

SUPPLEMENT 6

Home Security and Fire Safety

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Editor's Note: This supplement reports on the current threat that window and door security bars pose to life safety. It details the efforts of NFPA to address the problem and recommends future action.

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In recent years, deaths by fire have declined, as have most measures of loss due to crime. However, the public's perception of crime hasn't always kept pace with reality. One result is that more and more people take security measures to protect themselves and their possessions. Some of these security measures to block intruders, such as installation of security bars and grilles, pose a significant risk of trapping occupants fleeing a fire. In fact, since 1980, there has been a dramatic increase in the number and percentage of fire deaths that can be attributed to blocked exits.

PROBLEM DEFINITION

The threat to life safety from security bars is hard to measure but appears to be on the rise. There are three main aspects to the problem: increased use of security measures in homes, difficulty in collecting hard data to quantify the problem, and the essentially unregulated state of the security bar industry.

Home Security Trends

While solid statistics on practices and usage are elusive, most observers of the home security industry believe that fear of crime has led more and more citizens to blockade themselves inside their homes. Some of these measures are ill-conceived, some are makeshift (for example, nailing windows shut), and some are even illegal. In their attempts to protect their families and properties by locking out intruders, these people seem unaware they might be locking themselves into a potentially life-threatening situation.

Despite a downward trend in overall fire deaths in the United States, the number of fire deaths related to the use of security bars has risen. An average of less than one fire death per year was attributed to "illegal gates or locks" for 1980 through 1985. This figure increased dramatically to an average of nearly 16 deaths a year for the 1986 through 1991 period. In 1993, seven children died in a Detroit house fire and eight family members perished in a dwelling fire in Mississippi. In 1997, four children perished in a fire in Tampa; a family of five died in a Bessemer, Alabama, fire; and in East Palo Alto, California, nine people were killed. In 2002, an Alabama fire killed two adults and a five-year old. The same year, a Georgia fire killed three adults. In all of these fatal fires, security bars on windows and locked doors kept escape from the fire and kept fire fighters from successfully completing their rescue attempts.

Socioeconomic circumstances make the problem worse. Most of these fatal fires occur in low-income, high-crime neighborhoods. Due to a heightened fear of crime in these neighborhoods, people take measures to secure their homes and discourage intruders from entering, thereby, either consciously or unconsciously, placing a higher priority on security than on fire safety. This is particularly dangerous because

people living in high-crime and/or low-income areas usually face increased fire risk as well. Increased fire risk, combined with blocked exits, is most dangerous for young children, the elderly, and the disabled, for whom escape might be more difficult, even under ordinary circumstances.

Data Collection Difficulties

Although fire deaths related to security measures have increased dramatically, the number is still small enough to pose a problem for the sample-based estimation procedures used to track U.S. fire issues. This problem is made more severe by the dominance of multiple-death fires among the known incidents. In addition, fire death and injury reports might omit information related to security bars because the question that captures security measure involvement also addresses other issues. On the standard form for such reports, there are a number of possible contributing factors listed, but only one can be selected. A further complication is that many forms refer to only “illegal bars or gates.” Because the legal status of the security bars or gates is often unclear, the likelihood that the gates or bars will be identified as impediments to escape is reduced. The data classification defined in NFPA 901, *Standard Classifications for Incident Reporting and Fire Protection Data*¹, has been changed to delete the term *illegal*. In addition, new systems collecting data are adding the capability of listing multiple contributing factors. However, it will take time before these changes are used by everyone in the field.

The Security Bar Industry

Fragmentation. The nature of the security bar industry presents some substantial obstacles to solving the life safety problem these bars pose. Research reveals that the security bar and gate industry is highly fragmented, with considerable regional differences in professional standards and little understanding of the possible consequences of permanently installed bars or inadequate release mechanisms. Until recently, there had been no standard of design and no consistent use of quick-release mechanisms on security bars or gates. Differences among installation companies are even greater. Some are one- or two-person welding shops that focus on security and only install permanent window bars. Other companies offer several options, including easy-release components.

Market Forces. Working against standardization are the market forces behind the industry's product development. Exhibit S6.1 depicts the various market segments of the security and fire safety industries and how they relate to the amount of money and technology invested in them.



Exhibit S6.1 Security bar industry market segments versus investment.

The market segments are displayed in pyramid form, with the top, smallest section representing large facilities, such as convention centers and courthouses, which have the most sophisticated types of alarms, locking devices, and fire safety systems. The next section includes large office buildings and shopping centers, which also have relatively sophisticated security and fire safety systems with automatic releases or delayed egress locking devices and which represent a somewhat larger segment of the market. The next

section of the triangle represents a still larger segment of the market that includes “middle America.” This market segment is the major customer base for NOMMA (National Ornamental & Miscellaneous Metals Association), a trade group representing manufacturers and suppliers of gates, bars, and other security devices, as well as ornamental ironwork. The last and largest segment represents the many low-income communities in both urban and rural areas.

The inverted pyramid on the right represents the amounts of money and technology invested in the corresponding market segments. As you can see, the smallest market segment—grand facilities such as convention centers—has the greatest investment of resources. The largest market segment, which represents numerous low-income communities, has the fewest available resources.

