



Towards standards and ratings for shelters protecting against explosive volcanic eruptions.

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The emergency management plans for many areas threatened by explosive volcanic eruptions have the basis that, for survival, it is necessary to evacuate out of range of the most prominent volcanic hazards, particularly pyroclastic flows. This advice is good in theory and is appropriate for ideal circumstances where a full evacuation can be completed and maintained, but several problems occur in practice, particularly since predicting explosive volcanic behaviour is fraught with difficulties. For good contingency planning, it would be worthwhile to consider the possibilities of staying in buildings during the eruptive phase, even where thick tephra deposits, large ballistics, or several pyroclastic flows threaten. The authors have analysed the vulnerabilities of some typical European residential building types to the most significant hazards identified. In many instances, occupants would be able to survive an explosive eruption from their nearby volcano. At times, their chance of survival could be markedly increased if they were to take action before or during the eruption. Some form or guidelines, minimum standards, or a rating system would assist in indicating how well certain buildings could withstand the volcanic hazards expected along with suggestions for improving a building's rating. Recommendations are given regarding the development of such formal documentation and advice. This work contributes to the EU-funded project EXPLORIS (Explosive Eruption Risk and Decision Support for EU Populations Threatened by Volcanoes, EVR1-2001-00047).