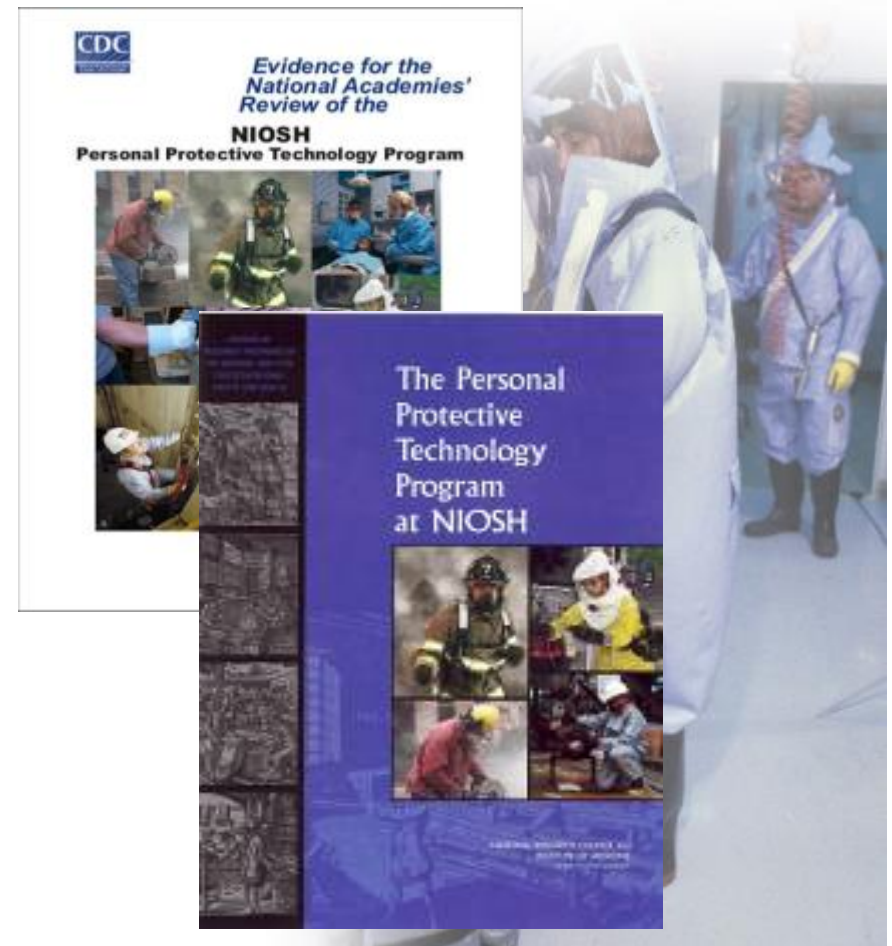


# Implementation of the National Academies' Program Recommendations: NIOSH PPT Program

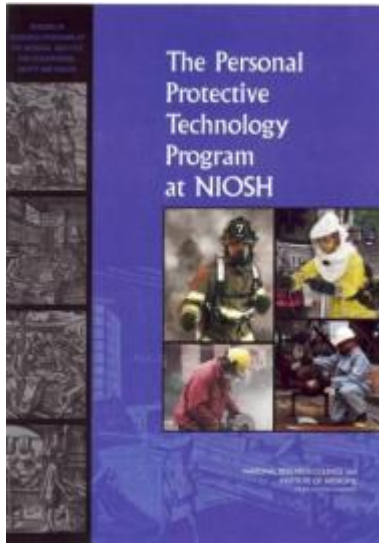
Maryann D'Alessandro, Ph.D.  
Director, NPPTL  
PPT Program Manager

NIOSH Board of Scientific Counselors  
Sixty-first Meeting

June 20, 2014



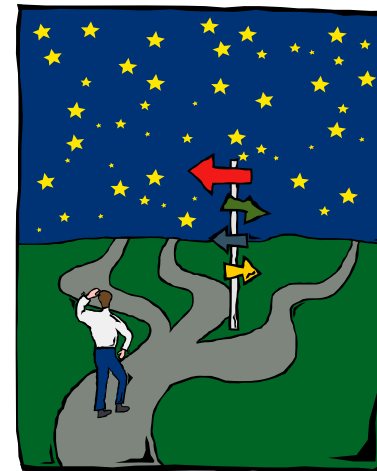
# Presentation Structure



## National Academies' Recommendations



## Update on Issues Selected for NIOSH BSC Tracking



## Future Plans

# NIOSH PPT Program Vision and Mission

The **VISION** is to be the leading provider of quality, relevant, and timely PPT research, training, and evaluation.

