

Measuring the impact of fire on the environment (Fire Impact Tool, version 1)

Purpose and Goal

In Sweden the responsibility for damage to the environment at a fire incident is increasingly focussing on the responders. Most incident response personnel do not have the training and expertise to understand the environmental consequences of their field operations. The Fire Impact tool was developed for training responders about the environmental impacts resulting from their actions. A process was also developed by which the environmental advantages and disadvantages of fire protection systems can be analysed.

Methods and Implementation

The Fire Impact Tool uses fire models, environmental risk assessment (ERA) and life cycle assessment (LCA) methods to predict the environmental impacts of vehicle and enclosure fires for user created fire response scenarios. The tool platform is an MS Excel® spreadsheet.

The analysis of fire protection systems compares the environmental impact, in units of kg CO₂-equivalents, of having more frequent and severe fires in schools with the environmental impact of installing sprinkler systems in every school in Sweden.

Results

The ERA predicts the local impact to soil, groundwater and surface water from fire water run-off.

The LCA model predicts the global impacts caused by replacement of suppression media, replacement of building and content materials, treatment of waste suppression media, response travel, smoke, the persistent effects of foam in water, and the treatment of excavated soil.

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