SAFE HAVENS INTERNATIONAL

School Safety Monthly

December 2015

Taking Shelter from All Hazards

Cover Photos: Rachel Wilson

Message from the Editor

By Rachel Wilson, Editor & Staff Photgrapher

In this Edition of School Safety Monthly we are talking about sheltering from a variety of hazards. This is not the first time we have mentioned how concerning it is for us as analysts to see so many schools across the country hyper focused on one very specicic possible threat. Especially when we know that the likelihood of that threat's coming to frutition is extremely rare while other more common threats with less media coverage go ignored.

Which are you more likely to come across at your school, a gunman or a bee? Which one are you ready for? Do all members of your staff know where to find and how to use an EPI pen? Our sources say - maybe.

Consider the number of lockdown drills your school does a year versus the number of earthquake, fire, and tornado drills. Which protocol are your students most apt at? What we've found in many schools since Sandy Hook is that the focus from the protocols that aren't a great source of television news are often neglected. Are you aware if your school is located near a hazardous materials plant? Would your school know what to do if they called to tell you there was a gas leak and that your school should "Shelter in place"?

Photo: Rachel Wilson

In this issue we are going to go over some of the other ways that schools can prepare their students and staff to take protective actions. As always we hope you find it helpful and welcome feedback! - *Rachel*

Photo: Rachel Wilson

Shelter in Place – A Critical Emergency Protocol

by Michael Dorn

With recent reports that at least one major terrorist group has been working hard to acquire chemical weapons for use in attacks, government officials have provided warnings that this threat should be taken seriously. Yet the majority of the more than 1,000 K12 schools we have assessed since the Sandy Hook active shooter incident either do not have a shelter in place protocol, have not conducted shelter in place drills in recent years or both. No K12 school is properly prepared for accidental release of hazardous materials in their community, for an attack by a well-read active killer, or for an act of school terrorism involving chemicals if it does not have, practice and periodically drill a distinct shelter in place protocol. While the term shelter in place is used by some federal agencies and in some regions of the country to describe what is commonly called a lockdown, this is the most commonly used term for hazardous materials sheltering in the United States. While we are not overly concerned with what term or phrase school officials use to describe the process, we are deeply troubled that so many schools have no viable way to shelter building occupants from hazardous materials releases that occur in their community. While attacks with hazardous materials have been used by terrorists to attack schools in other countries, more typical scenarios involve truck, rail, shipping, manufacturing and agricultural accidents. Failure to properly plan for either scenario means that a school is not well prepared for both types of incident. Shelter in place protocols normally involve moving students and staff who are outdoors as well as those who are in portable classrooms into the building quickly, shutting down air handling systems and closing any open doors and windows. Local fire department as well as local, state and federal emergency management officials can help school officials better understand local hazardous materials risk. They can also often help school officials develop more effective hazardous materials incident protocols.

Combining sheltering protocols could result in mass casualty loss of life

We find that an increasing number of K12 schools attempt to consolidate their hazardous materials sheltering, severe weather sheltering and sometimes even their earthquake sheltering procedures into one protocol. This is an extremely dangerous approach. The reason this practice is dangerous is that the proper action steps for each of these three distinct types of incident are quite different from one another. This approach could result in mass casualty loss of life in any one of these three types of incident. Instead, school crisis plans should include distinct protocols for hazardous materials incident sheltering and for either or both of the other emergency sheltering protocols depending on whether or not they can occur in the local region.

Evacuation is an important option

A variety of common types of hazardous materials events can make it appropriate to evacuate students. Accidental or intentional releases of hazardous materials inside of a school can make it unsafe for staff and students to remain in the school. Students and school staff should be properly prepared to perform either a shelter in place or an emergency evacuation. In addition, students and staff should be prepared to move from a shelter in place to an emergency evacuation if public safety officials determine that this is appropriate.