The **MISSION** of the PPT program is to prevent work-related injury, illness and death by advancing the state of knowledge and application of personal protective technologies (PPT).

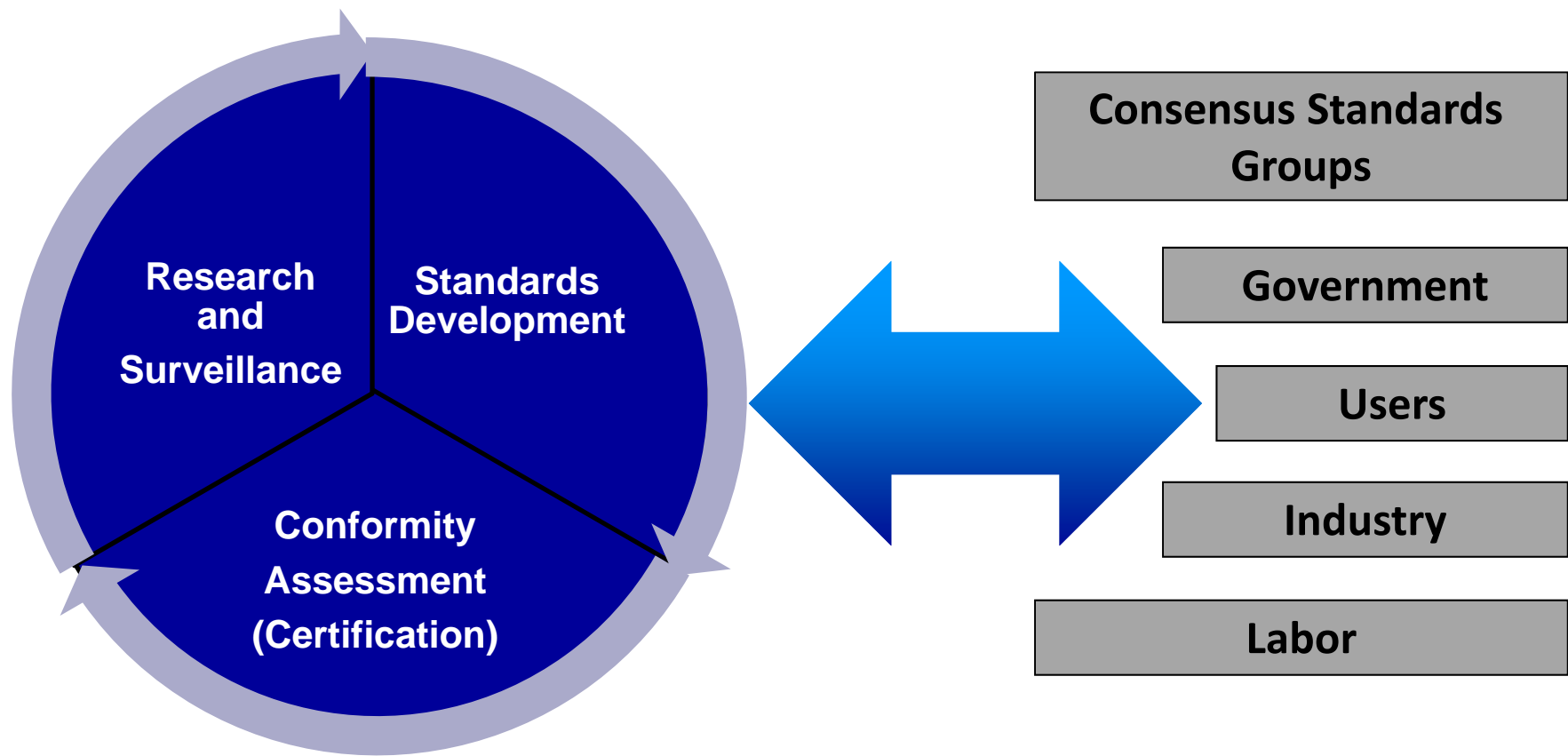


**An estimated 20 million workers use PPE on a regular basis to protect themselves from job hazards.**

# High Priority Issues Selected for NIOSH BSC Implementation Tracking

- A. Participate in policy development and standards across all types of PPT**
- B. Oversee certification of all PPT including an assessment of certification mechanisms**
- C. Conduct outreach programs for optimal use and acceptance of PPT by workers**
- D. Define barriers to and facilitators of PPT use**
- E. Develop innovative PPT designs and test methods to improve comfort, fit, and usability**

**Relevance and Sustainability** are maintained for each of the five high priority issues by consciously and continually involving key stakeholders.



**Stakeholders: Provide inputs, utilize outputs, and together produce positive outcomes affecting worker safety and health**

## A. Participate in policy development and standards across all types of PPT

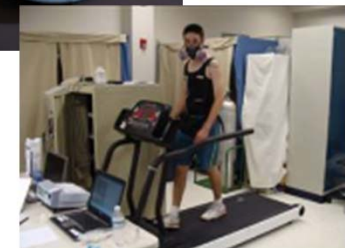
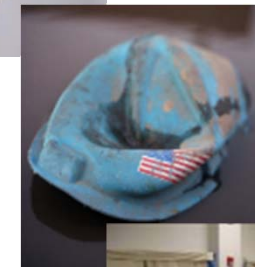
- Two activities underway to address recommendations
- NIOSH BSC 2012 Scores
  - Relevance 4.5
  - Sustainability 4.0
  - Progress 4.0
  - Potential impact 5.0
- Key BSC Comments
  - Expand effort beyond respirators to full spectrum of PPE
  - Augment NIOSH resources by leveraging capabilities of partners



# A. Scientific protocols and SME input are balanced to provide the foundation to address standards gaps.

## Progress

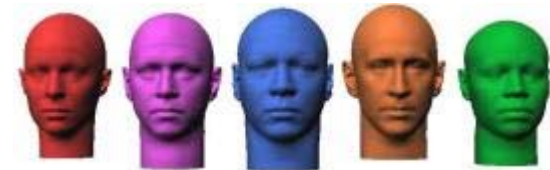
- Two final rules published (CCER, EOSTI)
