

# Development of Half-mask Facepiece for Male Workers and Its Fit Performance in Korea

Don-Hee Han<sup>a</sup> and David Kim<sup>b</sup>

<sup>a</sup>Dept. of Occupational Health and Safety Engineering, Inje University, Gimhae, Gyeongnam-do, Republic of Korea

<sup>b</sup>Dobulife Tech Co., Gwangju, Gyeonggi-do, Republic of Korea

E-mail: [dhan@inje.ac.kr](mailto:dhan@inje.ac.kr)

Tel.: +82 10 3556 5439

## ABSTRACT

Ten years ago, three differently sized half-mask facepiece prototypes were constructed from silicon using computer graphics and statistical analysis to fit them according to Korean facial dimensions. The purpose of this study was to complete the medium-size half-mask respirator based on the prototype, which would provide an adequate fit performance for male workers at a shipyard, Hyundai Samho Heavy Industry Co., in Korea. The complete respirator—the hardness 55—was manufactured with existing accessories such as a filter, exhalation valve, and strap attached. The fit performance test was conducted by performing a quantitative fit test on 48 male subjects: workers who usually wear half-mask respirators (Dobulife Tech Co., Model DM-911, Korea). The results showed that the hardness 55 provided male subject workers with much better fit performance than the existing mask constructed by the same company. Because softness of the material of facepiece, in particular the inner part, influenced faceseal leakage, further research on developing better fit respirator facepiece should consider carefully the fine control of material softness.



- We wish to be considered for a poster.