

Are CBRN standards appropriate for you?

Denise Tracey, an associate with W L Gore & Associates, with responsibility for CBRN products, says that standards need to consider what wearers will be doing, what level of threat they are likely to encounter and so what level of protection they will require



MANY COMMENTATORS, JOURNALISTS and industry experts have repeatedly told us that the world has changed since September 11, 2001. In fact, it was changing in many ways before this infamous date; with the Sarin attack in Tokyo and the increased threat of asymmetric attack from terror groups, the world has been preparing itself for many years to resist these new threats.

New threats?

In some ways the threats are the same as before – the bombs in Madrid and London used conventional weapons, and the targets have not really changed. But there are new dimensions – the absence of warning leaves no doubt that the main goal is the death and maiming of as many people as possible; the potential for the weapons to include chemical, biological and even radiological materials is ever present; the new enemy does not play by the conventions of the old.

In the Cold War scenario, the expected attacks were well understood and the likely exposure of personnel could be predicted with some degree of certainty. In the new world this has changed. Today's enemy does not play by the old rules, the potential weapon could include a very wide range of chemical and biological materials, not just those seen in military scenarios and the civilian responders need to be prepared to deal with a wide range of possibilities.

Preparation for these possibilities includes the protection of the individual responder. In the event of a chemical or biological attack the first thought of all civil defence personnel is to help those affected. This requires that those responding will be working within the contaminated areas, seeking to provide medical aid, remove casualties and obtain evidence from a crime scene to enable successful prosecution of the offenders. While protection from the contaminated environment



is essential, it is also critical that the responders are able to carry out the required activities. There is little point in 100 per cent protection that does not enable the wearer to carry out their rescue tasks effectively.

With this in mind, the question of appropriate standards to assess performance of personal protective equipment comes up. How does the wearer know that what they are wearing will protect them and allow them to function effectively? In particular, what tests are appropriate for these new environments?

Military scenarios have produced a 'standard' assessment (which does vary in interpretation from country to country) for chemical warfare agents such as mustard gas and nerve agents.

Civilian standards

Civilian standards are well developed to assess performance of clothing designed for handling known or unknown toxic industrial chemicals and materials. Both sets of standards are excellent in doing what they were designed for. However, the use of these standards to assess performance of clothing to be worn in the event of a chemical or biological terrorist incident pushes their applicability to the limit.

The military based tests only measure performance of the clothing against vapours of

traditional chemical warfare agents. There is no inclusion within the standards for protection from liquids, aerosols or biological agents.

The hazardous materials handling standards, such as EN 943, address the exposure of the wearer to high levels of hazardous materials. To pass this challenge the materials are required to be impermeable to a very wide range of vapours, and consequently the materials are typically water vapour impermeable, very heavy and thick, resulting in garments which cannot be comfortably worn for long periods of time.

The test methods described above have been developed over time to measure the optimum performance from the technologies available in the past. More advanced materials are now entering the market; these are capable of providing the required level of protection for certain roles, with reduced physiological burden. However the current test requirements may not allow the breadth of performance of these materials to be adequately measured.

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photo: Steve Schooling

Appropriate testing

In reality, the appropriate testing needs to consider what the wearer will be doing, what level of threat they are likely to encounter and so what level of protection they will require. The US NFPA 1994 test does move in this direction, including both chemical and biological warfare agents, as well as some toxic industrial chemicals in the challenge list, and considering the likely mode of exposure of the wearer to these materials. This shows a move towards ensuring that standards reflect probable risks and so result in protective clothing which effectively provides protection but does not add unnecessarily to the physiological burden of the wearer.

The important question for the wearer is: "Do I know that this product will protect me when I am under threat and will it allow me to conduct my job?"