- Two rules in progress (Inward leakage, Fees)
- Expansive R&D collaborations to develop new PPE designs will result in improved standards.
- 19 projects in progress support improved PPE standards across industry sectors



## A. PPT enhancements through improved standards increase worker safety and health.

### Impact

- Research contributions and active membership on SDOs supported seven new PPT standards
- Headform development leveraged globally by over 40 partners to improve PPE
- Scientific contributions to 30 new standards will improve worker safety and health
- Improved comfort and design features expected to improve worker protection



Design from research funded by CDC Contract to GA Tech



## A. Participate in policy development and standards across all types of PPT

### Future Plans

- Assess approaches to integrate ISO standards into the U.S. infrastructure
- Identify and support research needed to address PPE standards gaps
- Determine most appropriate standards for evaluating healthcare worker PPE
- Continue to enhance intramural and extramural research collaboration



## B. **Oversee certification of all PPT, including an assessment of certification mechanisms**

- **Three activities underway to address recommendations**
- **NIOSH BSC 2012 Scores**
  - **Relevance** 5.0
  - **Sustainability** 4.0
  - **Progress** 3.5
  - **Potential impact** 4.0
- **Key BSC Comments**
  - **Participation by the full spectrum of stakeholders, including UL and SEI**
  - **Adequacy of resources for overseeing certification of all PPT**
  - **NIOSH regulatory authority and audit/oversight function capability (including financial resources)**
  - **Does not appear that action on the clearing house recommended by IOM has been initiated.**

