

## **Determination of Work Place related Protection Factors for Respiratory Protective Devices**

### **Duration of the project**

2010 – 2013

### **Background**

Respiratory protective devices (RPD) play an important role in providing protection to workers against chemical and biological agents and oxygen deficiency. As they are used for protection against serious harm to health and/or life, these devices are subjected to formal certification schemes throughout the world. The assessment of the likely protection that can be expected from a given RPD is based on total inward leakage measurements in a laboratory.

It is well established throughout the world that in general, workplace protection provided by a given class of RPD can be much less than those obtained during a test under a certification scheme. Many countries have established “assigned protection factors” (APFs). These were established in the main with the help of workplace studies together with application of professional judgement. In other words, APFs were established by a combination of art and science. As different source data and different professionals were involved with the determination of APFs their resultant figures vary from one country to another. This situation is unacceptable in a global economy, where companies operate without “boarders”.

RPD standardisation has been taken forward by ISO/TC94/SC15 in 2002. This committee has a significant workload developing standards for the performance assessment of RPDs. The approaches taken for the development of these standards are unlikely to deliver globally harmonised APFs in the near future.

### **Objectives**

One of the objectives of the project is to **deliver a standardized method and strategy for the determination of workplace protection factors for various RPD**. Above that, series of measurements shall be undertaken to carry out **workplace studies to obtain figures of the real performance of up to three types of RPD**. Another objective is to look at the effect and effectiveness of training on the protection of the user by comparing the “as is” situation with the situation of after training has been given to the wearer.

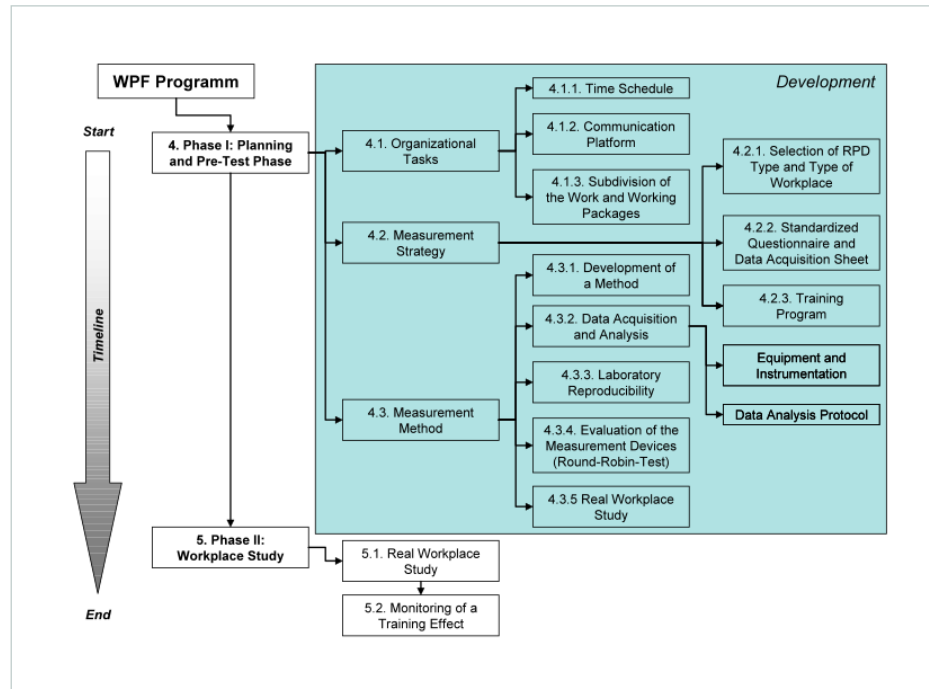
These factors correlate with the level of protection that can be obtained with a certain RPD under real working conditions.

### **Research methods**

Several measurement series should be performed with RPD in real life studies. This means that the tests will be performed directly on real workplaces. With the test data, certain factors will be determined that can be used to derive the desired workplace fit factors.

The project will involve an international group of test laboratories mainly from OSH institutes under PEROSH and should cover a broad range of real life working fields considering the test series. The used test itself should be as simple as possible and robust enough that a handling under the requested conditions can be realized.

**Scheme 1:**  
Sketch of the workflow  
for the whole  
project



**Scientific relevance**

As different source data and different professionals were involved with the determination of assigned protection factors (APFs), their resultant figures vary from one country to another. A standardized method and strategy for the determination of workplace protection factors for various RPD would harmonize the current situation. Although the ISO committee is developing a standard for RPD selection and use, it will not have the power to cover the issues that are proposed by the PEROSH project. In fact, the outcomes of this project will help ISO.

**Practical/societal relevance**

With the availability of European wide agreed workplace related protection factors for RPD the risk assessment of workplaces will be improved and harmonised within Europe. That would enable safety professionals to select devices with adequate protection which will finally lead to an improved worker protection. Besides that, the workplace studies will give information of the real performance of certain types of RPD.

**Project leader**

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**Project participants**

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- Health and Safety Laboratory (HSL, UK), PPE Team, Personal Safety Unit
- Finnish Institute of Occupational Health (FIOH, Finland)
- Central Institute for Labour Protection of Occupational Health - National Research Centre (CIOP-PIB, Poland)
- Institut National de Recherche et de Sécurité (INRS, France) Département Ingénierie des Procédés
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