

CHILDREN & INFANTS RESPIRATORY PROTECTIVE SYSTEM — CHIRPS

Tamar Miller¹, Heli Honig¹, Gad Frishman¹, Keren Hizkia², Yonit Lavie², Yiftah Priel², Reuven Fichman², Hadar Roter³, Uri Shuali³, Ido Nir³, Esther Krasner¹

¹) IMOD – NBC Protection Division, Hakiryia, Tel Aviv, ISRAEL

²) DEA R&D, Merkaz Sapir, Givat Shaul, P.O.Box 35242, Jerusalem, ISRAEL

³) IIBR, Nes Tziona, ISRAEL

CHIRPS is an innovative children & infants' respiratory protective system (RPS) against chemical and biological (CB) hazards, designed to fit newborns, infants and children up to 10 years of age. The system has a protective hood which is closed around the neck and integrated with a personal 45 lpm blower. The blower supplies filtered air and creates a positive over-pressure and an efficient air turnover within the system, thus providing a high protection factor and preventing a CO₂ concentration increase. CHIRPS replaces the current Israeli infants' RPS and the children's RPS with one RPS. The goal was to improve user-friendliness and functionality compared to the current systems. Furthermore, for economic reasons, the aim was to base the design on current children RPS's components. CHIRPS underwent various trials, including protection factor and functionality, in order to achieve the Israeli certification as an Israeli children and infants' respiratory protective system. As CHIRPS was designed for children, human trials were limited, being reduced to the minimum necessary, a functional trial conducted upon 34 children, ages 6 months-10 years. CHIRPS was evaluated in comparison with the relevant current children's/infants' RPS and was warmly accepted by the children and their parents. The CHIRPS' design has a smaller system volume, compared to the current children's RPSs (which also have a 45 litre per minute personal blower), thus was approved to be respiratory safe. The CHIRPS's protection factor was tested upon four different representative dummies (newborn, 1, 4 & 9 years old) with a breathing simulator machine and was proved to provide a high protection factor for all children's ages (above 800,000).