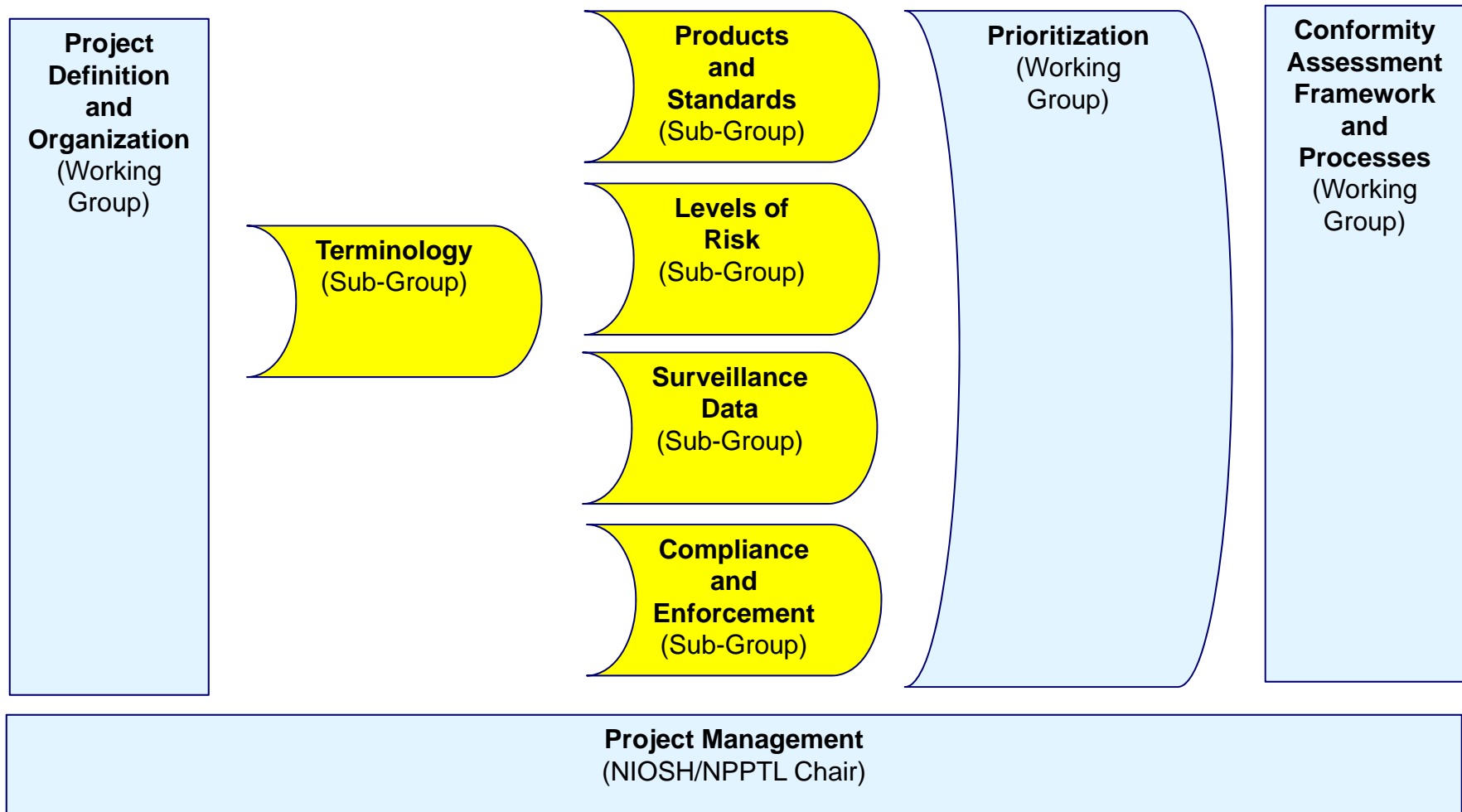
# B. Participation by the full spectrum of stakeholders has led to draft PPT Framework and Clearinghouse.

