

Stay or Go?

by Karen Kroll

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Should U.S. schools equipped with fire sprinklers and with fire detection and intercom systems have the option of using a delayed evacuation policy when it comes to fire drills or actual fires? A controversial pilot project underway in Minnesota is examining that question. Supporters say it's time to reevaluate the practice of having students completely evacuate a school when the fire alarm sounds, since many of today's school buildings are much safer than they were even a decade ago. Those opposed contend that implementing a delayed evacuation policy in schools places kids in needless danger.

The project began in 2001, when the Minnesota State Fire Marshal's office allowed two high schools in Minneapolis, two in Faribault, and one in Austin to implement a delayed evacuation policy. According to the March 2001 State Fire Marshal's Statement of Policy, prepared by Jon Nisja, a supervisor with the State Fire Marshal's office, the schools had to be constructed of noncombustible materials, protected throughout by an automatic extinguishing system, and have a two-way intercom system and fire walls. They also had to have complete corridor smoke-detection systems that allowed staff to identify which fire alarm has been activated. Each school in the project is either new or has been renovated. In Austin, the buildings date to 1921, 1939, and 1953, and the fire sprinklers and alarms were installed in 1993 and 2001. North High in Minneapolis was built in 1975 with fire sprinklers, and Southwest, built in 1940, was renovated in 1997. In Faribault, upgrading construction began in 1996.

The Austin High School has about 1,250 students, while the two Minneapolis high schools have between 1,300 and 1,500 students each. In Faribault, the high school has 1,400 students and the elementary school has about 600.

According to Nisja, he and Mike Monge, director of Fire and Code Services in Faribault, first discussed the delayed evacuation policy five or six years ago when a series of school shootings raised concerns about security. Adding impetus to the project was their concern about the disruption that resulted when intentional false alarms forced unnecessary evacuations and their belief that any response to an alarm should be evaluated before evacuation begins.

Patrick Sheehan, bureau chief of inspection with the Minnesota State Fire Marshal's office, says checking the situation first enhances safety.

"You want to understand where in the building the danger is occurring, so that those in danger can be moved away from it," says Sheehan.

According to Keith Dixon, superintendent of Faribault Public Schools, the delayed evacuation policy gives school administrators time to check for danger before initiating an evacuation or lock-down. Dixon and his colleagues wanted to develop a single-response life-safety policy to the variety of problems that might arise at any school in Faribault, all of which have fire sprinkler systems, fire-rated corridors, and other life-safety features installed with funds raised by a \$40-million bond referendum.

"We really wanted to look at how to deal with the multiple kinds of situations we would face in a school setting," he says. The discussions began right after the 1999 shootings at Columbine, says Dixon.

In the Faribault and Minneapolis schools, the strategy works like this: The alarm goes off, and students stop what they're doing and stay at their desks. The teacher checks the area immediately surrounding the classroom for smoke or flames. If he or she finds none, the students and teacher stay put.

Meanwhile, a school employee checks the fire alarm control panel, which is typically in the principal's office. He or she tells a custodian which alarm has activated, and the custodian heads to that area to check for signs of fire or other danger. If the custodian doesn't radio the principal's office with information within 60 seconds, evacuation begins.

During this process, the principal or another school official uses the public address system to inform students and staff that the cause of the alarm is being investigated. If any danger is found, students and teachers are told to evacuate or move to another location in the building. If the teachers or students can't hear the instructions or aren't sure what to do, they should evacuate.

"If there's any doubt, evacuate," says Nisja.

Austin High School, which is located downtown and bounded on two sides by busy thoroughfares, follows a slightly different policy.

"They really don't have a place to evacuate the kids," says Nisja, a member of NFPA's Fire Prevention Code Technical Committee. "You have a 6- to 10-foot (1.8- to 3-meter) sidewalk, and then busy thoroughfares."

When an alarm goes off, students leave the area they're in, but stay in the building, whose classrooms and gym are separated by a corridor and fire-rated doors. A separate annex houses the band, choir, graphic arts, and other classes. If the alarm sounds in the school building or in the annex, students and staff go to the gym. If the alarm sounds in the gym, they go to the auditorium.