Potentially dangerous lockdown concepts

We have seen a number of situations where school officials have been advised to move file cabinets and other heavy objects to block doorways in case an active shooter attempts to breach a locked classroom or office door. Two concerns with this approach are that it could delay emergency evacuation if one or more attackers were to combine either the use of fire or hazardous materials release with an attack using firearms. While this may sound hypothetical we note that to date there have been four K12 attacks in the United States

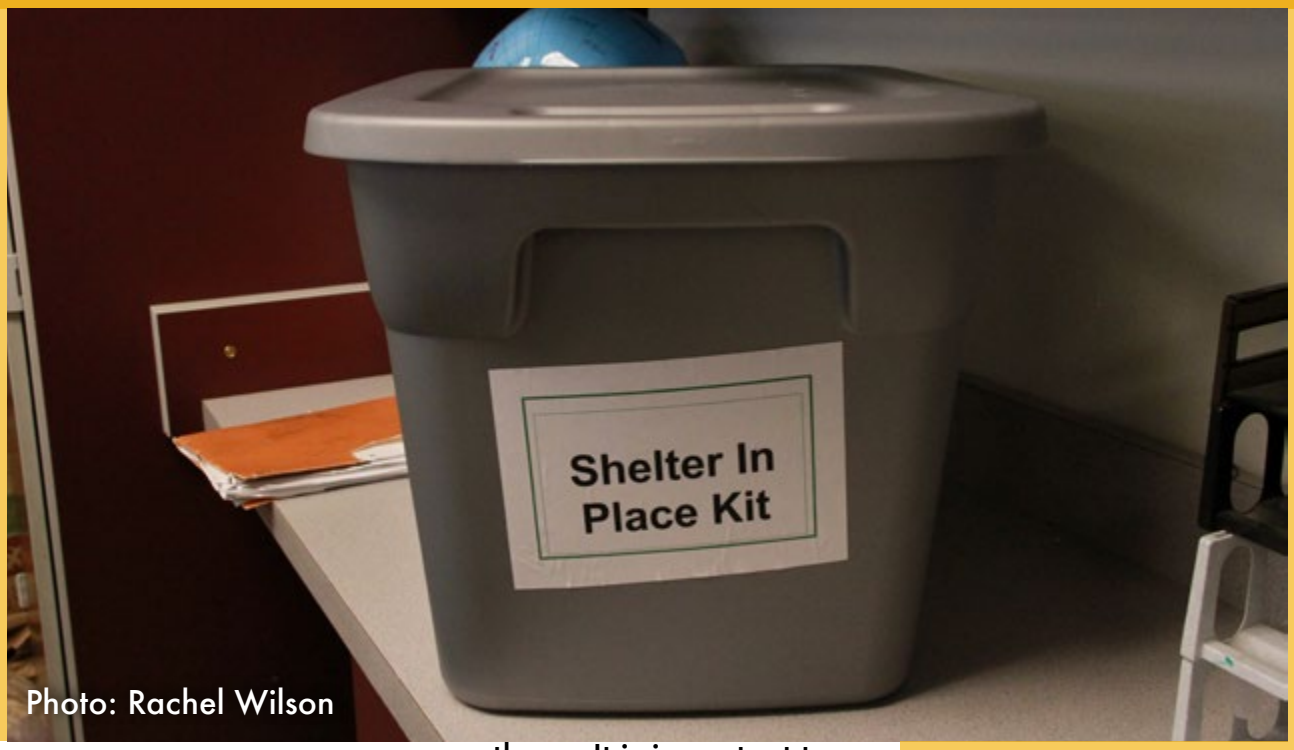


Photo: Rachel Wilson

where the use of both fire and firearms has been combined. The first incident of this type took place in Olean, New York in 1974 and the most recent attack that we are aware of occurred in Littleton, Colorado in 2013. We also note that there have been a number of attacks on schools in Africa and the Middle East where fire and firearms have been used together. And despite modern fire suppression systems, it is still possible to create a fire that will kill occupants with smoke in a modern building.

Relevant emergency protocols

Several functional protocols can improve survivability for both internal and external hazardous materials events. While we have already discussed the importance of emergency evacuation, the room clear and reverse evacuation protocols can also be important. We find that many schools lack these important emergency protocols and/or do not train and drill on them. It is important to understand that schools that do not have a reverse evacuation protocol will typically take minutes longer to move groups of students inside of the school in the event of a tornado, armed aggressor near the school, a dangerous animal on campus, a hazardous materials incident in the community or other situation where it is safer to shelter inside the school than to remain outdoors.

