

How Well Are We Actually Protected with a Gas Mask?

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For the CE (Conformité Européen) certification of gas masks, a laboratory method is used to measure the level of protection on human beings. However, it is known that in practical conditions the level of protection can be much lower than measured in the laboratory. This is due to differences between the standard protocol of movements in the laboratory and the specific activities during real-life tasks. TNO Defence, Security & Safety is capable of on-line measuring the level of protection offered by a gas mask during the performance of a movement program that simulates the tasks of a wearer in realistic conditions. In cooperation with DSTL (UK) and FFI (Norway) a “field protection” system is developed. This system is able to do online measurements of the level of protection of a gasmask simultaneously the movements of the wearer are recorded with a camera and a movement sensor. Additionally, the pressure inside the mask can be measured to assess the breathing resistance. The results of these “field measurements” will be compared to laboratory results to investigate the correlation between the two. Eventually, the results can be used for the design of (a) laboratory test protocol(s) for gas masks that is a more adequate representation of their real-life performance. A second possible application is the improvement of mask designs to provide adequate protection for specific tasks. The protective performance of various masks, widely used in industry, is currently evaluated. In the presentation, the test device and protocol will be described as well as some results, for example that the protection the gasmask offers depends on the type of activities the wearer is performing.