Dan Wilson, Austin fire chief, favors the policy as it's practiced at the Austin High School.

"To me it makes perfect sense. It really is safer for our kids," says Wilson "I think our school is one of the safest to be in, in the event of a fire. That's largely due to the built-in protections, like alarms and sprinkler systems."

Wilson says he wouldn't allow the school to do this if the buildings weren't completely sprinklered.

Thomas Deegan, fire marshal for the city of Minneapolis, also supports the delayed evacuation program, although he says he wasn't thrilled about it at first and would only support its use in certain schools.

"When we first looked at (using delayed evacuation in schools), I...wondered if it was a concept thrown out to take care of false alarms and security (concerns)," he says. "But it's been there about 18 months to two years and seems to be working pretty well."

Deegan attributes the program's success to the buildings' sprinklers and to the fact that the students are older and can understand the instructions.

Concerns

Although they acknowledge the obstacles some schools face in implementing standard fire-alarm evacuation procedures, critics of the delayed evacuation project don't agree that the policy will enhance student and staff safety.

"The firefighters strongly disagree," says Dennis Andrist, a captain with the Faribault Fire Department and president of the Faribault Firefighters IAFF Local 665. According to Andrist, his comments represent the unanimous position of the Faribault firefighters union.

In the event an alarm signals a real fire, delaying evacuation can increase the danger to students and staff.

"The timeline of fire can be extremely rapid," says John Hall, assistant vice-president of NFPA's Fire Analysis and Research Division. "It's a bad idea to assume that you have enough time to operate in a multi-phase manner."

Others question the prudence of changing long-standing evacuation policies.

"We know it's been a very long time since any child has died in a school fire," says Hall. While acknowledging that such factors as fire sprinklers and improved construction have helped, he adds that the practice of making kids leave the building when an alarm goes off has, too.

Some are worried that having children stay put when an alarm sounds may become confusing or even dangerous.

"We want to keep the message clear that when a fire alarm sounds, it's time to go into action," says Judy Comoletti, NFPA's assistant vice-president for Public Education.

"It's ludicrous," adds Mike Stockstead, president of the Minnesota Professional Firefighters Association. "You have hundreds of people in the school that you're leaving in a hazardous area."

Robert Solomon, NFPA's assistant vice-president of Building and Life Safety Codes, says implementation of such policies may contribute to the apathy that many adults show when faced with fire alarms. Individuals have to be prepared to act when they hear an alarm, not wait for someone to tell them what to do, he says. Such programs may instill a 'wait and see' attitude.

Several proponents of delayed evacuation counter that automatically evacuating a building when an alarm sounds tends to create kids who respond without thinking.

"One of the problems we've had with old fire alarms is that people behave like robots. If there's anything out Policy opponents counter this assertion by noting that Section 4.7 of NFPA 101®, Life Safety Code®, requires that emergency evacuation drills be held at unexpected times and under varying conditions to simulate the unusual conditions that can occur during an actual emergency.

False alarms

Another reason for implementing the delayed evacuation policy is its impact on false alarms.

In the year before the pilot program began, Minneapolis' Southwest High School had 53 false alarms, says Assistant Principal Mary Michael Connelly. North High School also struggled with an excessive number of false alarms, says Principal Ron Simmons. At times, they would have several in one day.

Since the policy was implemented, the number of false alarms has dropped to four or five a year at Southwest and one or two a month at North.

However, other school districts faced with the same problem developed responses other than delayed evacuation.

For example, the Boston, Massachusetts, school department hired additional security guards to patrol the hallways at one problematic school, and the increase in security led to arrests and a decrease in false alarms. At another school, ROTC students were used to patrol the halls.

Faced with their own rise in false alarms, officials in Newton, Illinois, worked with the governor to develop legislation that allows local fire departments to fine people who pull false alarms. And in Napa, California, officials developed a policy that allows the fire department to bill the parents of any student who pulls a false alarm to which the fire department responds and files an incident report.

