Introduction
Most safety and health professionals who have respiratory protection program responsibilities are at least somewhat familiar with the American National Standard for respiratory protection. It is commonly referred to as “ANSI Z88.2” or simply “Z88.2.” Long-time readers of this publication and other 3M literature, including the annual Respirator Selection Guide will likely recall that 3M has cited Z88.2 for many years for information relevant to operating an effective respiratory protection program. While Z88.2 has served its readers well for more than 30 years, this article will describe why it is not currently necessary. This is not to say it should be ended once and for all; it just needs a rest.

Background
It must be recognized that worker safety and health regulations were not widely in place prior to 1970. Most importantly, the legislation that created the Occupational Safety and Health Administration (OSHA) was passed in 1970. The United States did not have a respirable coal dust exposure limit or respirator requirements for miners until after passage of the Federal Coal Mine Health and Safety Act of 1969. It was also during the 1960’s that radiation protection regulations were criticized for their inadequacy. Accordingly, there was little guidance and no national regulatory requirements for respiratory protection in place prior to the late 1960’s.

In the absence of safety and health regulations, practitioners needed guidance in many aspects of their profession to help them do their jobs effectively. Because respiratory protection was one of the least understood aspects of safety and health, procedures for the effective use and care of respiratory protective devices were clearly needed. Thus, the first Z88.2 standard originated in 1969 as “...a revision of the respiratory protection portion of American National Standard Safety Code for Head, Eye and Respiratory Protection, Z2.1-1959.” In other words, Z88.2-1969 was created to fill a need. As is the case with all ANSI standards, it was issued as a document representing a consensus of concerned parties. Compliance with ANSI standards was, and still is, voluntary.

As is the case with any technology, professionals’ knowledge of respiratory protection changes over time.
Discussion

Shortly after OSHA was organized as an agency in 1971, it adopted most of Z88.2-1969 into its first mandatory respiratory protection regulation. It was codified as 29 CFR 1910.134 and remained largely unchanged until 1998.

As is the case with any technology, professionals’ knowledge of respiratory protection changes over time. New product designs become available; experience may change the perception of what constitutes “best practices.” For these reasons, Z88.2 was revised and republished in 1980 and again in 1992. Each revision clarified, expanded or changed provisions of the 1969 standard, and introduced new concepts. For example, qualitative and quantitative fit testing provisions were first explained in detail in the 1980 edition of Z88.2. Very significantly, assigned protection factors (APFs) appeared in Z88.2 for the first time in 1980. These values are numerical estimates of how much contaminant reduction or protection each class of respirator is expected to provide when it is properly selected, worn and used. Since their introduction, APFs have been critical to the respirator selection process. Based on further accumulation of data and experience, important changes in Z88.2-1992 included adjustments to some of the APFs, and a reinterpretation of the meaning of quantitative fit testing results.

Because of its periodic review and revision, ANSI Z88.2 deservedly developed its reputation as the “state of the art” guidance in respiratory protection. It was for this reason that 3M and many others looked beyond the requirements of 1910.134 to Z88.2 for additional guidance to enhance the quality of respiratory protection programs.

During the years that Z88.2 was undergoing periodic revision, OSHA was also aware of the changes taking place in the understanding of respiratory protection. Accordingly, OSHA issued an Advance Notice of Proposed rulemaking to seek comments on the need to revise 1910.134 in May of 1982. For many reasons, including rulemaking procedural requirements, agency priorities and resources, however OSHA was not able to issue its final revised respiratory protection regulation until January 8, 1998. Thus, for almost 16 years after OSHA began the updating process, Z88.2 continued represent the best practices in respiratory protection program management.

Once issued, the 1998 revision of 1910.134 brought most of OSHA’s respiratory protection requirements up to the state of the art. Its guidance on particle filter selection and managing the use of chemical cartridges were actually more contemporary than the existing Z88.2-1992. Because of controversy over what APFs should be incorporated into 1910.134, OSHA “reserved” (i.e., postponed for future action) the APF portion of the revised regulation. Thus, Z88.2-1992 was still useful as a reference for APFs until OSHA published its own legally enforceable APFs on August 24, 2006.

The analyses OSHA used to arrive at its APFs will be the topic of a future JobHealth Highlights article. For now, suffice it to say that OSHA’s APFs are based on rigorous review of the best available data, and 3M fully supports them. OSHA’s values closely follow those in Z88.2-1992, but they are not identical. Further, OSHA’s APF table includes entries for self-contained breathing apparatus with tight-fitting hoods. These devices did not exist in 1992; this is another example in which 1910.134 is more current than Z88.2.

There is no data that has been presented to indicate that 1910.134 is deficient in any way. This is logical, since it is based on the most up to date information and data available. As such there is nothing that would be improved by a new edition of Z88.2 at this time. Ultimately, new data may become available to indicate that one or more provisions of 1910.134 need improvement. While OSHA regulations do not apply to all workplaces, those who are not regulated by OSHA and once looked to Z88.2 for guidance will best serve their workers now by following 1910.134.
Summary and Conclusion

The ANSI Z88.2 standard was the foundation for respiratory protection practices and regulations in this country. For more than 30 years, it was considered the state of the art in the implementation of effective respiratory protection programs. However, since OSHA has revised its respiratory protection requirements to reflect the state of the art, and the OSHA requirements are mandatory, another revision of Z88.2 is not needed at this time. In the future, new information and data may prompt the need for changes to some aspects respiratory protection programs. Because Z88.2 has historically been the fastest way to update this information, a revision might be considered at that time.

References


