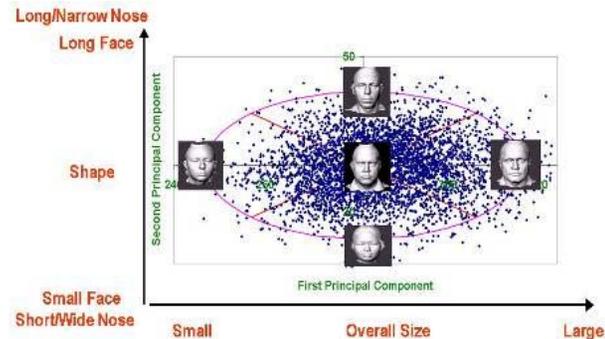


# Development of Computer-Aided Face-Fit Evaluation Methods – FY13 (927PP09)

## Objective

- Establish up-to-date respirator fit-test panels and test headforms to be incorporated into the national and ISO standards
- Develop an anthropometric database of Asian workers
- Investigate the correlation between 3-D parameters and face fit

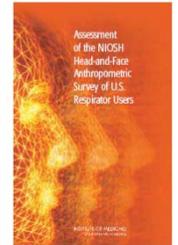
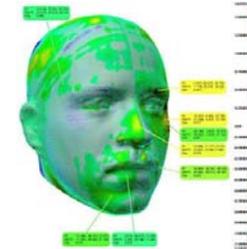


## Applicable Standards Related Activities

- ISO TC94 SC15 WG1 PG5
- 29 CFR Part 1910.134

## Stakeholders

- OSHA, MSHA, ANSI, ISO
- Respirator Users
- Manufacturers



## Key Partners

- Texas Tech University
- Canada National Research Council
- Tongji Medical College, China
- Florida State University
- NIOH, South Africa
- Instituto de Salud Pública (ISP), Chile

## Project Scope

- Develop an anthropometric survey detailing the face size distributions of respirator users using both traditional measurement methods and three-dimensional (3-D) scanning systems
- Investigate the extent to which facial features can predict respirator fit and protection
- Develop respirator fit test panels using the traditional bivariate approach and the principal component analysis (PCA)
- Develop test head forms

## Milestones FY13

- Q3 Submit a paper on shape variations of Chinese civilian workers.
- Q4 Submit a manuscript on Patterns of Respirator Performance and Associated Facial Variability (Dennis Slice work) to OD for approval
- Q4 Evaluate the NIOSH respirator fit test panels with Censor 2010 data

## Outputs

- Manuscripts published or submitted to peer review journals (**16**)
- Presentations at conferences (**21**)
- Standards committee meetings & public meetings (**12**)

## Outcomes

- The techniques and methods developed in this study resulted in the ability of manufacturers to design respirators with improved face-fitting characteristics (**15 outcomes have been achieved to date**)
- Fit Test Panel and head forms incorporated in respirator testing and certification and ISO standards
- **Outputs have been cited 97 times in the peer-reviewed literature**
- Chile and South Africa have adopted the anthropometric survey methodology for studies on the characteristics of their populations

Updated: 05 April 2013