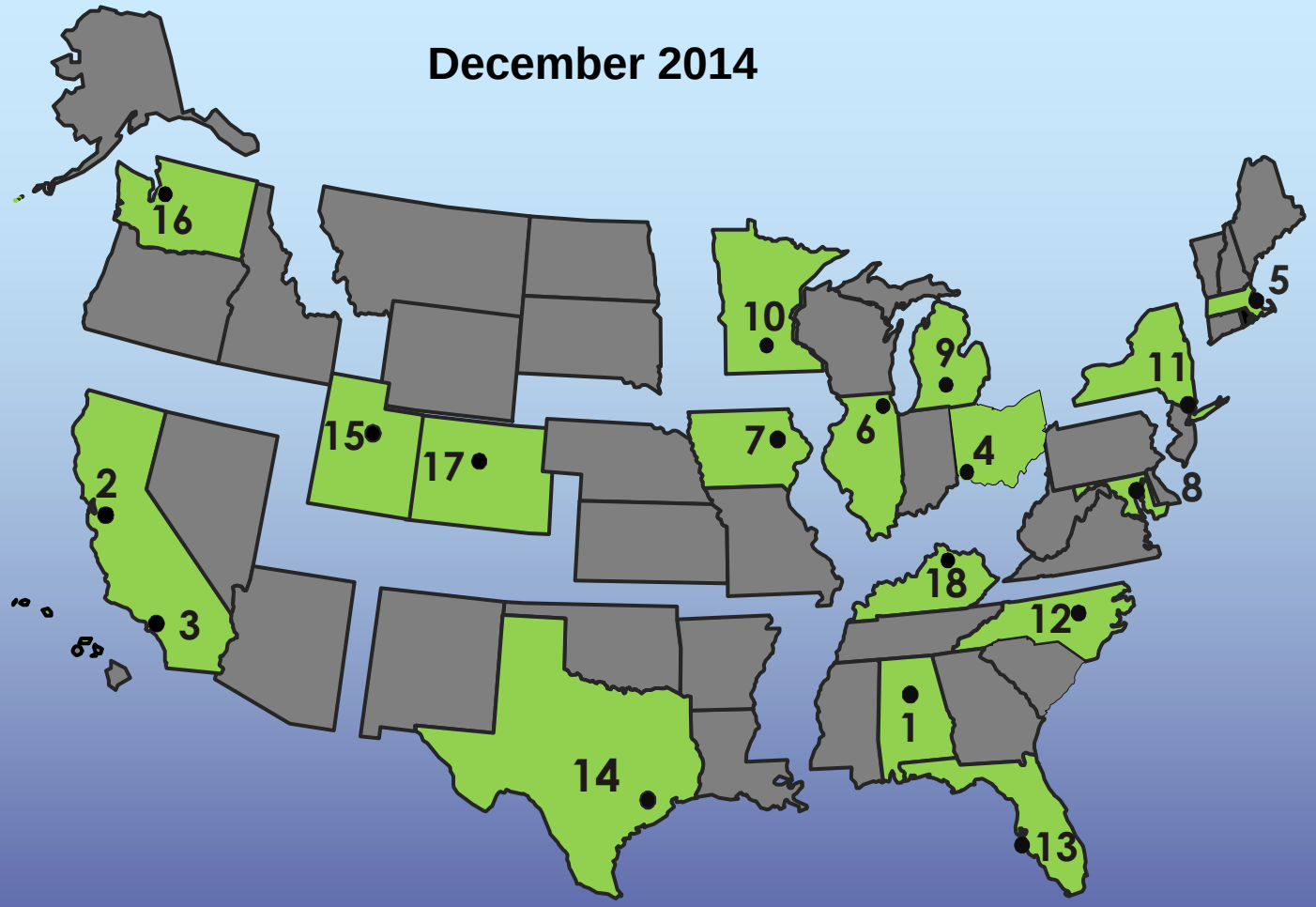
# Educating the Next Generation and Professional Standards of Performance

## Part 1

## Industrial Hygiene Education in North America

# NIOSH Education and Research Centers

**December 2014**




1. University of Alabama, Birmingham
2. University of California, Berkeley
3. University of California, Los Angeles
4. University of Cincinnati
5. Harvard University
6. University of Illinois, Chicago
7. University of Iowa
8. Johns Hopkins University
9. University of Michigan
10. University of Minnesota
11. Mount Sinai School of Medicine
12. University of North Carolina
13. University of South Florida
14. University of Texas
15. University of Utah
16. University of Washington
17. University of Colorado
18. University of Kentucky

# ERC Trainees and Graduates, FY15

| | Trainees FY15 | Graduates FY15 | Employed or seeking OSH employment |
|---|---|---|---|
| | | | |
| **Discipline** | # Trainees | # Graduates | |
| **Industrial Hygiene** | 199 | 85 | 85 (100%) |
| **Occupational Health Nursing** | 132 | 41 | 41 (100%) |
| **Occupational Medicine** | 71 | 27 | 27 (100%) |
| **Occupational Safety** | 78 | 34 | 34 (100%) |
| **Allied Disciplines** | 283 | 98 | 92 (94%) |
| **Subtotal** | 763 | 285 | 279(98%) |
| | | | |

