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ISO Respiratory Protective Devices (RPD) – Human Factors driven Standardization

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This paper gives an overview about the work progress of the ISO Subcommittee(SC) 15 «Respiratory Protective Devices» within ISO Technical Committee (TC) 94 «Personal Protective Equipment».

Since March 2002 SC 15, its working groups (WG's) and specifically its project groups (PG's) consequently have followed the scope of SC15 and structured performance requirements for both the standards, filtering devices and supplied breathable gas devices in clear focus on characteristics of human beings-the wearer. Human factors are the foundation of the final requirements. The interference between the Respiratory Interface, the wearer and the device Respiratory Protective Device (RPD) itself will influence the protection level of the system. Anthropometric data of wearers faces developed by the National Institute for Occupational Safety and Health (NIOSH) allows to cluster the 5th to 95th percentile of the RPD wearer population into 5 basic headforms to be used in several test methods. The protective performance of a RPD will be identified by specific inward or total inward leakage test conducted by test subjects recruited out of this distribution penal, called PCA-penal.

It is envisioned that the new standards will take into consideration the wearer's task, the environment, the wearer's work load and the associated respiratory work rates. A new classification concept, equal for both filtering and supplied breathable gas RPD is based on protection level, the work rates and the capacity of the devices. The first time in RPD standardization the different RPD can be compared independant from technologies used in the design.

Historically standardization was based on specifying products. The standards of tomorrow will follow the basic respiratory demands of the wearer and specify the performance of RPD. Requirements for specific work places are addressed as special application, such as fire fighting, mining or escape scenarios. The new approach of the ISO-RPD standardization has to be explained to the wearers, including the selection process of the most appropriate RPD for the work and the wearer, a big change in attitude but a great challenge to get better and suitable protection of the wearer.