## Progress



## B. Assessment of resource distribution will maximize effectiveness of PPT Framework implementation.

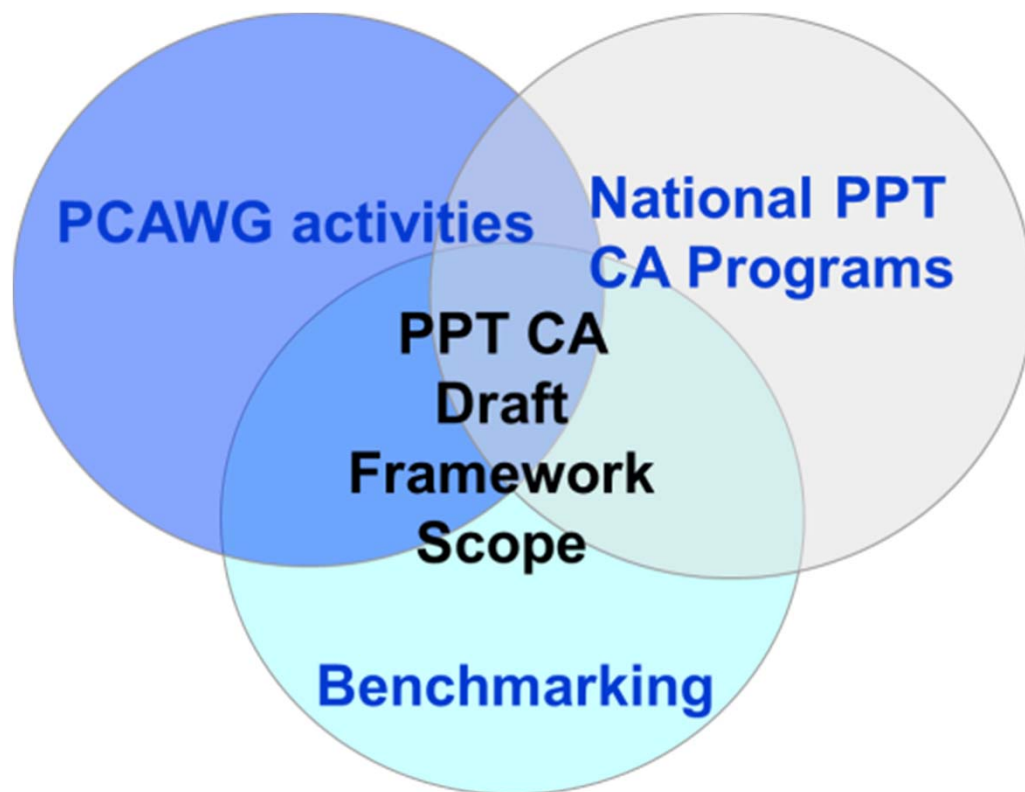
### Progress



## B. NIOSH PCAWG activities are establishing national recommendations for effective uniform CA requirements.

### Progress

- The Draft PPT Conformity Assessment (CA) Framework published in Sept 2013 in Docket 237.
- Completed the EU CA benchmarking study
- Expanded study of U.S. CA public and private CA programs is underway.



CA: Conformity Assessment  
PCAWG: PPT Conformity Assessment Working Group



# B. PPE Pro Database serves as first step toward PPE Surveillance system for the nation.

## Progress



The miracles of science™

Centers for Disease Control and Prevention  
CDC 24/7: Saving Lives. Protecting People.™

A-Z Index A B C D E F G H I J K L M N O P Q R S T U V W X Y Z #

### Personal Protective Equipment Products (PPE-Pro) NIOSH

**Filter by Personal Protective Equipment Type**  
Include all PPE Types

**Filter by Hazard Type**  
Chemical Reactions x

**Filter by Standard Organization**  
NFPA x

**Filter by Standard Type**  
Include all Standard Types

**Filter by Standard Status**  
Include all Standard Statuses

Help ▾ Clear Form

- This form will generate a query of applicable standards and regulations related to various types of PPE. Leaving the search box empty will return all possible results.
- The query fields are joined by "AND", meaning that choosing more options will narrow the search. Not choosing any filter values will return all possible results.
- To search for phrases, enclose search terms in quotation marks.
- For more detailed information click the help button.