This information about resource distribution shows the economic incentives and possible disincentives for the companies in this business. Clearly, there is more incentive for security bar manufacturers to invest in systems for large, public facilities, which would yield higher profits, than there is to invest in safety measures for low-tech devices in low-income communities.

Range of Products. Security devices that can assure life safety do exist in the low-income market. For example, security locks with inside release and quick-release bars are readily available. Some manufacturers even customize security systems with life safety features such as fluorescent labels that increase visibility at night. Unfortunately, the link between the manufacturers, installers, and end users of these systems is often weak. Manufacturers often don't install their product, and many installers and end users are not aware of the life-safety advantages of some products over others.

Groups Affected by the Problem

The final key to understanding the security bar-life safety issue is the identification of the various groups that would have to contribute to a solution.

Users. Those who have security bars on windows or doors in their homes, particularly those in low-income communities

Security Bar Industry. Those companies that design and manufacture security bars and those that install them

Code Groups. Those groups responsible for creating and revising national codes, such as NFPA 101; NFPA 5000TM; *Building Construction and Safety Code*,^{TM2}; and regional building codes

Local Fire and Building Officials. Those responsible for local modification and enforcement of fire and building codes

Fire Service. Those involved in fire suppression, fire data analysis, and fire safety education

Law Enforcement. Police groups and associations and, especially, local police officers dealing with citizens' security concerns

Governing Bodies. State legislatures, agencies, and local officials writing bills, regulations, and ordinances

Social Service Agencies. Public and private groups working in low-income communities

Housing Authorities. Local, state, and federal groups dealing with housing issues

Public Health Officials. Those responsible for public health and safety

Insurance Industry. Companies dealing with both property loss and liability issues

PROGRESS TO DATE

The NFPA Center for High-Risk Outreach Home Security and Fire Safety Task Force was established in 1993 to find engineering, enforcement, and educational solutions to the problem of fire victims being trapped by bars on windows or doors. Members of the task force come from diverse backgrounds and include fire marshals, public educators, police officers, and industry representatives. They help track legislation, progress of community outreach programs, and improvements in technology. Some of the accomplishments of the task force include the following:

- Underwriters Laboratories Inc. *Subject 2326 Research Bulletin Releasing Systems for Window Bars in Residential Occupancies*³ has been published. It provides requirements for the evaluation, construction,

and performance of window bar releasing systems and can be used as a basis for state and local laws and regulations.

- Changes have been made in NFPA 901, *Standard Classifications for Incident Reporting and Fire Protection Data*, to eliminate the word *illegal* pertaining to security bars, in an effort to improve data collection.
- Incidents and statistics, codes and standards changes, proposed legislation, and updates from the security bar industry are constantly monitored.
- A public education packet including a leader's guide and illustrated brochure describing the dangers of security bars, fire safety messages, and the typical types of release devices has been produced and distributed to thousands of community and church groups, fire safety educators, law enforcement groups, and many others. The leader's guide and brochure is available in English and Spanish on NFPA's website. www.nfpa.org. It can be duplicated by local fire departments and other organizations.
- Messages regarding the life safety issues associated with security bars have been incorporated in NFPA educational brochures and Fire Prevention Week materials.
- The NFPA Center for High Risk Outreach continues to cooperate with model programs in communities such as Ft. Lauderdale, Florida, and Oakland, California, where coalitions have been formed to provide retrofitting of security bars with quick-release devices and community educational programs on fire safety and security and escape planning.
- A partnership with State Farm Insurance has resulted in the gathering of sample release mechanisms, which helped in the development of the Underwriters Laboratories Inc. bulletin for releasing systems and the development of a State Farm educational video and brochures on the importance of release devices.
- Partnerships with organizations such as the National Association of Hispanic Firefighters (NAHF), the International Association of Black Professional Fire Fighters (IABPFF), and the New York City Police Department have resulted in the dissemination of information and education to their constituents for outreach in urban communities.
- Regulation at the state government level has been encouraged. For example, California passed two bills related to security bars in 1996. One requires emergency escape warning labels on all bars sold through retail outlets, and the other gives local cities and towns the authority to regulate installation of security bars, including those on existing buildings. Related bills have also been passed in Mississippi and Texas.

FUTURE ACTION

Recommendations for future action and potential solutions can be placed in one of three categories: engineering, enforcement, and education.

Engineering

Code Development. The NFPA Technical Committee on Means of Egress, which is responsible for Chapter 7 of NFPA 101, *Life Safety Code*, and Chapter 11 of NFPA 5000,TM *Building Construction and Safety Code*TM should consider several issues related to means of escape in the next code cycle.

First, the minimum number and type of means of escape should be examined. If security measures are employed or if operation of an emergency escape mechanism is somewhat complicated, the time required to operate all of the features of the means of escape might prevent successful escape.

Second, if some, but not all, of the openings provided from a given room or space are used as a means of escape (as is currently the case), some consideration should be given to how these openings should be identified so that occupants can readily identify them in the event of an emergency, or at the very least when preparing their escape plans. At present there are significant differences among manufacturers.