The ability to quickly evacuate students and staff or to shelter them indoors could be critical if an accidental or intentional release of hazardous materials occurs on or near a school. Local, state and federal public safety personnel can be a valuable resource in developing and practicing these important emergency functions.

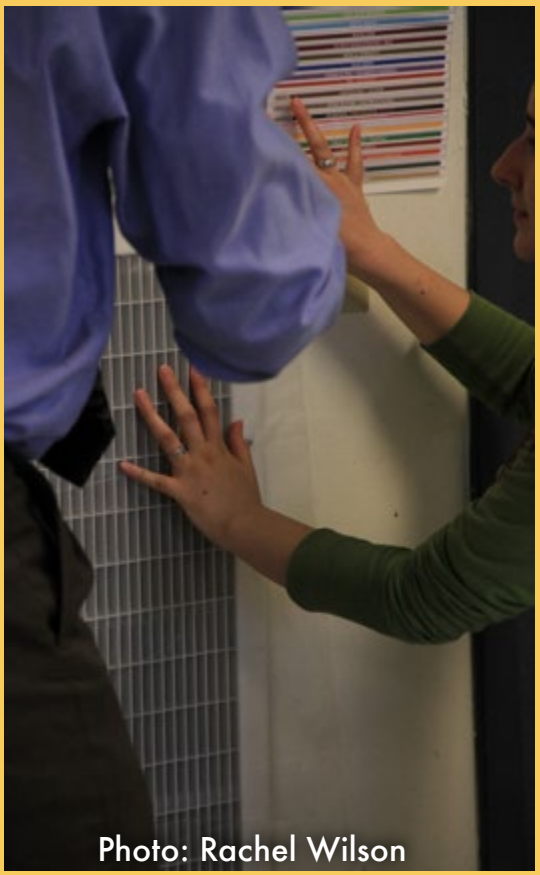


Photo: Rachel Wilson

Michael Dorn is the Executive Director of Safe Havens International and has served as a school system police chief, School Safety Specialist, State Anti-terrorism Planner and as the Lead Program Manager of the Terrorism Division of the Georgia Office of Homeland Security.

Severe Wind Event Sheltering

by Stephen Satterly, Jr.

You are outside monitoring your class at recess. You feel a strong wind start up, and look up to see a funnel cloud approaching, maybe 300 yards away. You're the only adult out there, so what would you do?

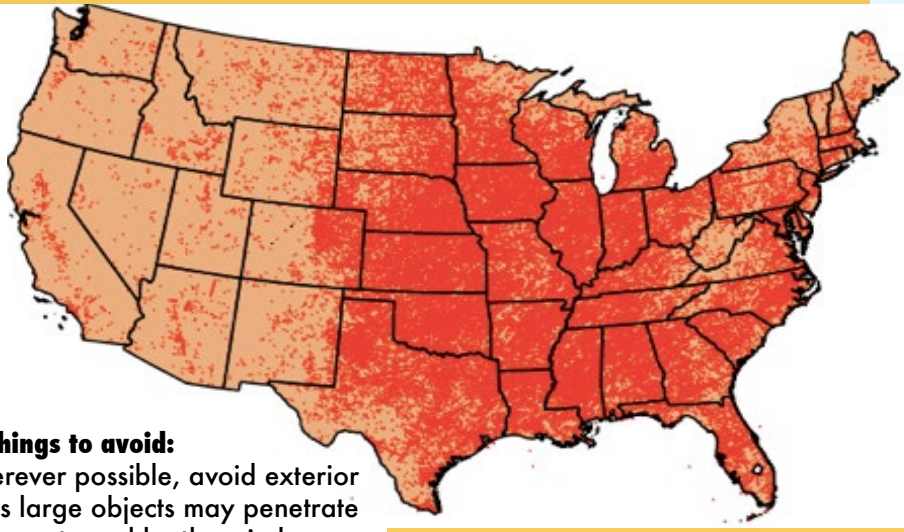
The answer is to get them to shelter, but where is that shelter? When the tornado is bearing down is not the time to wonder where to shelter. Preplanning is vital to survival!

