such as an SRO, if one is stationed at the school. School-based law enforcement officers typically have experience in responding to and managing manmade incidents and can assist risk assessment teams in identifying such hazards within a school and its surrounding community.

School Resource Officers

For additional information on establishing and maintaining an SRO program, please refer to the Department of Justice's [*A Guide to Developing, Maintaining, and Succeeding With Your School Resource Officer Program*](#).

Emergency Management Community

An effective HVA requires a close partnership with the local emergency management community. Risk assessment teams should consider enlisting the assistance of local emergency responders. While school personnel may have firsthand knowledge of some school hazards, local emergency responders generally have more experience in identifying such dangers. For example, fire marshals and inspectors can identify common fire hazards present within and nearby a school.

Local emergency management representatives can also provide knowledge of how community hazards may impact the school. For example, a major traffic incident may delay parents from reaching a school to pick up their children, complicating established procedures for family reunification and necessitating prolonged student care.

School administrators should consider including the following community officials on their risk assessment teams:

- Emergency responders (emergency medical services, fire, and law enforcement);
- Local and state emergency management agency representatives;
- Public health officials;
- Public utility officials;
- Regional Federal Emergency Management Agency (FEMA) representatives; and
- Transportation authorities.

Meetings

Effective school emergency management planning requires regular assessments of hazards. The school principal or district superintendent should work with school personnel and the local emergency management community to establish how frequently the risk assessment team should meet. Safety experts advise that HVAs should be conducted at least once every school year. In addition, significant changes such as building renovations and additions to the school or community may require additional risk assessment team meetings.

Hazard Identification

The first step in conducting an HVA is to identify what hazards pose a risk to the school. During the hazard identification process, risk assessment teams should create a list of

dangers to the school building and grounds, staff members, students, and visitors. Risk assessment teams should take an all-hazards approach to developing this list, including those dangers that originate from within the school and from the local community.

School Hazards

School hazards include those dangers that could occur within the school building or grounds. Some examples of school hazards include bullying, fires, hazardous material spills, and violence. Safety experts suggest that risk assessment teams utilize site surveys to identify school hazards. During a school site survey, a risk assessment team inspects the building, facilities, and grounds for potential hazards. Some questions that risk assessment teams may wish to consider while conducting a site survey include:

- Are gas, power, and sewer lines located near the evacuation routes or near outdoor assembly areas?
- Are all utility shutoff points labeled?
- Does the school building have elevators?
- Do exit routes pass under canopies?
- Do hallways and doors contain glass panels?
- Do lockers, bookshelves, and other storage units line the hallways?
- Does the school building have handicap lifts in stairwells that might cause a bottleneck of evacuating students?
- Is lighting dependent on electricity rather than sunlight?

After completing the site survey, the risk assessment team should create a list of all identified school hazards as well as a description of where they are located. School safety experts recommend that risk assessment teams also create blueprints of their schools and identify the locations of potential hazards. Some jurisdictions include photographs of these hazards. For additional information on identifying site hazards, please see the *Lessons Learned Information Sharing (LLIS.gov)* Best Practice document: [Pre-Incident Site Planning: Site Hazards](#).

The risk assessment team also should consider assessing the issue of bullying by distributing anonymous surveys to students, teachers, school staff, and parents.

Community Hazards

Risk assessment teams also should include an assessment of hazards present in the local community when conducting an HVA. Representatives of local and state emergency management agencies who are part of a risk assessment team may be able to provide information on community hazards relative to their specific fields. However, this may not provide a comprehensive overview of all community hazards. Risk assessment teams also should collaborate with organizations and other schools that may have already conducted their own community hazard assessments. Local Emergency Planning Committees and other regional emergency planning committees typically have identified hazards present in the community and

Hazard Identification Workbook

The Maine Emergency Management Agency's (MEMA) [Hazard Identification and Risk Assessment for Schools Workbook](#) provides a checklist of potential hazards that may be of assistance to schools conducting an HVA.

Site Survey Checklist

The [National Clearinghouse for Educational Facilities](#) provides a [Safe School Facilities Checklist](#). This checklist can be utilized during a school site survey to identify potential hazards.

Fairfax County School District

The Fairfax County, Virginia, School District maintains a representative on the local emergency planning committee to receive information on community hazards that could impact schools in region.

are a good resource for risk assessment teams.

Risk assessment teams also should consider utilizing federal resources when identifying community hazards. The [United States Geological Survey](#) and the [National Oceanic and Atmospheric Administration's National Weather Service](#) can be of assistance in identifying natural hazards that may impact the region. The [Department of Energy](#), the [Department of Housing and Urban Development](#), and the [Department of Transportation](#) also can be of assistance in identifying community hazards.

Community Hazard Identification

Risk assessment teams can review FEMA's [Get Disaster Information](#) Web site for information on past disasters that have occurred in their communities. Risk assessment teams also can consult FEMA's [Hazard Mapping Information Platform](#) Web site, which offers electronic maps that indicate regional hazards.

