Protecting the First Responder Against CBRN Threats

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As part of the Canadian CBRN Research and Technology Initiative (CRTI) Programme, a team led by the Royal Military College of Canada has developed a Guidance Document and inputs for Standards to provide protection for First Responders against a CBRN terrorist event. The team has used a HAZMAT event as the starting point and determined how the terrorist event will be different. For a HAZMAT event the zones around it are divided into the "initial isolation zone" and the "protective action zone". Whilst the NFPA and NIOSH have done an excellent job defining the requirements for respiratory protection in the initial isolation zone, the much larger protective action zone, which may be several kilometres long and wide, where police and Emergency Medical Service workers must operate has received much less attention. The presentation will explain the series of decisions that are required to establish the worst-case but feasible exposure in the protective action zone and how this can be translated into requirements for respiratory protection.

The guidance is designed for all kinds of responders in a wide variety of foreseen roles. Potential exposure scenarios were developed in consideration of the nature of the attack - with categories defined as contagious spread; large scale CBRN, small-scale chemical and small-scale powder incidents. Large-scale incidents with >200 kg material are treated in the same way as full-HAZMAT operations. Exposure models were used to predicted peak levels and decay rates based on the ALOHA air movement model.

The recommendations are based on the following considerations:

- Scenario descriptions
- Response roles
- Exposure and operating conditions
- User requirements
- Realistic evaluations of performance
- Acceptable exposure levels

In addition, responder organizations must themselves implement:

- Scenario-based training on response roles and use of equipment
- Training on risk management approaches to minimize exposure if hazards are encountered
- Appropriate sizing and fit-testing procedures, regularly implemented
- Appropriate equipment testing and maintenance procedures