Some steps to take to prepare:

1. Go through your building with people who know about the facility - architects and engineers, and certainly someone from your local emergency management agency. They can go over plans and help select the safest areas in your building to shelter from severe wind events. FEMA has created a document titled, FEMA P-431, Tornado Protection: Selecting Refuge Area in Buildings, Second Edition.

2. When a safe area is identified, calculate how much floor space is available. The FEMA recommendation is 2.5 square feet per person, 3.5 square feet for people in wheelchairs. So after calculating the amount of floor space, divide by 2.5 to get the number of people that can be sheltered there.

3. If there is not enough space for everyone, FEMA recommends using the "best available shelter." These should be identified prior to their use. Some basic guidelines are to use north-south hallways, classrooms on the north and east side of the school, away from the prevailing direction of most tornados. The idea is to provide the best possible chance of surviving.



This is a map of the United States that shows all tornado touchdowns from 1950 through 2011. This map was created using the program uDig and a tornado track shapefile from the Storm Prediction Center.

Some things to avoid:

1. Wherever possible, avoid exterior walls as large objects may penetrate as they are tossed by the winds.

2. Avoid classrooms with windows, especially on the south and west sides of the school. If classrooms have to be used, have blankets on hand to cover the students to mitigate against flying debris.

3. Try to avoid east-west hallways, especially those with an exterior door, as they can turn into wind tunnels.

4. Avoid areas with large roof spans, like gymnasiums and cafeterias.

5. Do NOT use second floor areas! Wind speeds increase with altitude, increasing missile damage from flying debris.

Once safe areas are selected, mark them on a map and keep this on file in your building safety plan along with appropriate notes about why these areas were chosen. This information could be invaluable as staffing changes over time. These areas should not change unless you remodel your building.

Practice getting to your safe areas quickly. If these areas are properly situated, it should take no more than two minutes to get everyone in the building to a shelter area. If it takes longer, find a closer area.

When people are in the shelter areas, there is no recommended position for a person to assume. Some prefer the crouching position with hands and arms over the neck and back of the head, others prefer to sit with their backs to a wall, with their arms over their head. FEMA does not recommend one over the other. Pick one and practice, practice, practice.

Each building should conduct annual reviews of their local risks, including severe wend events like tornados, hurricanes and derechos (Land hurricanes). If severe wind is considered a risk in your area, make sure to properly plan, and then practice to respond to these events.

Stephen Satterly, Jr. is an Adjunct Analyst with Safe Havens International and a regular contributor to School Safety Monthly.

Earthquake Sheltering Facts-Based Preparedness

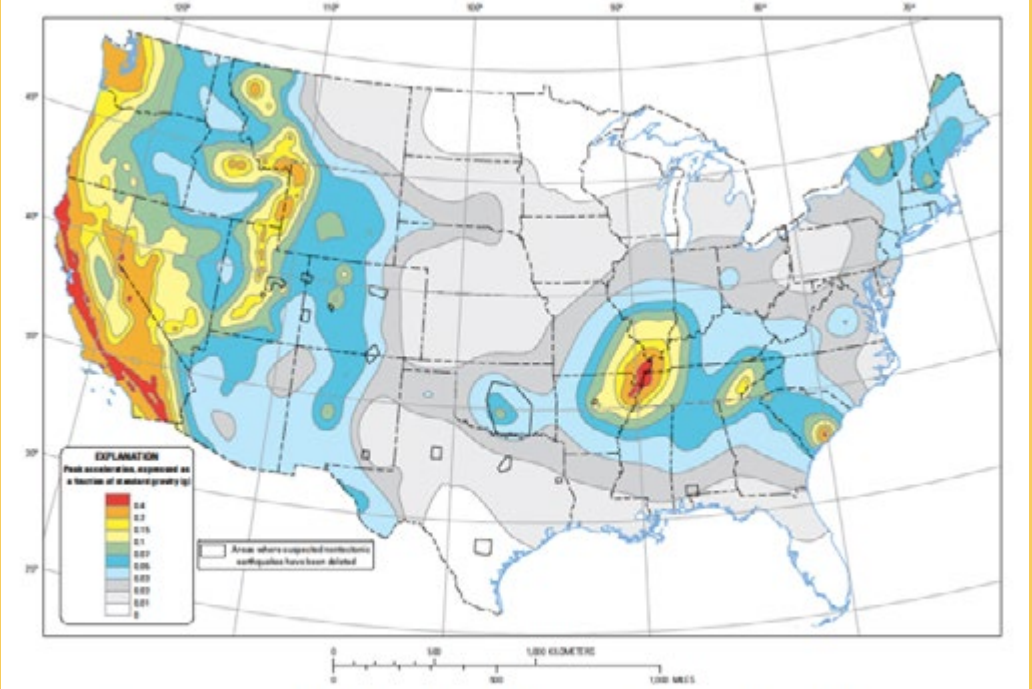
by Stephen Satterly, Jr.

