

Case studies — Which technical properties play a role with arson fires in schools?

Arson

Almost every day one or two school fires occur in Sweden. In most cases arson is the cause of the fire. The losses for these arson fires are considerable. In this project a number of cases studies have been conducted on school fires. The project envisages obtaining more knowledge on the technical factors which influence the spread of fires caused by arson in schools. Solutions to mitigate the fire spread in these cases are also proposed.

As methods case studies on almost 60 fires, a specific case study in one town and an enquiry to all fire investigators in the network of MSB has been used. The study resulted in the identification of a number of technical deficiency and solution to these.

Some of the deficiencies are lack of detection systems and automatic alarm systems, bad construction of roof and voids and insufficient or malfunctioning fire compartmentation. Solutions for these deficiencies can be automatic fire alarm systems with efficient location of different type of detectors (smoke and heat detector cables), good illumination, surveillance cameras and sprinklers. In these areas it will be necessary to conduct a cost-benefit analysis.

The areas which need innovations are fire protection system for roof elongations nearby the connection between facades and roofs, sprinklers and rescues tactics for voids. Three possible fire scenarios were identified as important: an outside fire with waste nearby the facade and two fires inside (one with debris inside the school facilities and one as a result of flammable liquids being thrown into the school). These scenarios are important for the further development of technical solutions.

Even that this study focused on technical requirements a number of organisational deficiencies became apparent. The systematic fire protection work as described in Sweden (SBA) does not always work as well as it should. Moreover it is important to create a good environment around the schools which is not the case now in many locations. Also involvement of school personnel is important. Finally it is important that one needs to adapt almost a “zero tolerance” towards arson in schools by acting to each incident whether it is small or large.

Report

Read more in the report “Case studies—Which technical properties play a role with arson fires in school?” published by Lund University, no 3148. The report can be downloaded from www.brandforsk.nu, project-number 907-081.

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