Standard Search  Search

Search By

1 Result Found | Page 1 of 1

**NFPA 1992** National Fire Protection Association (NFPA) ▾

*"Standard on Liquid Splash-Protective Ensembles and Clothing for Hazardous Materials Emergencies", 2012*

This standard shall specify minimum design, performance, certification, and documentation requirements; test methods for liquid splash-protective ensembles and liquid splash-protective clothing; and additional optional criteria for chemical flash fire protection. This standard shall apply to the design, manufacturing, and certification of new liquid splash-protective ensembles or new liquid splash-protective clothing items.

- Standard Type: Test Method
- Status: Current
- Hazard Type(s): Chemical , Chemical Reactions
- PPE Type(s): Chemical protective clothing , Chemical protective footwear , Chemical protective gloves
- Reference(s):
  - Incorporated by Reference: NFPA 1991 , NFPA 1994 , ASTM F 2010 , ANSI/ISEA Z89.1 , ASTM F 1154 , ASTM F 1301 , ASTM F 1342 , ASTM F 1358 , ASTM F 1790 , ASTM F 1868 , ASTM F 903
  - Required by Regulation: NJ Standard-0116.00
- Conformity Assessment: Third party certification required



## B. The PPT CA Framework will provide consistent national guidance for PPT conformity assessment schemes.

### Impact

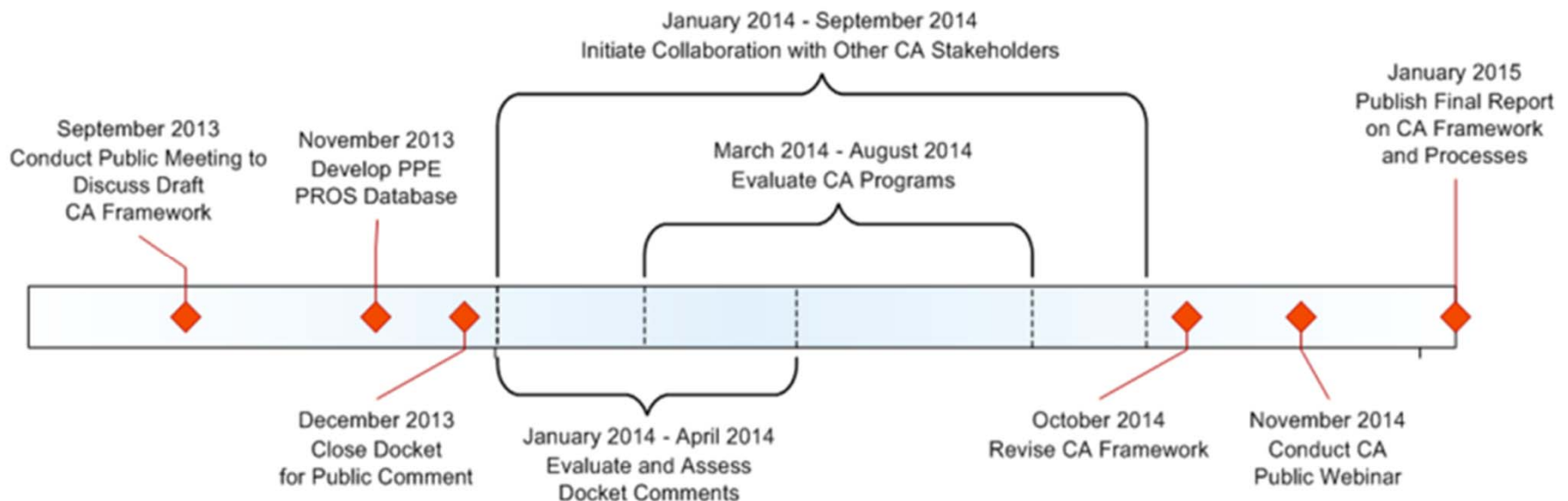
- PPT Framework will support a diversity of CA schemes.
  - will meet producer and user needs
  - will be based on well established CA principles and requirements.
- NIOSH will be well instructed and experienced to make informed decisions for future CA approaches to support its mandated responsibilities for respiratory protective devices.
- Better defined conformity assessment programs across the nation will be achieved.



