



LUND
UNIVERSITY

DIRECTED ACTIONS CAN SAVE LIVES

By Marcus Runefors, marcus.runefors@brand.lth.se

Originally published in Swedish in "Brandsäkert" in September 2015. Only conclusion chapters are translated below. The fractions are from a pilot study of 32 cases. A larger sample of 150 cases is being analyzed and the results will be published in the spring of 2016. The translation is done by Marcus himself and slight deviations from the wording in the article may be present.

Important conclusions

Marcus Runefors' area of research is to identify barriers, technical systems that – if they would have been in place – would have prevented a fatality. Examples may be smoke alarm or a sprinkler system. An important conclusion so far it that it is important to target the right measures to the right group.

– In a fourth of the cases, the victim has not been able to evacuate themselves and then will not a smoke alarm be effective but some kind of extinguishing system is needed.

In a fifth of the cases could the victim have evacuated but chose not to.

– For example they have tried to extinguish the fire and died by the sink, or they have talked with the dispatcher for too long from inside the burning building. In some cases the victim went back into the building to save their dog.

There are also a number of cases where a locked door prevented the evacuation.

– The most common is that the victim have locked the night lock and put the key a bit away from the door. In some cases the victim has been unable to find the key during the fire and was found just inside the door.

Here information is an important factor and also education about fire dynamics. While teaching practitioners about basic fire dynamics Marcus have shown a picture of a 30 cm flame. Many believed that it would take 15 minutes before a fire like that would lead to flash over.

– In reality it's much quicker and the room can reach flash over in a couple of minutes. That is important to know if you should decide whether to try to extinguish or evacuate immediately.

Cooperation is needed

An especially vulnerable group is disabled smokers. A mobile sprinkler system – a portable extinguishing system activated by a smoke alarm may be one way of preventing fatalities, especially since people in the risk group are often known by the municipality through its assistance assessment. Marcus describes cases where people have been killed by a dropped cigarette where hundreds of burn marks from previously dropped cigarettes could be found on the floor.

– There they could have acted before the event. And it's not only about money – I learned that one of these fires happened in a municipality where there were several portable sprinkler systems in a warehouse collecting dust. Here a better cooperation between the local fire department and the social services are needed.

One should not overestimate the ability of traditional sprinkler systems. The analysis so far shows that even if all the affected homes were equipped with sprinkler systems, only about half of the cases could have been prevented¹.

– Traditional sprinkler systems, which are activated by the heat of the fire, are too slow to activate if the victim is in direct proximity to the fire such as in the case of fire in clothes [or bed smoking], said Marcus and inform that another person in his project is working on developing quicker sprinkler systems.

Note (not in the article): The potential effectiveness of a portable sprinkler system with nozzle in bedroom and living room are, in average, about as effective as a fixed sprinkler system (about 60 % of the fires). However, if cases where the municipality have conducted a need assessment is sorted out the effectiveness of a portable sprinkler system is increased to about 80 % and the effectiveness of a fixed (thermally activated) sprinkler system is reduced to about 30 % and smoke alarm reduced to about 15 %. This clearly demonstrates that different measures are appropriate for different groups.

¹ I'm currently on 79 cases analyzed (out of about 150) and it seems like this is slightly larger for this larger sample. A best estimate of the potential effectiveness (given 100 % reliability) is about 64 %.