

CBRN Respirator Standards Development in the United States**Richard W. Metzler**

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ABSTRACT

Prior to 2001, there were no standards in the United States for respiratory protective devices for a full range of expected chemical, biological, radiological, and nuclear (CBRN) terrorist threats. Neither industrial nor military respirators provided protection from the entire complement of potential CBRN agents. Under Federal regulations, emergency response forces are required to use respirators approved by the National Institute for Occupational Safety and Health (NIOSH) for the expected hazards.

By establishing *partnerships* with other Federal agencies, manufacturers, and emergency response organizations and by using communication methods such as the internet and special *public meetings*, the NIOSH, National Personal Protective Technology Laboratory (NPPTL) was able to integrate applicable industrial and military technologies to provide the full range of protection needed by responders. These partnerships enabled NPPTL to gain nationally-based support on the proposed standards, allowing adaptation of the standards by policy rather than a lengthy rulemaking process.

Developing respiratory protection standards for CBRN applications included seven major steps:

1. hazard analysis
2. operational requirements (including human and environmental factors)
3. protection requirements
4. standards definition
5. test procedures and validation
6. reliability and quality assurance requirements
7. user training and guidance documents

Specific CBRN standards have been developed for four classes of respirators:

1. self-contained breathing apparatus (SCBA)
2. air-purifying (full-facepiece) respirators (APR)
3. air-purifying escape respirators (APER)
4. self-contained escape respirators

NIOSH approvals have been granted to most SCBA and a few APR manufacturers. Currently, applications for approval of CBRN escape respirators are being processed by NIOSH. Presently, CBRN respirator standards development efforts are addressing powered air-purifying respirators (PAPRs).