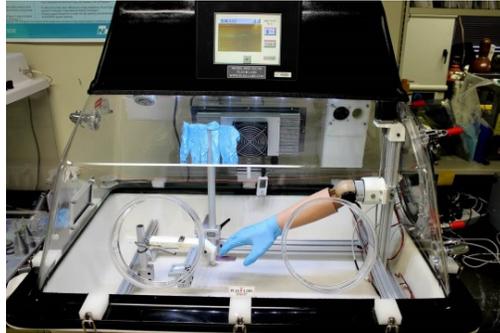


# Penetration of Engineering Nanomaterial Through Protective Gloves (NTRC) – FY15 (939ZXYK)

## Objective

To develop test methods and determine engineered nanomaterial (ENM) penetration through protective gloves that are commonly used in the nanomaterial industry under conditions simulating occupational use.



Temperature & humidity controlled exposure chamber with an online controlled robotic hand

## Applicable Standards

- ASTM F23, E56
- NFPA 1994, 1971, 1951

## Key Partners

- NIOSH NTRC
- Clarkson University
- NIOSH DART

## Stakeholders

- Glove manufacturers
- Nanomaterial industry
- NIOSH NTRC



## Project Scope

- Task 1. Development of test methodologies for evaluating penetration of ENMs in both a dry powder and an aqueous phase and mimic workplace use conditions.
- Task 2. Evaluation of ENM penetration through nitrile and latex gloves which are most commonly used in the ENM industry.

## Milestones

- Q1. Complete determination of glove damage time for ENM powder
- Q2. Complete determination of glove damage time for ENM slurry
- Q3. Complete study on limits of determination for analytical methods (e.g., scanning electron microscopy and inductively coupled plasma mass spectrometry)
- Q4. Complete determination of ENM penetration of nitrile gloves

## Expected Outputs

- Manuscripts published in peer-reviewed journals (one in development)
- Presentations at national/international conferences and stakeholder meetings (2)
- Periodical reports by Clarkson University (10)
- Employee invention report
- ASTM standard

## Expected Outcomes

- This project will contribute to NIOSH NTRC report titled “Approaches to Safe Nanotechnology: Managing the Health and Safety Concerns Associated with Engineered Nanomaterials”.
- This project will improve standards and test methods for protective gloves used for workers handling ENMs in nanomaterial industry.

Updated: 17 Feb 2015