

# **Inward Leakage and Protection Factor in Respirator Standards**

Yang Xiao-bing, Fang He, Zhao Bin, Yang Bo, Ding Song-tao

China Research Institute of Chemical Defense; Beijing, PRC

Terminology for inward leakage / total inward leakage and protection factor will be briefly introduced, followed by a detailed description of test methods in worldwide respirator standards that relate to those terms. The standards mainly include the chemical, biological, radiological and nuclear (CBRN) respiratory protection standards developed by the American National Institute of Occupational Safety and Health, European respiratory standards EN 13274-1:2001, Japanese respiratory standard JIS T8159:2006, and Chinese mandatory respiratory standards GB 2626-2006, GB 2890-2009 and ISO/DIS 16900-1.2 draft, etc. The differences in the inward leakage / total inward leakage test methods among those standards are analyzed, which includes the aerosol type, test subjects, simulated exercises and duration, sampling method and test result evaluation method, etc. At the same time, the assigned protection factors and workplace protection factors together with simulated workplace protection factors are also explained. Based upon the comparative analysis, opinions on the problems of Chinese respirator standards are given as well as factors that should be taken into account during inward leakage testing.