



September 11, 2013

NY Code Authority

Re: Proposed Amendment to IBC Section 906.2

We propose the following addition to Section 906.2 of the International Building Code:

Insert new section after 906.2 in the current Code.

906.2.1 Electronic Monitoring for Fire Extinguishers.

Where a fire alarm system is required by Section 907.2, and where portable fire extinguishers are installed as required by this Code, shall be supervised by listed and approved electronic monitoring devices in the following Occupancy Use Groups:

A1 , A2, A3, A4 – 100 or more persons;

B (3 stories and above);

E – Exception: Day care with five or fewer children;

F – 10,000 sq. ft. and larger;

H;

I1, I2, I3;

M (3 stories and above);

R1;

R2 – Exception 1,2,3,4 family homes or apartments

S2 – 10,000 sq. ft. and larger

30-day inspections shall not be required for dry-chemical, water or halogenated agent portable fire extinguishers that are supervised by a listed and approved electronic monitoring device, provided:

1.0 Electronic monitoring shall confirm that extinguishers are properly positioned, properly charged, and unobstructed, and

2.0 Loss of power or circuit continuity to the electronic monitoring device shall initiate a trouble signal, and

3.0 The extinguishers shall be installed inside of a building or cabinet in a non-corrosive environment, and

4.0 Electronic monitoring devices and supervisory circuits shall be tested annually.

5.0 A written log of required hydrostatic test dates for extinguishers shall be maintained by the owner to ensure that hydrostatic tests are conducted at the frequency required by NFPA 10.

Introduction and Background:

Fire extinguishers are required to be installed in many occupancies as defined by the building and fire codes. NFPA 10, *Installation of Fire Extinguishers* covers the requirements for installation, testing and service requirements of installed fire extinguishers. A fire extinguisher is an active fire protection device used to extinguish or control small fires. When a fire is contained or extinguished during its early stages of development, lives are saved and property losses are greatly reduced.

We often forget the important part a fire extinguisher plays in the life safety because when a fire is extinguished in its early stages, the exposure to the occupants and reduction of risk to firefighters along with reduced damage to the structure are all benefits to a properly placed and operational fire extinguisher. This fact has been revealed in numerous studies of fire extinguisher effectiveness.

In the past fifteen years, five independent studies have demonstrated that an available working fire extinguisher is most effective at controlling and extinguishing a fire at the earliest or incipient stage – before it can cause significant damage to property and lives:

1. **80% of fires successfully contained/extinguished.** 2002 The UK and EUROFEU Fire Trades Association study
2. **83% of fires totally extinguished.** 2003/2004 New Zealand Fire Service / FPANZ study
3. **61% of all fires extinguished by fire extinguishers.** 2006 Swedish Fire Service review
4. **80% of reported fires are successfully contained or extinguished by fire extinguishers.** 2010 Worcester Polytechnic Institute's (WPI) study on fire extinguisher use in academic institutions.
5. **95% of reported fires are extinguished.** 1999 National Association of Fire Equipment Distributors

Furthermore, the Texas State Fire Marshal's office tracks method of extinguishment for all reported fires within Texas state agencies and universities and **45% of all reported fires between 2008 – 2010 were extinguished by fire extinguishers.**

Today the building and fire codes require every aspect of a building's fire protection systems to be monitored to ensure the systems are in working order. The only part of the building fire protection equation that remains a stand-alone, un-monitored fire protection device is the fire extinguisher.

Building and fire codes have for many years required fire extinguishers to be installed in buildings in accordance with the requirements of NFPA 10, *Standard for Portable Fire Extinguishers*.

Given the known effectiveness of fire extinguishers when charged and accessible it would make logical sense that these devices be electronically monitored to insure 24/7 availability and reliability. Monitoring ensures that: Personnel know in real time whether an extinguisher is available and ready for use in the event of a fire.

- Personnel are alerted when an extinguisher is low on pressure, is blocked, is removed or otherwise not available for use so that necessary corrections can be made.
- Monitoring provides 24/7 code compliance – minimizing the risk of human error and the need for frequent visual inspections.
- Fire extinguisher monitoring provides the same level of accountability as that required for other components of a building's fire protection system, such as fire sprinklers, engineered fire alarm systems and fire alarm detection components.

Some states, New Hampshire for example, have enacted legislation to require all newly installed fire extinguishers to be monitored by the existing fire alarm system. This legislative approach completes the circle of protection provided by the early warning fire alarm systems. Now occupants of these buildings will be notified early by the fire alarm system of the existence of a small fire and they will also know that the extinguishers will be ready to extinguish that small fire.

