

White Paper

Can You Hear Me Now?

Sirens, voice and text messaging only go so far. Why campus mass warning emergency notification systems call for long-range intelligible voice capability to take control of emergency situations.



When the first major amendments in a decade to the Clery Act¹ were signed into law on August 14, 2008, a significant new security mandate went into effect right away for universities and colleges. In the wake of the tragic shootings at the Virginia Tech campus in 2007, schools are to “immediately notify the campus community upon the confirmation of a significant emergency or dangerous situation involving an immediate threat to the health or safety of students or staff.”

As a result, institutions everywhere are reevaluating their processes and resources. The official report of the Virginia Tech Review Panel recommended “that campus emergency communications systems have multiple means of sharing information.” In light of these recommendations, surveys show that most schools are planning a multi-layered approach to mass safety notification that includes a mass notification speaker system. These speaker systems are typically optimized to broadcast a warning siren, with voice capability being an option.

Warning sirens are useful because they are a universally recognized first alarm to tell people to pay attention and that danger exists. However, a siren by itself does not communicate any information about the crisis. What is the exact emergency? What actions should people take? The Virginia Tech Review Panel recommended that “during an emergency, immediate messages be sent to the communities *that provide clear information on the nature of the emergency and the actions to be taken.*”

Any emergency mass notification communications plan must include the equally important next step – *Tell everyone what to do next!* During a crisis, one of the most frightening things for people is not knowing what’s happening and what to do.

When evaluating technology and capability of mass notification systems, those entrusted with campus safety should take into account the need to not only alert the campus population to an emergency situation, but also have the means to clearly communicate the situation and give live, real-time and intelligible directions to safety. Relying solely on prerecorded messages is unreliable as every situation is different.

Alert. Give actionable directions. Take *control* of the situation.

Consider the following example: Confirmed shots are being fired in an open area behind a building in the northwest part of a campus, near a heavily-traveled entrance. Lockdown procedures are started for all buildings in the immediate area. Everyone else must avoid the area and quickly evacuate the campus by alternate routes.

While this is happening, students and staff are moving between classes, there is a conference in progress with attendees from across the country, it’s Visitation Day for prospective students and their parents, and there are a number of independent contractors as well.

What is the best way to control this emergency taking place on campus?

Alert *everyone* on campus

Everyone on campus must be alerted that there is an emergency situation threatening their safety. However, statistics tell us that at any given time, 20% of people on campus are not

actually students. Contractors, people attending conferences, parents, visitors, and technicians all have legitimate reasons to be on campus every day. And, chances are that English isn't the first language for some.

Will strangers on campus know what a warning siren means? Will everyone immediately comprehend the nature of the risk? As one U.S. Army officer noted, "You can't do a thing with a siren unless you can follow it up and give instructions."

Give actionable directions

What's going on? What should I do next? Where should I go? It's human nature to panic in an emergency. Providing people with information is the best way to avoid chaos and execute emergency safety plans. Tell people what to do, where to go, where not to go.

Keep in mind that a volatile situation can change quickly. If it does, people must then be given more instructions about what new action to take.

Technology must be immediately available and fail-safe

An emergency situation calls for a "flip the switch" response.

Broadcasting text messages and sending e-mail requires that security personnel log on to a system and enter or activate the messages at a terminal. However, experts tell us that during stressful situations, performing tasks requiring fine motor skills are more difficult. The equipment must be immediately and easily available for use.

Another critical factor is throughput, which is the rate of successful message delivery over a communication channel. In past emergency situations when large numbers of people on campus were trying to access their mobile devices at the same time, the heavy bandwidth demands on the telecommunication networks compromised the availability and speed of the network itself. As a result, people were unable to rely on their mobile devices to get real-time information. In a situation like this, the ability to broadcast crucial information using an intelligible voice can be critical.

Long range *live voice* clarity important

Following an alert, a firm, reassuring live voice giving clear and understandable instructions enables officials to direct people to safety in a controlled manner, averting a potentially chaotic situation.

However, an outdoor siren warning system with voice capability is not necessarily capable of delivering intelligible live voice directions at 500 yards. Typically, these siren systems are optimized to broadcast sirens; with voice service being secondary. Mass notification systems that are optimized to broadcast both pre-recorded and live voice have unique specifications not seen in voice-adapted siren systems.

The human voice is most easily understood at long range when projected in a frequency range of 400Hz to 6500Hz, due to the harmonics that gives a voice timbre and makes it understandable.. A siren-type loudspeaker projecting voice generally has a wide frequency range of 200 Hz to 2,000 Hz. At this range, the result is voice that sounds "muffled." To provide long-range high quality audio, equipment must have harmonics that go from 400 Hz to 7,000 Hz. Most siren

systems do not. The result is poor-quality voice that can hinder the ability of affected parties to understand instructions.

Conclusion

Mass notification speaker systems are an important part of any school's emergency notification plan. The systems reach their full potential when they are voice-optimized and allow for the broadcast of clear, intelligible voice. It is recommended that potential buyers seek equipment with voice-optimized specifications and conduct side-by-side tests using industry standard procedures in order to determine the best performing system that will meet their needs.

Sources

¹The Clery Act, originally enacted by the Congress and signed into law by President George Bush in 1990 as the Crime Awareness and Campus Security Act of 1990, was inspired by 19 year old Lehigh University freshman Jeanne Clery who was raped and murdered while asleep in her residence hall room in 1986.

²The Higher Education Opportunity Act (Public Law 110-315) (HEOA) was enacted on August 14, 2008, and reauthorizes the Higher Education Act of 1965, as amended (HEA).

<http://www.ed.gov/policy/highered/leg/hea08/index.html>

Report of the Virginia Tech Review Panel,

<http://www.governor.virginia.gov/TempContent/techpanelreport.cfm>

About the Author

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About IMLCORP

IMLCORP manufactures high-quality long-range mass notification sound equipment that enables the military, law enforcement, first responders and other safety organizations to immediately and effectively alert, and gain and maintain control of emergency situations. IMLCorp also makes and sells breaching and entry equipment for first responders, as well as decontamination systems and vehicle immobilizers.

To learn more about IML CORP, visit <http://www.imlcorp.com>