

REAL TIME MONITORING OF PROTECTION FACTORS IN A SPECIALLY DESIGNED TEST CHAMBER WITH VIDEO CLIPS AND EVALUATION SOFTWARE

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The evaluation of ten respirator models was performed in a specially designed 20 m³ stainless steel test chamber at 15°C and 25°C (RH 80 %) at an air flow of 200 m³/h. Respirators were tested for an aerosol of sodium chloride particles and a test gas of amyl acetate. A total of 121 tests were carried out for 7 test subjects. The first part of the tests contained eight activities (OSHA), the second consisted of six activities designed to emulate a work situation involving hot work in an off-shore environment and the third was the same as the 1st tests. Leaks into the respirators were measured by two condensation particle counters detecting particle concentration outside and inside the face piece of the respirator. The two instruments and a video camera were connected to the ParticleView software enabling real time monitoring of particle concentrations inside and outside the respirator and simultaneously collection of video clips. PTR-MS (Proton Transfer Reaction Mass Spectrometry) was used for monitoring of amyl acetate leakage inside the respirator. After each test the test person was interviewed on how the respirator performance was perceived based on a specially designed questionnaire (n=112). All the tested models fulfilled the assigned protection factors. One disposable respirator tested did not show good performance. Performance was significantly lower in cold weather (5, 15 and 25°C were tested). Beard growth does impair the performance of negative pressure respirators.