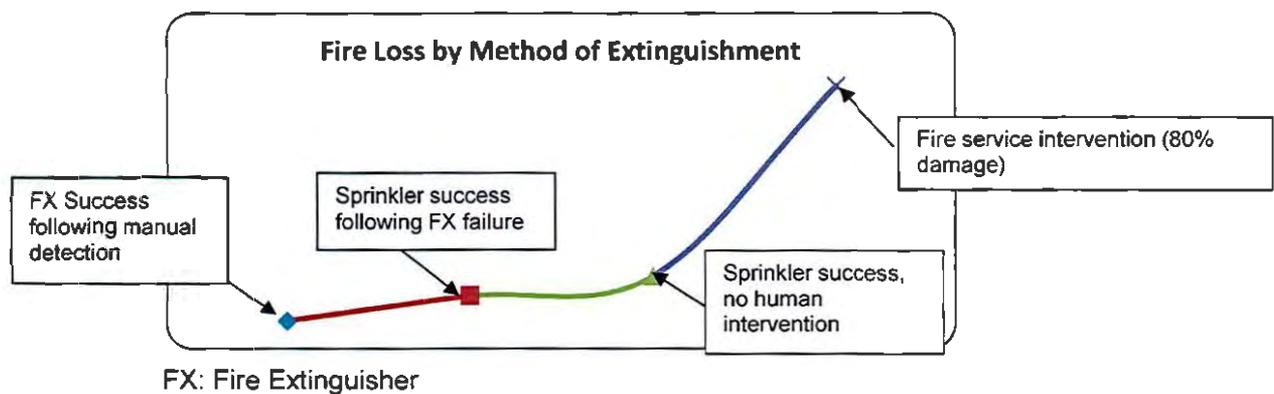
Reasons for Adoption:

- Personnel are alerted when an extinguisher is low on pressure, is blocked, is removed or otherwise not available for use so that necessary corrections can be made.
- Monitoring provides 24/7 code compliance – minimizing the risk of human error and the need for frequent visual inspections.
- Fire extinguisher monitoring provides the same level of accountability as that required for other components of a building's fire protection system, such as fire sprinklers, engineered fire alarm systems and fire alarm detection components.

Costs for Building Owners:

What are the financial benefits to building owners of monitored fire extinguishers?

- *Operable and accessible fire extinguishers reduce costs.*
- *According to a 1991-1995 National Fire Incident Reporting System (NFIRS)/NFPA study, over 90% of all property and life loss occurs once the fire has progressed beyond its early or incipient stage, according to the NFPA. Fires controlled and extinguished at the incipient stage have significantly less financial impact than fires extinguished via sprinklers or uniformed firefighting personnel.*



Ref. University of Canterbury, Christchurch New Zealand, "Assessment of the benefits of Fire Extinguishers as fire safety precautions in New Zealand Buildings", 2008

For Example:

Losses are 32 times less in fire extinguished by a fire extinguisher than a fire extinguished by a sprinkler following an attempt to extinguish using a fire extinguisher

- *Losses are 57 times less in fires extinguished by a fire extinguisher than controlled by an automatic sprinkler without human intervention*
- *Losses are 292 times less in fires extinguished by fire extinguishers than fires extinguished by uniformed firefighters*

- *NFPA statistics from 2007 show that the direct property, human and business interruption costs for fire in the United States was a staggering \$61 billion dollars. Working and accessible fire extinguishers may very well help lower that figure.*

- *A 1997 study for the Norwegian government looked at the cost benefits analysis of the 1990 regulation to require fire extinguishers in residential dwellings. It was found from the analysis of fire brigade reports that fire hoses and fire extinguishing equipment prevent fire spread by 15% of the domestic fires every year. The study therefore assumed that the reduction in insurance company's compensation of fire losses would reduce by 15% per year, a benefit- to - cost ratio of 2:1.*

How will fire extinguisher monitoring impact costs for owners?

As stated previously, fire extinguishers are already required by the building and fire codes. NFPA 72 and NFPA 10 recognize monitoring of fire extinguishers. NFPA 10 allows reduced monthly inspections when a fire extinguisher is monitored, thereby saving the owner substantial costs annually.

