

Considerations for the Role of Assigned Protection Factors (APF) in Respiratory Protection

Description

Assigned Protection Factors (APF) are important to respiratory protection compliance and an integral aspect of a comprehensive respiratory protection program but can become a complex challenge for those health and safety professionals seeking global standardization of management processes. While a detailed review of the derivation of APF's and their regulatory requirements across the globe can be found in [“Key Considerations Regarding Respiratory Protection Assigned Protection Factors \(APF\)”](#) this paper will summarize the main points and offer general APF considerations for health and safety professionals needing to manage worker exposure to inhalation hazards through the use of respiratory protection.

Regulatory and standards setting organizations have established numerical protection values for specific Respiratory Protection Equipment (RPE) to help meet the intent of their requirements and guidelines. These values represent the level of protection the RPE can be expected to provide the wearer when used in a continuing, effective respiratory protection program, and are typically termed the Assigned Protection Factor (APF). Another term, Nominal Protection Factor (NPF) represents laboratory determined performance values for a given type and class of respirator written into European performance standards. APF values for the same or similar RPE can vary greatly between countries and regions, often because the derivation process itself is variable. Ultimately it is the employer's responsibility to follow the applicable RPE requirements for their facility but to assist the employer the following are some considerations for those multinational companies seeking to standardize their approach to a variable APF regulatory framework or consider APFs for countries or regions where those regulations are lacking.

When multinational companies desire to set an APF standardization across all their company facilities, one approach would be voluntarily setting of an internal company's APF at a lower, more conservative number than what is specified by the relevant national regulations or work to the lower common value. For operations in locations where national regulations do not exist, review of existing APF and NPF and the data used to set them is recommended. Discussion in the detailed document mentioned above, along with tables of US and European APFs, is aimed at assisting occupational health and safety professionals with this type of review. In some cases, deciding to use the lowest relevant APF across global locations may also trigger a review and optimization of selected respiratory protection, especially in European Countries where certain respirators (e.g. FFP1) have an APF of 4.

Employers with operations in countries that have regulated APF should follow local regulations and use the regulated APF or set internal APF that are equivalent to or more conservative than the applicable regulations. If the employer is in a country where APF have not been set and they wish to use APF, they should consider reviewing the APF of those countries that are using RPE approved under the same regulations and that specify similar respiratory protection programs as the employer has implemented.

Employers should consider that current APF values apply only when:

- The respirator has been properly selected;
- The potential wearer has been medically cleared to wear the selected respirator;
- The wearer has been trained regarding the respiratory hazard(s), proper use of the respirator including how to put the respirator on and take it off, any limitations on its use, and its maintenance including verifying adequate air flow for

Powered Air Purifying Respirators (PAPR) that may not be equipped with an alarm prior to entering the contaminated area each time;

- The respirator is not worn when conditions such as facial hair interfere with the face seal;
- The wearer is properly fit tested using a validated fit-test protocol prior to the use of tight-fitting respirators; and
- The wearer knows the proper procedures and schedule for cleaning, disinfecting, inspection, repairing, discarding, and otherwise maintaining the respirator.

In addition to these considerations for the role of APF in respiratory protection programs, it is important to recognize that often the APF chosen is based on the extent of exposure to the airborne hazard. A robust exposure assessment program based on accurate characterization of the amount of airborne contaminant and understanding the variability around that exposure is important for appropriate application of the APF in respirator selection. Other factors important to exposure minimization are respirator and other PPE donning and doffing methods that prevent contamination of skin or other surfaces, or resuspension of airborne particulates, that may also contribute to overall exposure.