

Death prevention by virtual training

Despite stricter safety requirements and the use of newer technologies, fire fighters are still involved in many incidents during their brave defence. They are involved in accidents during field operations but, strangely enough, also during training.



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In the USA for example, an increase of almost 21% in training-related injuries since 1987 have been reported by the US Fire Administration. Therefore, training must be efficient and danger must be avoided. But what if a different approach of proper training can lead to prevention of training injury, but also to fewer mishaps in the field? Exactly, that will kill two birds with one stone!

But what can we find in science about the causes of these incidents?

Let's lift the corner of the veil... Three notable cases were found looking into this subject:

- Fire departments are very dependent on volunteers;
- Most of the time volunteers get the same training as a career firefighter;
- Volunteers are over-represented in accidents.

Some studies have been conducted on the causes of those (fatal-) accidents. A recent study – done by Wildland Fire Safety and Health Network (2014) – shows that “Human Factors” have an extreme share in accidents, in the context of wildland (bushfire). It's in 34% the primary cause of the accidents and in 80% a major cause. Despite the overrepresentation of Human Factors, researches don't pay enough attention during systematic investigation but it's surely needed. So time for changes, because human factors are trainable!

How do we describe human factors regarding fire fighters?

Human factors are about human behaviour and performance. It optimises the fit between people and the system in which they work in order to improve safety and

performance (in case of fire fighters). Let's translate it to something more practical: It is about the factors that affect the human body and mind. The factors for the human body are pretty obvious: Fitness, Fatigue, Dehydration etc. The factors that influence the mind may be new: Situation Awareness, Experience and Trust in team members. Most of the time the body is trained quite well, but they totally forget to train the mind. So it is important to be prepared for all scenarios, by training both your body and your mind!

Let's look at the figures closer, and dig into (US studies on) accidents with fire fighters

In America, the US Fire Administration investigated incidents in their corps. First, they mention the distribution of volunteer vs. career fire fighters. In the US 69% of all fire fighters are volunteers. The second thing mentioned in their report is the total calls for service. In 2015, there have been 30.100.000 calls for service. This service is provided 1 out of 3 times by a volunteer, and 2 out of 3 times by a career fire fighter so far based on the distribution of the force and its interventions.

The third interesting part of their study is the distribution of fatal accidents. In 2015, 56 fire fighters died. Of this, 32 volunteers and 24 career fire fighters. So volunteer fire fighters represent 57% of the fatal accidents while performing 33% of the task... Conclusion: Statistically, volunteers are almost 3 times more likely to be involved in a fatal accident than career fire fighters! Thus volunteers make more fatal mistakes, and as was mentioned earlier, most of those errors are mainly due to human factors (34% primary cause, 80% major cause). Moreover, there is no big difference in (psychical) training between a volunteer and a career fire fighter. The biggest difference – in America

– is that a volunteer will intervene approx. 12 times a year while a career fire fighter 58 times. So the real difference between both is repetition, in other words, experience. If we scroll back to Human Factors, we see that experience is an important part of human factors. But how can you properly train human factors?

The possibilities

Training human factors is mainly about decision-making, over and over again. Ensuring that the right decisions are taken at the right time, it's about being ready when needed. The basis of correct decision-making is experience/situation recognition. The only way to gain experience is repetition. But doing the same thing over and over again in real life is time and money consuming. Thus training must be efficient and specific. Let's present the solution: Virtual Training. Virtual training is specific, efficient and the possibilities are endless! With virtual training you can train any scenario any time you want, without any risk of danger. And besides that... it's cost efficient.

Virtual training?! What is that exactly? It's killing two birds with one stone

Virtual Training – also known as Simulation Training or Incident Command Simulation – is seen by the US Fire Administration as a future trend. Unfortunately, it's not fully accepted and integrated into daily use yet during workouts. While it is a very effective and inexpensive way to tackle one of the main causes of incidents (there it is again!): Human Factors. Every fire

▼ **Explosion. Fires, explosions, gas clouds, wind, rain, smoke are all available.**



fighter knows how to handle a hose or shear. However, let's train on situation recognition, monitoring procedures and appropriate communication. All with the purpose to tackle the Human Factor causes of incidents (mentioned earlier): Situation Awareness, Experience and Trust in team members. With a clear result, fewer incidents during training and fewer incidents during field operations. So wake up! Cause Incident Command Simulation is killing two birds with one stone.

In addition, it is easy to simply debrief each workout. Everything is recorded, and with one push of the button, the training is paused. This is a situation that we see prevalent in practice. While colleagues are watching, a few fire fighters are training. Suddenly the instructor stops the scenario and asks the group: “What happened over there, and was it the right decision?” “What would you if you were in control?” or “What procedure do we need to follow in this scenario?”

This way, you can get the most out of Virtual Training for all participants, in an efficient and specific way anywhere and anytime you want without any risk.

▲ **There are many varied types of incidents such as, train derailments, fires & floods are just a few.**

The advantages of incident command simulators for Australian users

In Australia, there are even more volunteer fire fighters. Volunteers represent a stunning 94% (!) of all fire fighters. All those fire fighters need to be trained for all possible scenarios. They have to be prepared for everything and have preferably experience in everything. Therefore training has to be more efficient and specific, and cross the boxes that are necessary for more safety and better performances! So be smart and use Virtual Training for your fire fighting department. Sounds interesting? Have a look at virtual training solutions such as VSTEP's RescueSim – Incident Command Simulator.

In Australia VSTEP is represented by Bluemont Pty Ltd (ABN 12 111 034 149). Bluemont represents a selected number of mostly European companies in Australia and New Zealand with a focus on firefighting, flood protection and incident preparation. Justin Bear, Bluemont's General Manager, has been active in the emergency industry in Australia for many years. Justin is convinced that RescueSim can contribute in a cost effective way to prepare emergency personnel better for incidents and cooperation between members of rescue teams. Justin can be reached at +61 488033066 or justin.bear@bluemont.com.au for more information about VSTEP and RescueSim.

➔ **For more information, go to www.bluemont.com.au**

Justin has over 25 year's experience in delivering client focused projects throughout a range of project service industries including fire safety systems. At Bluemont we have successfully delivered mobile bulk water supply systems and flood mitigation solutions with major clients such as Fire & Rescue NSW, CFA, Caltex, Viva Energy & Puma Energy.