Third, consideration should be given to requirements for mechanical or electrical releasing means for emergency escape openings where those mechanisms are employed. How should they operate? What fail-safe modes or interlocks should be required?

In addition to changes to NFPA 101 and NFPA 5000, efforts should be made to correlate the provisions of NFPA 1, *Uniform Fire Code*⁴, and other nationally recognized fire prevention codes should be undertaken concerning security measures and means of escape. Although widespread concurrence on means of escape requirements, especially opening dimensions, already exists, the regulatory vacuum on

security measures has been filled rapidly, and conflicts between the competing objectives of security and fire safety might exist.

In this same vein, security issues should be integrated directly into discussions of code requirements, rather than resolving security/life safety conflicts after they emerge. The emphasis on life safety from fire often produces perceived conflicts with security. While both of these concepts are related to the larger subject of loss prevention, their relationship to each other is often complicated and confusing. In practice, though, both objectives can be satisfied.

Standards Development. Several types of standards might need to be developed to ensure that security-related products and designs meet the intent of code requirements for operability, reliability, and durability. Product standards should be developed to describe the requirements for proper design, installation, and operation of products and their main components. These standards should recognize that window bars are not the only design that can be employed. Grates, shutters, impact-resistant glazing, and locks may also be used. Testing standards should be developed to evaluate how well products perform their intended functions (security and life safety), as well as how reliably they perform over time. Inspection and maintenance standards, written to be understood by homeowners and describing how to verify and ensure the continued proper operation of products, should also be developed.

Any standards that are developed should be performance-oriented rather than prescriptive or proprietary and should be the product of an open consensus process. Given the current absence of technical standards in this area, the degree of industry inconsistency in design and installation, and the relative lack of recognition of the problems in this area, it should be assumed that the process of developing new code and standards requirements will be lengthy.

Enforcement

New installations of security devices clearly should be regulated via legislation. A generic model could be developed for use by all states. This model should include the following:

- Identification of problem
- Reference to code requirements that only approved (that is, releasing) equipment be used
- Reference to product standard or required listed equipment
- Establishment of penalties (civil and/or criminal)

To address issues surrounding existing security bars and gates, an educational rather than regulatory approach should be taken.

Existing regulatory processes could be used to enforce legislation. To ensure that they are addressed in inspections, security bars could be added to the jurisdiction of fire and building departments. The question of licensing installers remains debatable. On the one hand, licensing ensures higher-quality, regulated work and provides a channel for fire safety information. On the other hand, licensing is not as effective as a permit process—which requires inspection—and involves additional paperwork that could place unnecessary restraints on installers. Additional enforcement steps that should be taken include requiring existing noncomplying security devices to be replaced/fixed upon sale of a building, promoting financial incentives for replacing noncomplying existing devices, and involving the insurance industry in future discussions.

Education

The education component should take a two-tiered approach, targeting the message and outreach to two groups: the experts and the general public.

Experts. Experts consist of industry, law enforcement, and code officials somehow involved specifically in the issue. Efforts to educate the security bar industry should focus on the hazards of security devices if improperly designed, installed, or manufactured. In addition, an industry standard for security devices should be developed and monitored to ensure compliance. Finally, industry should become a partner in educating

consumers by developing educational materials for dissemination in conjunction with promotional pieces to potential customers.

The law enforcement community, including the fire service and social service agencies, should recognize that people who install burglar bars are motivated by security concerns and consult the police—not the fire department—for advice about what security measures to take. The police should work with fire departments to ensure that fire and life safety issues are addressed. To facilitate this cooperation, the definition of *security* should be broadened to include fire safety concerns in addition to crime prevention. There are measures one can take to ensure the ability to escape without sacrificing the ability to keep intruders out. To bring all of law enforcement into the loop, a brochure or fact sheet with safety advice, industry standards, and recommended devices should be disseminated to public entities having any exposure to regulations, inspections, or enforcement of codes or ordinances.

Code officials, including permitting, enforcement, and plan review officials, should be educated about standards, requirements, potential hazards, and operations of security devices. These groups could then distribute information on various devices, their use and installation, and design features.

General Public. Schools and community organizations should be actively involved in educating the public about the types of devices available as well as their proper use and application. Insurance companies and other groups should be encouraged to require that minimum standards be met if security devices are installed on premises that are rented, leased, or insured on behalf of others. Most important, widespread dissemination of educational materials is vital. Individuals need to be made aware of the wide variety of fire safety and security measures available.

REFERENCES

1. NFPA 901, *Standard Classifications for Incident Reporting and Fire Protection Data*, 2001 edition, National Fire Protection Association, Quincy, MA.
2. *NFPA 5000™, Building Construction and Safety Code™*, 2003 edition, National Fire Protection Association, Quincy, MA.
3. *Subject 2326 Research Bulletin Releasing Systems for Window Bars in Residential Occupancies*, Underwriters Laboratories Inc., Northbrook, IL.
4. NFPA 1, *Uniform Fire Code*, 2003 edition, National Fire Protection Association, Quincy, MA.