

## **CBRE COLLECTIVE PROTECTION IN BUILDINGS**

A. Zahnd<sup>1</sup>, D. Schuler<sup>2</sup>

<sup>1</sup>*Federal Office of Civil Protection (FOCP), Spiez Laboratory, Austrasse, CH-3700 Spiez, Switzerland;* <sup>2</sup>*BBS Ingenieure AG, Gertrudstrasse 17, CH-8400 Winterthur, Switzerland*

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With the aim of an integrated approach, Spiez Laboratory developed fundamentals to mitigate Chemical, Biological, Radiological and Explosive threats. The guidelines concerning the CBRE Collective Protection in Buildings address protection measures for people who stay in aboveground buildings. The integrated risk management allows the evaluation of appropriate measures to improve security for people in buildings, which are based on relevant risks as well as the cost/benefit effects of the measures.

The risk-orientated planning guidelines deal with hazards of incidents with chemical or radiological agents and in particular terrorist attacks with explosives, firearms, chemical, biological or radiological substances. Based on corresponding CBRE reference scenarios data for hazard and risk analyses were provided. With the guidance tool the probability respectively plausibility of a scenario and the vulnerability of built infrastructure, the number of casualties/injuries, the amount of damage and the loss of functionality and services can be estimated. Operational and technical safety and security measures, constructive protection and measures for building services are evaluated due to the risk assessment.

The presented methodology was successfully validated in practice. For four greatly varying sites - an office building, a bus depot, a data center and a main railway station - hazard and risk analyses have been executed. Based on the results, cost-effective safety precautions were recommended.