## B. NIOSH will continue to work with the PCAWG and all partners to develop the PPT CA Framework.

### Future Plans

- Finalize and disseminate PPT Framework to provide guidance to scheme owners to obtain uniformity across nation
- Educate users and partners to optimize utility and sustain PPE-PROS Clearinghouse



## C. Conduct outreach programs for optimal use and acceptance of PPT by workers

- Two activities underway to address recommendations
- NIOSH BSC 2012 Scores
  - Relevance 5.0
  - Sustainability 4.0
  - Progress 5.0
  - Potential impact 5.0
- Key BSC Comments:
  - Need for construction sector input
  - Sustainability concerns for future funding of ERCs

## **C. Intramural and extramural outreach integration are critical to the success of the PPT outreach activity.**

### **Progress**

- Exceeded FY12 target by conducting 21 outreach activities.
- Conducted over 42 outreach activities from FY13-FY14, reaching thousands of participants, to translate and disseminate research results and increase PPT awareness.
- Increased dissemination of outreach tools through web postings.
- Initiated development of outreach products in English and Spanish.
- Developed 10 respiratory protection core competencies and associated training modules for nurses.
- Developed targeted outreach products for healthcare, mining, and emergency response communities.

## **C. Conduct outreach programs for optimal use and acceptance of PPT by workers**

### **Impact**

- Reached 1,000s of students and workers through collaboration with NIOSH ERCs with an emphasis on healthcare and emergency response programs.
- Delivered 81 presentations to stakeholders and posted 110 information products to the web in 2013.
- Number of hits to Respirator Trusted Source webpage nearly doubled since 2012 to 523 hits/week.
- PPT Program has tweeted 4,515 times and has 6,457 followers.
- For the first time incorporated respiratory protection content in worker training programs.

## **C. Conduct outreach programs for optimal use and acceptance of PPT by workers**

### **Future Plans**

- **Conduct at least twelve outreach activities in FY14.**
- **Collaborate with the NIOSH ERC programs to identify and implement PPT related training activities.**
- **Leverage nursing core curriculum and training modules to develop similar content for other industry sectors.**
- **Continue to explore effective approaches to conduct webinars and increase the availability of PPT resources.**
- **Develop PPT outreach strategies for FY15 and FY16.**



## D. Define barriers to and facilitators of PPT use

- Three activities underway to address recommendations
- NIOSH BSC 2012 Scores
  - Relevance 5.0
  - Sustainability 4.5
  - Progress 5.0
  - Potential impact 5.0
- Key BSC Comments:
  - Increase outreach to other sectors, e.g. low skilled construction workers

## D. Define barriers to and facilitators of PPT use

### Progress

- 13 manuscripts published and 7 in press related to developing methods to assess PPE comfort
- Best PPE Training practices tools disseminated through webinars and partnerships
- Completed and posted filtering facepiece respirator Extended Use and Reuse Guidance
- Completed draft Respiratory Protection Program Toolkit and The Joint Commission Monograph
- One manuscript published on improving fit of body, hand, head, eye and foot PPE



## D. Define barriers to and facilitators of PPT use

### Impact

- Results of harness sizing research will facilitate user productivity and ensure user comfort.
- Three peer reviewed manuscripts describing 28 characteristics and criteria for a healthcare worker respirator are expected to lead to improved respirator designs.
- OHN RPD competencies are expected to increase PPE knowledge in workforce
- TJC collaboration increases likelihood of intervention impact in healthcare



## D. Define barriers to and facilitators of PPT use

### Future Plans

- Disseminate Healthcare Worker RPD Toolkit and TJC Monograph
- Generalize OHN respirator core competencies to address other RPD workforce training needs
- Assess strategies to remediate burden of PPE
- Work with partners to provide PPE outreach programs to low literacy/low skilled workers.