Some potential community hazards may include:

- Buildings with unrestricted access that provide a direct line-of-fire to the school;
- Industrial plants and factories that produce or handle hazardous materials;
- Large public works projects, such as dams, gas lines, mines, or water treatment facilities;
- Major transportation routes and hubs, including airports, highways, railroads, sea ports, and subways;
- Military installations;
- Nuclear power plants or nuclear waste storage facilities; and
- Prisons.

Risk Analysis

Once school and community hazards have been identified, risk assessment teams should conduct a risk analysis. During the risk analysis, risk assessment teams take the list of hazards developed through site surveys and community assessments and prioritize them according to their relative risk to the school. There is no standard method for prioritizing school hazards. All risk determinations are subjective and vary depending on the region and factors unique to the school. However, one commonly used method is to compare hazards based upon the likelihood of an event occurring and the extent of the damage the event could cause to the school.

Risk Analysis Resources

For additional resources on risk analysis, please also see the *LLIS.gov* Best Practice documents: [Risk Assessment: General Guides and Tools](#) and [State and Local Government Continuity of Operations Planning: Risk Assessment](#).

Probability

The probability of an incident occurring is important to establishing risk. To determine the likelihood of an incident occurring at school, risk assessment teams can consult crime statistics, historical records, and other schools in the region. State and local emergency management agencies can be of assistance in assessing probabilities. Risk assessment teams should consider the following points when assessing the probability of an incident occurring:

- Amount of advance warning
- Frequency of occurrence in past
- Time of year at which it is likely to occur

Consequence

To determine the potential consequences of a hazard, risk assessment teams should consider which school assets might be impacted. Damage resulting from a school incident can include economic loss, impaired school function, and physical and emotional harm to students and personnel. Emergency responders can assist in the determination of which assets might be damaged by specific hazards. Risk assessment teams should consider the following points when assessing the potential consequences of an incident:

- Area of effect
- Duration
- Potential magnitude and intensity
- Who would be impacted and how

FEMA's School Risk Analysis Formula

FEMA's [Multi-Hazard Emergency Planning for Schools](#) online training course provides a table to assist schools in determining risk priority. Using this formula, schools should identify a hazard and assess its frequency, magnitude, warning, and severity on a scale of 1 to 4. The total for each hazard should then be compared to the others and assigned a risk priority of high, medium, or low.

Hazard	Frequency	Magnitude	Warning	Severity	Risk Priority
Event	4 Highly likely 3 Likely 2 Possible 1 Unlikely	4 Catastrophic 3 Critical 2 Limited 1 Negligible	4 Minimal 3 6-12 hours 2 12-24 hours 1 24+ hours	4 Catastrophic 3 Critical 2 Limited 1 Negligible	<input type="checkbox"/> High <input type="checkbox"/> Medium <input type="checkbox"/> Low

Source: FEMA, Emergency Management Institute, [Multi-Hazard Emergency Planning for Schools](#).

Mitigation Plans

School administrators should utilize a risk assessment team's HVA to develop a written mitigation plan. The mitigation plan should address those hazards that were identified in the HVA and should outline steps that the school can take before, during, or after an incident to prevent or reduce the harm such hazards could cause. School safety experts encourage school administrators to view a mitigation plan as an integral part of the HVA cycle. The mitigation plan should be updated with each new hazard assessment. This should be a continuous process of improvement to the school, with new hazards being addressed every year.

Mitigation Plan Resources

For additional information on mitigation plans, please see the [Natural Hazard Mitigation Plan of the University of Mississippi, Lafayette County](#) and the *Lessons Learned Information Sharing Best Practice document: School Emergency Management Planning: Mitigation Plans* (forthcoming).

Mitigation plans are restricted by the fact that schools typically have limited funding to dedicate to mitigation efforts. For this reason, mitigation plans should prioritize actions that are inexpensive to implement and/or that address hazards with the highest risk priority, as established in the HVA. Safety experts suggest that schools seek funding and resources from outside the school to supplement the implementation of the mitigation plan.

Many schools utilize risk assessment teams to develop their mitigation plans. Risk assessment teams may have special insights into the nature of the hazards facing schools and may be uniquely situated to assist in the development of mitigation plans. Even if risk

assessment teams are not directly involved in the development of mitigation plans, school administrators should carefully consider their recommendations.

RESOURCES

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Links

Federal Emergency Management Agency

<http://www.fema.gov/hazard/index.shtm>

National Clearinghouse for Educational Facilities

<http://www.edfacilities.org/checklist/checklist.cfm>

National Oceanic and Atmospheric Administration

<http://www.nws.noaa.gov/>

US Department of Energy

<http://www.energy.gov/>

US Department of Housing and Urban Development

<http://www.hud.gov/>

US Department of Transportation

<http://www.dot.gov/>

US Geological Survey

<http://www.usgs.gov/>

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