I have had the honor of doing school safety assessments across the United States. One of the questions typically asked during these assessments is whether the school has done any earthquake drills. Much more often than not, the answer is no. This even applies to areas where earthquakes are a real risk Should your school be concerned with earthquake sheltering? As is often the case, the answer lies in the facts.

The map to the right shows the probability of ground movement each year. The red areas have the highest frequency of movement, along the San Andreas Fault in California and the New Madrid Fault in Illinois, Missouri, Arkansas, Mississippi, Tennessee and Kentucky. The Juan de Fuca plate alongside the Pacific Northwest coast also creates increased risk for earthquakes, landslides and tsunamis. Simply put, these areas have a higher probability of experiencing a significant earthquake in 50 years. Of note is that there are relatively small areas of white, which indicate a near zero probability of a quake occurring. Unless your school is in one of these areas, you definitely have at least some risk of earthquakes.

The website for the Great Shakeout (shakeout.org) has excellent resources for schools to help them prepare for earthquakes. The essence of responding to an earthquake is *Drop, Cover and Hold*.

Earthquakes are not easily predicted, and often happen with little warning. When that happens people need to stop what they are doing, and drop to the ground. The USGS recommends dropping and getting under sturdy furniture like a table or desk. If you are unable to find this type of shelter, drop to the ground in an inside corner of the building and cover your head and neck.



Ten-percent probability of exceedance in 50 years map of peak ground acceleration

The above map is from the US Geological Survey. It shows the areas of the lower 48 states and the probability of having a significant earthquake. (USGS, 2014)

The USGS also warns agains the following:

1) DO NOT get in a doorway! An early earthquake photo depicts a collapsed adobe home with the doorframe as the only surviving part of the structure. This evolved into the myth that a doorway is the safest place to be during an earthquake. In modern houses and buildings, doorways do not provide any additional safety, and they do not protect you from flying or falling objects. Get under a table instead!

2) DO NOT run outside! Trying to run in an earthquake is dangerous, since the ground is moving and you can easily fall or be injured by debris or glass. Running outside is especially dangerous, as glass, bricks, or other building components may be falling. You are much safer to stay inside and get under a table.

3) DO NOT believe the so-called "triangle of life" myth!

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In recent years, an e-mail has circulated which recommends potentially life threatening actions, and the source has been discredited by leading experts.

After the earthquake has ended, get out as soon as possible. The structure you are in may be weakened from the earthquake. Provide triage and first aid for the people in your care. Maintain awareness of your surroundings for further dangers, like downed power lines or natural gas leaks. Develop accountability of your people, and be prepared to report to First Responders if anyone is missing.

Preparing for earthquakes is simple, but actually responding will not be easy. Earthquake damage is widespread, and you will not be the only one affected. Being prepared means being prepared for the long haul, as help may not be quick in coming. Be prepared!

Stephen Satterly is an Adjunct Analyst with Safe Havens International and a regular contributor to School Safety Monthly.

The Safety Net

In addition to School Safety Monthly, Safe Havens International also publishes an annual electronic journal titled The Safety Net. This is a more in-depth publication that allows for a longer format of articles and a detailed look at topics related to school safety, school security, emergency preparedness for schools, safe school design, building climate, safe school culture and school law enforcement concepts. If you are on the mailing list for School Safety Monthly you will also receive new issues of The Safety Net. If you are not already a subscriber, click here to sign up:
http://www.safehavensinternational.org/newsletter

School Safety Monthly

Chris Dorn.....Editor-in-Chief

Rachel Wilson.....Editor & Art Director

Michael Dorn.....Executive Director

Stephen Satterly, Jr.....Contributor

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