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Respirator Classification, A Subject That Requires Class Definitions and Oversight

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ABSTRACT

The significance of the classification of respiratory protection devices in the USA hasn't received much attention over the past thirty years. Initial classifications by the U.S. Bureau of Mines were based on the hazard the device was used to provide protection. In ASA Z2.1-1959, a classification based on respirator mode of operation was defined; atmosphere-supplying respirators (self-contained type, hose type), air-purifying respirators (gas masks or chemical cartridge respirators), self-rescue-type respirators, dispersoid (dust, fume, mist) respirators, combination gas and dispersoid respirators.

The joint AIHA-ACGIH Respiratory Protective Devices Committee published the Respiratory Protective Devices Manual in 1963 that identified self-contained breathing apparatus as a separate classification type.

In the 1992 edition of ANSI Z88.2, four types of respirators were identified: air-purifying, atmosphere-supplying, powered air purifying, and self-contained. Each type is specified with a variety of respirator inlet coverings (e.g., half-mask, full facepiece, helmet/hood, or loose-fitting facepieces).

OSHA is also following the ANSI classification approach in their 2003 proposed rule on assigned protection factors.

NIOSH, on the other hand, certifies respirators as the following types, based on various somewhat dated schedules: Self-contained breathing apparatus; gas masks; supplied air respirators; particulate respirators; powered and non-powered air-purifying particulate respirators, chemical cartridge respirators, special use respirators, and combination gas masks. Individual respirator types can be qualified against a wide variety of specific toxic agents or simulants, currently 45 entries.

These classification systems form the basis for determining which certification tests and user performance estimates (e.g., assigned protection factors) are assigned to commercial respirator models. Additional details and regular oversight are needed for each classification, along with certification testing that measures the performance of every respirator model or appropriate component on a respirator fit-test panel.