- *24/7 monitoring minimizes threat of tampering, vandalism and theft by giving real time notice of any movement or disruption to the extinguisher*
- *Minimizes business interruption when extinguishers are ready and available to control incipient fire*
- *Reduces exposure to liability claims and minimizes insurance payouts in the event of a fire.*
- *A 1997 study for the Norwegian government found a 15% reduction in insurance compensation after an increase in the mandating of fire extinguishers seven years earlier.*

Insurance losses are 292 times greater in fires put out by responding uniformed personnel than a fire extinguished by a fire extinguisher.

Current installation costs of monitored fire extinguishers to the occupancy owner are estimated at \$0.117 per square foot. (Average of one fire extinguisher every 3,000 sq. ft. @ \$350 per unit)

- *The cost of \$0.117 a square foot for monitored fire extinguishers is considerable less when compared to the cost of automatic sprinklers at \$2.00 - \$5.00 per square foot depending on construction.*

- *Continual monitoring of fire extinguishers meets code mandated monthly inspection requirements for all fire extinguishers and thus eliminates all 132 monthly inspections over the lifetime of an extinguisher in 12 yrs.)*
- *By meeting code inspection requirements the technology actually reduces costs for occupancy owner.*
- *The existing installation of monitored fire extinguishing systems has found that the costs of such systems can be amortized over a period of 3.5 to 4.5 years. After the amortization period, operational savings revert to building management*

What is the impact of requiring fire extinguisher monitoring system on small business?

- *The proposal to monitor fire extinguishers in newly constructed commercial occupancies that are mandated to have fire alarm systems will have either no economic impact or a positive economic impact on small businesses.*
- *First and foremost, not all businesses will be required to install the technology. This proposal only impacts new commercial occupancies that are required by code to have a fire alarm panel. Any small businesses that are not required to have an alarm panel but are required to have fire extinguishers are not impacted by this proposal.*
- *Per code, the maintenance and inspection of an occupancy's fire extinguisher inventory is a code mandated reoccurring 12-year fixed cost expense (at 12 years an extinguisher is subjected to a hydrostatic test and many times the extinguisher is simply replaced), a necessary requirement that takes both time & money. Occupancies found out of compliance are subjected to fines (Recently, OSHA fined a high profile Washington businesses for extinguisher violations). Since 2005, the International Fire Code (IFC) has allowed extinguishers to be continually monitored in lieu of the physical monthly inspections.*
- *Additionally NFPA 1 Fire Code requires that all fire extinguishers be manually inspected when initially placed in service and also invokes NFPA 10, Installation of Fire Extinguishers which states: "Fire extinguishers shall be inspected either manually or by means of an electronic monitoring device/system at a minimum of 30-day intervals. [10:7.2.1.2]"*

- *Via continual accountability, the technology eliminates mandated monthly inspections and saves occupancy owners the associated labor costs. Furthermore, factoring in costs associated with replacing missing or stolen extinguishers, clean up from tampered or vandalized extinguishers and the cost of business interruption and liability, the technology provides the end user hard cost savings.*
- *Current installation costs are estimated at \$0.1217 per square foot. (1 every unit every 3,000 sq. ft. @ \$350 per unit)*

Life Safety Benefits:

In the past ten years, five independent studies have demonstrated that an available working fire extinguisher is most effective at controlling and extinguishing a fire at the earliest or incipient stage – before it can cause significant damage to property and/or a threat to lives.

See attached Annex material submitted for review.

Annex 1

Six Tragic Examples of Inoperable or Misused Fire Extinguishers (chronologically past 10 years)

- Albuquerque New Mexico, October 2010 <http://www.kob.com/article/stories/S1776420.shtml?cat=504>
 - 1 year old girl killed in an apartment building fire
 - *Extinguisher was inoperable – leaving the girl's mother helpless*
 - *Extinguishers hadn't been inspected in years*

- Birmingham Alabama January 2010 http://blog.al.com/spotnews/2010/01/family_of_students_killed_in_h.html
 - 4 teenage girls were killed in a Days Inn hotel fire
 - *1st extinguisher was inoperable while the fire was in the early stages*
 - *2nd fire extinguisher was 200' away, fire progressed beyond the extinguisher's capabilities*
 - *Response time was delayed in excess of 20 minutes*
 - *Local Fire Marshal stated that an operable fire extinguisher could have made a difference.*
 - *Extinguishers hadn't been inspected*

