Design-Based Safety

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Scapegoats

Rare tragedies with terrible unintended consequences are usually preceded by a history of denial of a past series of related hazardous conditions. Thomas Bayes was a minister better known for his mathematical doctrine of chance, in which a number of similar hazards can become active at the same time to produce disaster. Civic leaders are usually unable to perceive how similar hazards can combine and create a colossal danger to the public. When noted authorities warn of danger and the need for costly safety features, community leaders often try to avoid imposing such costs on the community. When a tragedy does occur, those who could have made a difference often welcome an excuse to avoid accountability. That's when a scapegoat becomes an acceptable choice.

Community leaders do not relish having to develop detailed engineering analyses of the specific hazards and appropriate alternate safer designs and/or provisions for safety accessories. The real truth that could absolve the alleged scapegoat of guilt may never be known, or may take years to expose.

A classic example of scapegoat syndrome is the 1970 Pioneer Hotel fire in Tucson, Arizona. A black teenager named Lewis Taylor was convicted after a seven-week trial on circumstantial speculation in a case of arson in which 28 people were killed. A scapegoat becomes an acceptable alternate. Since 2003, a voluntary Arizona Justice Project involving a former Arizona State Supreme Court justice and several prominent attorneys has been working to free Lewis Taylor from a wrongful conviction. This group has found no factual evidence that Lewis Taylor started the hotel fire. A current county prosecutor has issued a no-contest ruling freeing Lewis Taylor, who spent 42 years in prison for a crime he contends he did not commit. The prosecutor did not want an unwinnable trial presented by the Arizona Justice Project and made a no-contest ruling — which does not erase the alleged guilt of Lewis Taylor; it simply lets him out of prison.

But this article is not about the conduct of our justice system. It is a review of the related design hazards that allowed a fire to race at a devastating speed to the top of an 11-story hotel building. Newspaper articles and other reports list the following hazardous conditions in the hotel building before the fire in 1970:

- No sprinkler system
- No smoke detectors
- An open stairwell that served as a chimney that would flood the building hallways with smoke
- Flammable decorations and drapes in the assembly rooms, without flame-proofing treatment
- Twenty-two inches of walls from the floor up were covered with flammable carpeting, and the remainder of the walls were covered with a combustible vinyl material
- Poorly designed fire escape system accessible only through hall windows and hotel rooms

These conditions made the hotel building a veritable furnace that could be ignited from many sources of mechanical or electrical failure.

For instance, heat from a small fire of paper trash in a cigarette ashtray in a building hallway can generate enough heat to create flashover to ignite any nearby flammable materials, such as — in this case — the flammable wall carpet. The National Fire Protection Association (NFPA) has, since the early 1900s, developed fire life-safety codes for municipal, county and state agencies to adopt. The six hazards listed earlier are well-recognized hazards that can be overcome at the time of design or when remodeling an existing building.

The building's owners had two choices: rely on insurance if a fire occurs or spend money so the building would be in compliance with NFPA standards. In this case, the choice was made to opt for the lower annual insurance premium. However, an investment to ensure compliance with NFPA standards would have resulted in a much lower long-term annual insurance premium that, in time, would have paid off any investment in life-safety fire protection and ensured the safety of the hotel's occupants.

In addition to failing to comply with the NFPA's life-safety standards, hotel management appears to have given lip service to ensuring fire-safety practices when it:

- Locked the doors to the third floor to prevent exiting from the upper floors to the mezzanine (ballrooms) and down to the first floor (lobby)
- Provided iron grills for the Penthouse windows that *could not be opened from the inside* to allow escape to the open roof in the event of smoke or fire
- Refused to treat the drapes in the hall conference rooms with fire retardant
- Stored materials on the exit stairways
- Attempted to extinguish two previous fires before calling the fire department
- Made no effort after two attempted *arsons* occurred to conduct a follow-up investigation to locate the wrong-doer

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Analysis of the failure of the hotel owner and elected city officials to require compliance with NFPA standards and operational fire safety practices shows clearly that their misplaced management priorities created an inability to ensure public safety. It is criminal to rely on personnel with no engineering qualifications and no understanding of fire safety design criteria or operational safety to be the watchdogs to protect the public. The very reason that doctors, engineers, nurses and dentists are licensed is to prevent the unqualified from making decisions that are outside their expertise. When inappropriate decisions are made by individuals who lack qualifications to rule on issues in which they have had no formal training and/or experience, a social environment in which serious error will occur is created. When those who are unqualified err and the loss of life and property occurs, the temptation to identify a scapegoat becomes apparent. The Catch 22 is that when a criminal action is called "arson," liability for gross negligence is eliminated. Then, no one is responsible for paying for the damage.

Dodging these issues by incriminating a scapegoat after a disaster continues to occur. After the recent massive explosion at a Texas fertilizer plant, it was reported that an individual was arrested on charges that authorities stressed were not linked to the deadly blast. Is this the first step in placing blame on a scapegoat? Before a disaster, those who have a responsibility to ensure the safety of the public and do nothing are those who, after the disaster, look for scapegoats.

System safety analysis needs to become a standard that reaches far beyond the limited scope of MIL-STD-882. The design and construction of all new large facilities, such as skyscrapers, manufacturing plants, fast-rail passenger transportation, mining and many other enterprises, need to include a system safety engineering analysis that is made available to the public. The good news is that some progressive design-and-build construction firms have adopted system safety concepts, usually under other names. This approach removes the opportunity for unqualified organizations to make design-safety decisions, and with it, the temptation to find a scapegoat when they err.