Elsewhere, school departments have relied on technology to reduce the number of false alarms. Some schools have installed specially designed pull stations, for example. When the plastic shield on the station is lifted, a piercing 120dB or 85dB warning horn sounds. The alarm quickly directs attention to the site.

Other schools that still employ full-evacuation during fire drills have installed equipment that aids students and others during evacuation, such as strobes and emergency lighting.

Officials at North say they, too, tried a technology solution—alarms that eject dye—but found it ineffective. The students who pulled the alarms usually left school for the day, so teachers were unable to identify them. And Connelly says that cameras were too expensive to install near the pull stations at Southwest High School. Staff there didn't try any of the other remedies.

School shootings

While relatively few in number, a spate of school shootings in the 1990s influenced many to favor leaving students in place after an alarm sounds until an investigation is completed.

"Some schools also fear sending kids outside to be shot at," says Sheehan.

This is exactly what happened in Jonesboro, Arkansas, in 1998, when two boys used the fire alarm to draw students out of a middle school and shot at them as they left, killing four students and a teacher and wounding another teacher and nine students.

Although the Jonesboro incident was horrific, a number of experts note that it was an issue of school security, not fire safety and that trying to solve both problems with one response won't work.

"Security issues should be addressed through security techniques, versus relaxing emergency policies," says Alan Breindel, president of Secure Defense Systems, a Springfield, New Jersey, security consulting firm.

In any event, shooters are unlikely to be dissuaded by a delayed evacuation policy, says John C. Fannin, president of Safe Place Corporation, a Wilmington, Delaware-based, firm that develops safety accreditation programs for different occupancies. Rather than using the alarm system to put people in danger, he says, a sniper will find another method, such as planting an explosive inside the school.

"They'll change their method of attack, but they'll still attack the building," Fannin says.

Building construction

School shootings aside, supporters of the delayed evacuation concept say that current construction practices make schools safe enough to justify the policy.

"Over the years, the fire and building codes have become very strict in public buildings, especially schools," says Faribault's Monge. "But, our response is still based on what we did 50 years ago."

Without a doubt, new schools are safer than old.

According to Ron Coté, P.E., NFPA's principal life safety engineer, NFPA 101, doesn't require educational occupancies to be sprinklered, but NFPA 5000™, *Building Construction and Safety Code*™, requires fire sprinklers in educational occupancies that have a fire compartment exceeding 20,000 square feet (1,858 square meters). Neither code exempts sprinklers in corridors protected by smoke and heat detectors.

NFPA 101 and NFPA 5000 also require that schools have alarm systems with some means of initiation, such as manual fire alarm boxes, formerly called pull stations. Manual fire alarm boxes must also be provided in the natural egress path near each required exit. The doors out of the building are exits, so that's where the manual fire alarm boxes must be installed.

Even though Minnesota adopted the 2000 International Fire Code from the International Code Council, not NFPA 101, all the schools participating in the project have automatic extinguishing systems throughout, as well as point-addressable technology that identifies the initiating device from the fire alarm control panel and all annunciator panels.

Nonetheless, firefighters and others say that evacuation still is the prudent course of action. While the school building itself may be of noncombustible construction, the furniture and equipment in them aren't, as they are in hospitals and correctional facilities, which use what's referred to as defend-in-place strategies. Health care occupancies have very rigorous construction and multiple robust and redundant fire safety systems built in as apart of their fire protection strategy. Simply put, this isn't the case in schools.

"The materials in the schools are more toxic in a fire situation than anything else," says the Faribault Fire Department's Andrist. Such materials include computers, electrical wiring, and lighting fixtures.

One area of particular concern is the use of the school's public address system to provide evacuation.

Section 9.6.4 of the Life Safety Code, which references NFPA 72®, *National Fire Alarm Code*®, requires that notification systems used for partial evacuation and/or relocation be equipped with two-hour rated cable and secondary standby power. Stockstead of the Minnesota Professional Firefighters Association notes that the policy developed for the delayed evacuation project doesn't ask the schools to meet these requirements.

