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## FIRE SAFETY BY THE NUMBERS

By Richard Schulte

The National Fire Protection Association (NFPA) report titled "*Structure Fires by Occupancy 2003-2007 Annual Averages*" paints a very interesting picture of fire safety in the United States. The report was developed by the NFPA Fire Analysis and Research Division and is dated June 2010.

Just how frequent are fires and fire fatalities in the United States? The NFPA report (referred to above) provides data to answer these two questions for different occupancies. Given that over 95 percent of fire fatalities which occur in buildings in the United States are in residential occupancies, you would expect that the statistics for non-residential would be glowing, and they are. The following table provides data for just a few of the various occupancies addressed in the NFPA report.

<b>Occupancy</b>	<b>Annual Average Number of Fires</b>	<b>Ratio of Fires to Fire Fatalities</b>
Elementary Schools	1,410	<b>No fatalities</b>
Middle/High Schools	2,750	<b>No fatalities</b>
Medical/Psychiatric Hospitals	1,520	1,520:1
Nursing Homes	2,930	195:1
Dormitories/Fraternities/Sororities/Barracks	3,690	615:1
Hotels/Motels	3,970	360:1
Department/Discount Stores	540	<b>No fatalities</b>
Business Offices	3,310	1,103:1
Electrical Generating Plants	120	<b>No fatalities</b>
Manufacturing/Processing	7,220	1,444:1
Refrigerated Storage	50	<b>No fatalities</b>
Warehouses	1,360	340:1

Are commercial (non-residential) buildings "safe"? Based upon the data above, the answer to that question is a resounding yes.

If that's the case, why do we spend so much capital on building fire safety and why are more restrictive fire safety provisions constantly being proposed? Unfortunately, the answer to that question is rather simple-there's lots of "gold to be mined" in the building code.

Far too many who participate in building code development process don't know the statistics on how fire safe commercial buildings in the United States actually are and others who participate in the code development process try to take advantage of this and utilize the building code as a means to sell products.

Is there such a thing as too much building fire safety? Based upon the data above, it seems reasonable to think that we have reached a point of diminishing returns with respect to fire safety in commercial buildings. Given that 95+ percent of the fire fatalities which occur in the buildings in the United States are in apartment buildings and 1- and 2-family dwellings, it would seem reasonable that our fire safety efforts should be directed to making our homes more fire safe.

In the last decade, our construction codes have addressed the issue of residential fire safety by mandating that sprinkler protection be provided in both apartment buildings and 1- and 2-family dwellings. Since the requirement to provide sprinkler protection in dwellings only applies to new buildings, it will take awhile to make a "big dent" in the remaining fire fatalities which occur in the United States, but over the last three plus decades we have made steady and substantial progress toward the goal of practically eradicating fire fatalities.

Some day, fire fatalities in dwellings in the United States will be as rare as fire fatalities in commercial buildings. In the mean time, perhaps it's time to take a hard look at the fire safety regulations which apply to commercial buildings and eliminate some of the provisions which add very little to public safety. Certainly, there must be some "over-kill" in the fire safety regulations which apply to commercial buildings somewhere in the building code. Given the vast amount of capital that we expend on fire safety in the United States (estimated by the National Fire Protection Association to be \$300 billion in 2007), even just a 10 percent reduction in our expenditures on fire safety in the U.S. is a substantial amount of capital which can be used for more productive purposes.

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**Editor's Note:** Richard Schulte is a 1976 graduate of the fire protection and safety engineering program at the Illinois Institute of Technology (IIT) in Chicago. Schulte worked as the fire protection engineer for the San Jose (California) Fire Department from 1980-1982. Schulte was named as one of ENR's "Top 25 Newsmakers of 2004" by Engineering News-Record for his work on critiquing the National Institute of Standards and Technology (NIST) investigation into the collapse of the World Trade Center towers on 9/11.