

## APPROACHES TO FIELD EXPEDIENT DETERMINATION OF PROTECTION FOR FIRST RESPONDERS

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A variety of deficiencies have been identified in the provision of known, adequate, respiratory protection by Canadian responder organizations when responding to chemical-biological-radiological-nuclear (CBRN) terrorism events. These include problems with respirator integration into the protective ensemble, an inability to demonstrate the high protection factors necessary for CBRN response (i.e. orders of magnitude higher than traditionally considered for occupational applications) and knowing the protective status of equipment when donned at the time of an incident. A project, now underway, is optimizing and demonstrating the use of leading-edge approaches and training two groups of federal first responders (the RCMP and Health Canada) in the following:

- Routine preventative maintenance on their respiratory equipment.
- On-site fit-testing procedures to size each wearer.
- Expedient methods of ensuring that equipment is correctly donned in the field.
- Methods for measuring simulated workplace protection factors.
- Assessing equipment integration procedures to assist in selection.

This presentation will focus on the approaches that are being followed to permit determination of the quality of protection in the field prior to entry into a hazard area for air-purifying respirators powered air purifying respirators and self-contained breathing apparatus. Preliminary results using several approaches that require minimal or no modification to the respirator while permitting quantification of protection factors at relatively high levels in the field will be presented. The applicability and limitations of devices that use controlled negative pressure condensation nucleus counting and pressure sensing will be discussed.