- Las Vegas Nevada, January 2008 <http://www.firesafetytoday.com/blog/?p=574>
 - Fire on the roof of the Monte Carlo Casino
 - *At least 4, and as many as 10 Monte Carlo owned extinguishers were used to fight the blaze before the fire progressed to the point of setting off alarms inside the structure. Since the use of the extinguishers were not being monitored, a serious delay in notifying firefighting forces ensued*
 - *Monte Carlo Official "Had the extinguishers been electronically monitored, we would have known about the fire 10-12 minutes sooner."*
 - *Monte Carlo lost \$100 million dollars in business interruption costs alone.*

- Oxford Mississippi, August 2004 http://www.usatoday.com/news/nation/2004-08-27-frat-fire_x.htm
 - 3 students perish in an University of Mississippi fraternity house fire
 - *1 week earlier the local Fire Marshal cited the occupancy for missing fire extinguishers.*

- Warwick Rhode Island, February 2003
 - 100 people perish in a rapidly moving fire at the Station Nightclub
 - The National Institute of Standards & Technologies (NIST) cites 10 factors that contributed to the tragedy. http://www.nist.gov/public_affairs/factsheet/ri_recomm_factsheet.cfm
 - # 6 on the list was *missing fire extinguishers*
 - *Not listed – any aspect of the automated alarm / detection system, which worked per code.*
 - *Testimony confirmed that “The fire extinguisher closest to where the fire started was missing the night of the blaze. Weeks before, the wall bracket that held it had broken. Beese said he put the extinguisher in a nearby closet. Fire specialists said - and Beese agreed - that it might have limited the fire's fury in its early moments.” The Boston Globe June 9, 2003*

- Orange New Jersey, January 2000 <http://www.nytimes.com/2000/03/02/nyregion/hazards-are-cited-at-seton-hall-dormitory-where-3-died.html>
 - 3 students killed / 58 injured in a Seton Hall dormitory fire
 - *Seton Hall is cited for lack of maintenance & inspection of fire extinguishers*
 - *Seton Hall is cited for missing fire extinguishers*
 - *Seton Hall settles out of court for \$36 million dollars*

Annex 2

Fire Extinguisher Effectiveness Data

The following data has been accumulated from state, collegiate and international sources and is current within the last 15 years.

- 1999 Study – National Association of Fire Equipment Distributors “*Portable Fire Extinguishers: Maintenance and Effectiveness*”
 - **95.3% of the time fire extinguishers were effective**

- 2010 Study - Worcester Polytechnic Institute “*Fire Extinguishers in Academic Settings*”
 - There are upwards of 15,000 fire incidents in US academic institutions each year involving fire extinguishers (reported & unreported)
 - **85% of the time fire extinguishers were effective** (72% extinguished / 10% containment / 3% life safety)

- 2008 – June 2010 - Texas State Fire Marshal’s Office statistical reporting “*State Agency and University Fires Reported*” <http://www.tdi.state.tx.us/fire/fmfsi.html>
 - **45% of all reported fires were extinguished by a fire extinguisher.**
 - Remaining fires; 15% sprinkler, 5% hood system, 22% other, 13% destroyed.

- 2008 - University of Canterbury, Christchurch New Zealand, “*Assessment of the benefits of Fire Extinguishers as fire safety precautions in New Zealand Buildings*”
<http://www.civil.canterbury.ac.nz/fire/pdfreports/Deep%20Ghosh%20-%20project%20final.pdf>
 - **94% of recorded incidents; a portable fire extinguisher is totally effective in containing & suppressing a minor fire.**
 - 86% of the incidents a fire extinguisher was used by the building owner / occupier

- 2006 Swedish Fire Service Review
<http://www.civil.canterbury.ac.nz/fire/pdfreports/Deep%20Ghosh%20-%20project%20final.pdf>

- **61% of all fires reported were extinguished by fire extinguishers**

- 2003 – 2004 New Zealand Fire Service / FPANZ Survey
<http://www.civil.canterbury.ac.nz/fire/pdfreports/Deep%20Ghosh%20-%20project%20final.pdf>
 - **83% of the time fire extinguishers are totally effective**

- 2002 – EuroFEU Report
<http://www.civil.canterbury.ac.nz/fire/pdfreports/Deep%20Ghosh%20-%20project%20final.pdf>
 - **80% of the time a portable fire extinguisher successfully extinguished a fire**

Studies by United States Fire Administration have found that 90% of all fires are extinguished & never reported to authorities. However, the National Fire Incident Reporting System (NFIRS) does not track method of extinguishment and as a result; there are no ongoing national figures on fire extinguisher usage. <http://nfirs.fema.gov/>.