## E. Develop innovative PPT designs and test methods to improve comfort, fit and usability

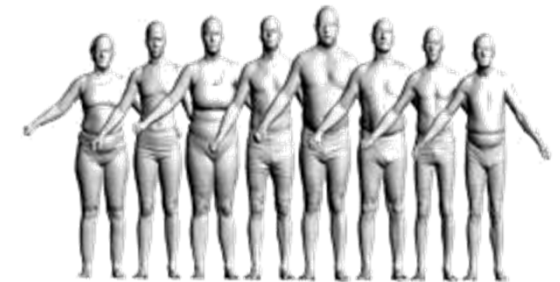
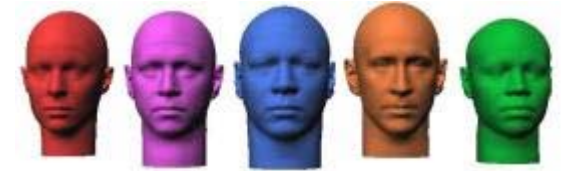
- Three activities underway to address recommendations
- NIOSH BSC 2012 Scores
  - Relevance 5.0
  - Sustainability 5.0
  - Progress 5.0
  - Potential impact 5.0
- Key BSC Comments
  - The activities are fully responsive to the objectives
  - All of the relevant inputs are assembled
  - Substantial progress achieved



## E. Develop innovative PPT designs and test methods to improve comfort, fit and usability

### Progress

- Developed test methods to assess comfort, fit and usability.
- Developed state-of-the-art headforms for testing PPT and approaches for analyzing 2D and 3D data.
- Completed facial anthropometric data collection on all 229 subjects in respirator fit study.
- Completed hand, head, and foot scans of subjects for firefighter sizing research.
- Continued work on seven research projects to address comfort, fit and usability issues.

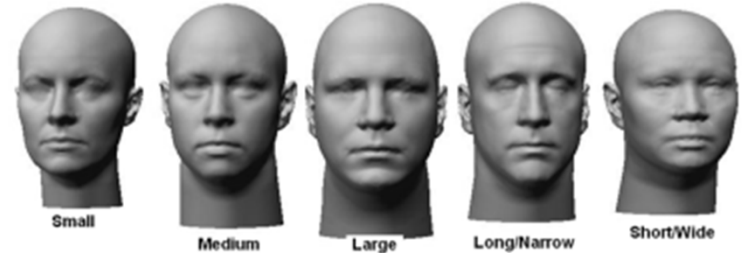




## E. Develop innovative PPT designs and test methods to improve comfort, fit and usability

### Impact

- Over 40 intermediate outcomes have resulted from the development of the NIOSH headforms.
- ISO standards have incorporated anthropometric research results.
- Manufacturers have incorporated NIOSH research results to design improved fall protection harnesses.
- Improvements made to firefighter bunker gear will enhance standards for availability of equipment across the diverse workforce.



## E. Develop innovative PPT designs and test methods to improve comfort, fit and usability

### Future Plans

- Work with standards development organizations to incorporate research findings in consensus standards.
- Develop test methods to quantitatively assess respirator and ensemble comfort
- Expand research using articulated headform.



## Next Steps

- **Continue implementing the NA Report's Recommendations, focusing on the selected high priority issues**
- **Identify next recommendation for targeted implementation**
- **Continue progress to address intramural and extramural research integration**
- **Respond to BSC feedback and advice**

# Photo credits

- 3M
- California Department of Pesticide Regulation
- Draeger
- Dupont
- Georgia Tech - Design funded through CDC Contract to GA Tech
- Kimberly Clark
- Moldex
- MSA
- Pm4id.wordpress.com (via google images)

*Depiction of products does not constitute endorsement by NIOSH.*

# Quality Partnerships Enhance Worker Safety & Health



Maryann D'Alessandro  
[bpj5@cdc.gov](mailto:bpj5@cdc.gov)  
412-386-4033

Thank you

**Disclaimer:**

Visit Us at: <http://www.cdc.gov/niosh/ppt/>

**The findings and conclusions in this presentation have not been formally disseminated by the National Institute for Occupational Safety and Health and should not be construed to represent any agency determination or policy.**