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Cause for Alarm

They won't find it on the shelf at the local discount store or computer warehouse, but correctional facility building managers and safety officers need to be on the lookout for a software package slated for release this fall.

ALARM 2.0 is a Windows®-compatible software that will help managers save time and money when bringing their facilities into compliance with the National Fire Protection Association (NFPA) Life Safety Code (LSC). It was developed at the National Institute of Standards and Technology (NIST) with support from the National Institute of Justice's Office of Law Enforcement Standards (OLES), located at NIST.

Based on the fire safety worksheet for correctional facilities in the LSC manual, ALARM (Alternative Life-Safety Analysis for Retrofit-Cost Minimization) performs calculations in moments that would take days to do by hand. By employing this user-friendly software, building managers and safety officers can quickly create a tailored, economical plan to bring their facilities into compliance with LSC. Correctional facilities can use LSC compliance to help achieve American Correctional Association (ACA) accreditation.

NFPA offers two versions of LSC. The "prescriptive" version (NFPA 101) specifies in detail what must be done to achieve compliance. It offers only one solution, with no flexibility or substitutions permitted. The alternate version (NFPA 101A), on which the ALARM software is based, does not have fixed requirements. Rather, it uses 13 fire safety parameters—including fire alarms, smoke detectors, automatic sprinklers, and number of exits—each with up to 7 safety levels. Many combinations can be used to achieve point scores needed for compliance. For example, if more sprinklers are installed, less smoke control is needed.

"There are many, many ways to be in compliance," says Dr. Stephen Weber, who heads the NIST team developing the software. "The idea is to earn enough points to be in compliance, but in the most economical way possible." According to Laura Schultz, the programmer who designed this version of ALARM, "Without our software you could sit for days and days trying to hit the right combination."

Because facilities receive separate LSC scoring for each building and each zone within a building (space separated by floors, horizontal exits, or smoke barriers), and points must be earned in four categories (fire control, egress, refuge, and general safety), days might seem like an optimistic estimate. Using ALARM, building managers or safety officers could have a proposed plan in 1 day or less if staff have already measured wall areas, counted exits, and collected the other data needed to find the solution.

"Correctional facilities are like small towns. You have different buildings, and different sites with different support functions," says Jack Harne, a correctional information specialist at the National Law Enforcement

How ALARM Works

ALARM (Alternative Life-Safety Analysis for Retrofit-Cost Minimization) is designed to make the National Fire Protection Association (NFPA) Life Safety Code (LSC) worksheet user friendly in a Windows® program. Similar to off-the-shelf spreadsheet programs, ALARM uses cells for data entry and can perform complex mathematical calculations. Anyone who knows Excel® or a similar spreadsheet program could pick it up quickly "with a small learning curve," according to one of its developers, Laura Schultz.

The 32-bit software fits on one CD that provides simple installation instructions. A detailed user's manual walks newcomers through filling in background information, such as size, current safety condition, and location. Providing location information allows ALARM to offer information regarding construction costs in the area.

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and Corrections Technology Center (NLECTC) in Rockville, Maryland, and a former correctional safety officer. "You also have housing. It's basically very similar to a community."

That analogy also could apply to hospitals that already have benefited from ALARM. NIST developed the software under a Public Health Service grant in the 1980s and updated it in the 1990s. According to NIST documentation, for a sample of 89 hospitals that used ALARM in planning LSC compliance, the software identified plans that were, on average, 41 percent less costly than prescriptive compliance would have been. This represents a total savings of more than $37 million.

The move from hospitals to correctional facilities occurred because Weber noted that the chapter on correctional facilities in the LSC manual followed the same pattern as the chapter on hospitals. He began reading and discovered similarities between the two types of facilities. "I realized it would be a perfect application of something we had already done," he says.

Weber pitched the idea to OLES and work began on the correctional facilities package in 1998. Beta testing took place in early 2001; feedback was used to develop the final product. When Weber contacted the Maryland Division of Corrections about beta testing, administrators were so impressed with ALARM's potential that all 17 facilities in the system became test sites. NIST also lined up sites in Virginia and Ohio, and ACA sent copies to facilities that applied for accreditation.

"Whenever you try to get funding for something," says Harne, "you always have to explain why you need the funds. The documentation reports produced by this software will help you explain why." Harne recalls being involved in lengthy and complex renovations as a correctional safety officer and says that such processes could have been streamlined significantly using ALARM. He says that the LSC is so complex, "there is no way you could absorb everything. The software might help remind you of something you've forgotten to check on."

"By going this way," says Weber, "you save a lot of time and effort in achieving compliance." Schultz adds, "You save time and money in the construction phase, and also in figuring out what to do and how to do it."

The complete ALARM 2.0 package with CD–ROM and User Manual can be purchased for $25 from the One-Stop Data Shop of the National Fire Protection Association (contact Nancy Schwartz at 617–984–7450 or osds@nfpa.org) or from the American Correctional Association (contact Gabriella Daley at 800–222–5646 or cservice@aca.org).

How Alarm Works *(continued)*

The software includes a sample project file that helps users learn about the program and a help system based on the LSC manual.

The main worksheet screen uses color coding to indicate the facility's current safety level, excluded options, and options the user wants to consider. ALARM automatically excludes alternatives that have lower safety ratings than the facility's current level; users may also choose to exclude options. The program further divides options still under consideration into those that lack data and those that are complete.

For example, a building manager may be considering an improved interior finish in corridors as a means of earning more points toward compliance. He indicates that the current safety level is Class B. Class C would automatically be excluded because of its lower safety level. The manager then clicks on Class A. ALARM asks him to indicate the square footage that requires renovation. It then offers three options for coming into compliance: removing the existing Class B finish to expose Class A materials underneath, coating the Class B interior finish, or covering the Class B material with drywall. The software also provides rough cost estimates for each option. The building manager chooses the selection that best fits the facility's budget.

When the building manager has entered data in all 13 LSC parameters, he selects the optimize feature. ALARM uses its color-coding function to highlight the options that will allow the facility to score enough points for compliance at the least cost. In addition to color coding on the data entry screen, the program provides a detailed report on the suggested least-cost plan.

"You can then show this to your budgeting people and say, 'we realize that we're out of compliance, and this is roughly what it will cost to bring us into compliance,' " Schultz says.

Building managers and safety officers have the option of getting bids from local contractors on options they want to consider, using these costs to override the rough estimates provided by the program, and running the report again to confirm the results.

Because ALARM is designed to use a replaceable database, future upgrades most likely will involve only substituting data files with more up-to-date cost information or revisions to LSC.

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