



## The 2005 Firefighter Safety Challenge

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Mr. DAVID F. PETERSON

Firehouse.Com Contributor

Recently, the United States Fire Administration (USFA) released a report summarizing the 107 firefighter deaths that occurred in 2004. If you read the report, did the numbers surprise you or do you accept that the firefighting business is inherently dangerous and that we will always lose firefighters on an annual basis? I did, until an email from a fellow author pointed out that the air transportation business looks at all mishaps as preventable. This one email changed my paradigm (after much contemplation) and I now regard all firefighter deaths as preventable. Having said this, I would like to issue a challenge to all fire service colleagues, on behalf of firefighter safety, early in this new year. But first, a little background!

The USFA report stated (among other things) that;

- 50% of the firefighter fatalities were from traumatic injuries (asphyxiation, burns, drowning, vehicle crashes)
- 50% of the firefighter fatalities were non-traumatic injuries (heart attacks and strokes. 49 deaths were from heart attacks!)
  - 3 were killed from apparatus backing up
  - 4 were killed from falls from vehicles
  - 5 were killed in fire apparatus collisions
  - 5 were struck by vehicles
  - 9 were killed in wildland fires
  - 20 were killed in vehicle collisions

(Information found at [USFA Website](#))

While we do not know the details of each death the numbers are startling. Would you agree that they are also unacceptable? Whether we are full-time, part-time, or volunteer firefighters, we are professionals, and, with all rhetoric aside, we can do better than this!

But, how can firefighter deaths be prevented, or at a minimum, be greatly reduced? One possible answer may come from the private sector with a concept called "Six Sigma".

Six Sigma is more than just the number six and the Greek letter "sigma", which looks like a sideways "Q"; it is a management philosophy that represents a statistical measure of how well a company can reduce errors, mistakes, waste, and defects in making their products or delivering their services. Six Sigma means a measure that strives for near perfection. While Six Sigma has been around since the mid 1980's and many successful businesses, such as Sony, Poloroid, and GE, have utilized its concepts, it has profound implications for a service oriented business such as the fire service. If a firefighter death can be described as a defect in the delivery of fire services then a Six Sigma philosophy can be utilized to decrease or eliminate firefighter deaths.

In his book, *The Power of Six Sigma*, Subir Chowdhury states that "Good companies focus on not making mistakes: not wasting time or materials, not making errors in production or service delivery, not getting sloppy in doing what they do best". Chowdhury goes on to state that Six Sigma is focused on eliminating mistakes, waste, and rework and that anyone and everyone can focus on making fewer mistakes. These words also ring true for the fire service.

### **What is Six Sigma?**

Six Sigma is used to designate a standard deviation, which is a measure of variation within a process. It is a way to measure how good or bad the performance of a process is.

Compare to:

- One Sigma is a process where 700,000 defects per million opportunities (DPMO) can be expected. This is equivalent to doing things correctly just 30% of the time.
- Two Sigma is a process where 300,000 mistakes can be found.
- Three Sigma will yield 67,000 mishaps.
- Four Sigma produces 6,000 DPMO.
- Five Sigma finds 235 problems for every million tasks. This is an equivalent of doing things right 99.98% of the time.

Six Sigma is a process or service that yields just 3.4 defects per million chances. At this level of efficiency things are done right or without defect better than 99.99% of the time.

Consider that, operating at 99% efficiency (margin of error of 1%) equates to a process Sigma of 3.8. In comparison, this would translate to;

- 20,000 lost articles of mail every hour
- 5,000 botched surgical procedures every week
- 4 accidents per day at major airports

Most companies operate at between 3 and 4 Sigma which produces between 67,000 and 6,000 defects, respectively. For the fire service, a margin of error of 1% would be disastrous if every death was measured against the number of fires in the US each year. 3.8 Sigma would amount to 16,500 firefighters killed each year responding to approximately 1.6 million fires!