According to Nisja, however, he and his colleagues tested each school's system before it entered the program to ensure occupants could hear and understand the announcements.

Dixon and other supporters of the program say they recognize that they can't rely on a single communication tool. In Faribault, for instance, school officials can communicate with teachers, students, and the custodial staff using telephones and e-mail, as well as the public address system. In addition, custodians are linked to school administrators by walkie-

talkie, and teachers are instructed to evacuate their classrooms if they can't hear or understand the public address system announcements.

Training

Training teachers and staff who implement delayed evacuation is another source of disagreement. At the pilot schools, teachers and staff receive a half-day training seminar on fire safety and procedures at the beginning of the school year, says Nisja. The employees sent to investigate alarms, usually custodians or building engineers, are trained to use fire extinguishers, he adds.

Proponents also say the teachers and staff have no intention of acting as firefighters.

"If we see smoke or anything, we move," says Faribault School Superintendent Dixon. "All we're trying to do is determine what the situation is that we're in."

Still, George Burke, spokesperson for the International Association of Fire Fighters in Washington, D.C., questions whether a teacher, even with extra training, would be likely to appreciate how few minutes it can take a fire to turn deadly.

"They may not recognize the danger to the same extent [a firefighter would]," he says.

Down the road

At this point, the program remains in its pilot phase. To date, there have been no major problems or major fires.

However, there have been delayed evacuations. When a fire in the second floor bathroom of the Austin High School activated the alarm, students were moved to the gym while a single sprinkler extinguished the blaze. According to Wilson, the whole thing proceeded very smoothly. And when a science experiment set off the alarm at North High, the school moved students from the east building to the west. According to Simmons, it all worked smoothly.

There's no firm end-date for the project, according to Nisja, who says he and his colleagues are observing the schools using delayed evacuation and may extend the policy to others.

However, it's unlikely that more than a small percentage of schools would qualify, since they'd have to be sprinklered and have point-identification alarm systems.

In addition, the school administration, the local fire department, and the Minnesota State Fire Marshal's office must all agree that any school that wants to participate in the program is a good candidate, says Minnesota State Fire Marshal Jerry Rosendahl.

Because the policy of exiting when the alarm sounds has clearly helped save lives, the burden of showing that delayed evacuation will work as well as the current practice is on advocates of the policy, says NFPA's Hall.

"They have to show that they've analyzed the likely effects of their policy on the range of fires schools can experience and that the results are just as impressive," he says.

While the five Minnesota schools appear to be the only U.S. schools using a delayed evacuation policy, some members of NFPA's Technical Committee on Schools and Daycare Occupancies are discussing it in their communities, says Committee Chair Cathy Stashak, a senior fire protection engineer with Schirmer Engineering in Deerfield, Illinois. However, a majority of committee members favors maintaining current practice, she adds.

According to committee member Bob Trotter, fire marshal for the city of Franklin, Tennessee, the committee is discussing delayed evacuation because of the increased safety of today's school buildings.

Trotter plans to submit a proposal through the Tennessee Code Development Committee to the NFPA Technical Committee on Schools and Daycare Occupancies that would allow for emergency relocation drills for schools that conform to certain criteria. For instance, they would have to be of Type I or II construction, have two separate fire areas, and automatic fire sprinklers. Trotter will submit the proposal during the revision cycle for NFPA 101. He plans to submit a similar request to the International Code Council.

To gauge its members' view on the topic, the Rocky Mountain Chapter of the Society of Fire Protection Engineers recently conducted an informal poll.

Members received a copy of a newspaper article outlining the policy and were asked to send in their responses, which were published in the chapter's newsletter.

Many of those responding stated that delayed evacuation is a good approach for hospitals, where the ratio of patients to trained attendants is regulated, and could only work in schools if they met the same requirements as hospitals.

In the end, the future of delayed evacuation may not be decided by its supporters or its opponents. As with so many issues in fire protection, it may be decided instead by circumstances. [NFPA Journal Managing Editor John Nicholson contributed to this article.](#)