# NIOSH Training Project Grants

**December 2015**

## Industrial Hygiene

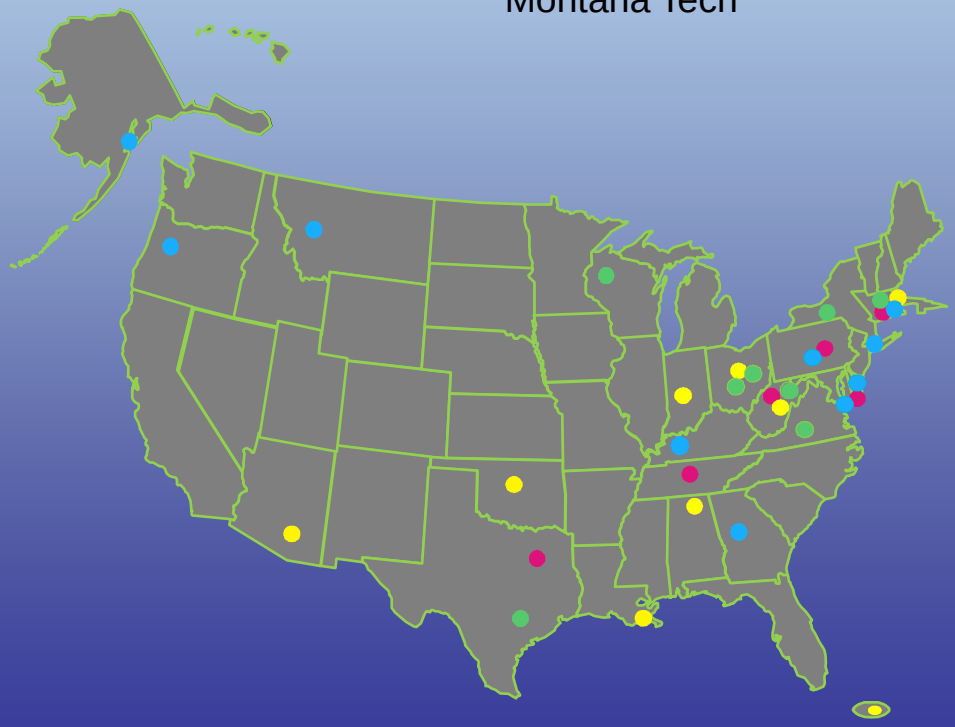
Arizona
MA/Lowell
North Alabama
Oklahoma
Puerto Rico
Purdue
Toledo
Tulane
West Virginia
Montana Tech

## Occupational Medicine

Meharry
Pennsylvania
Texas/Tyler
West Virginia
Yale

## Occupational Safety

SUNY/Buffalo
Texas A&M
West Virginia
Ohio University
Murray State
Montana Tech



## Allied Occupational Safety & Health

Alaska Marine
AOEC
Connecticut
Emory
IAFF
MA/Lowell
Millersville
Portland State
Western Kentucky
Virginia Tech
Wisconsin / Stout
Ohio State

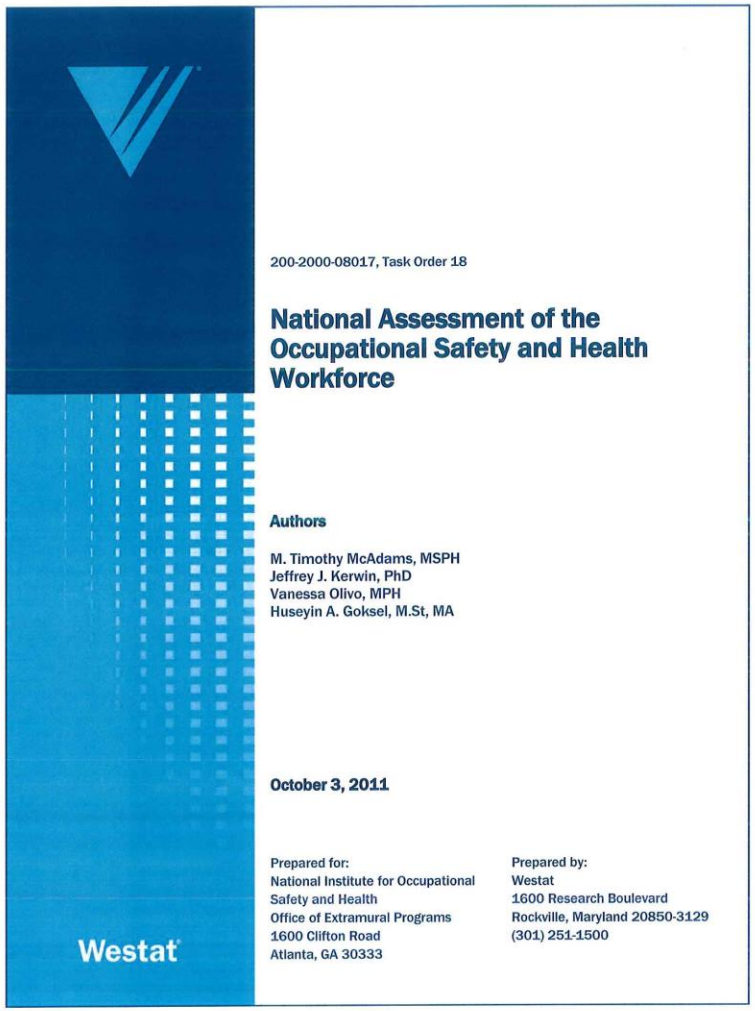
# The TPG IH Graduates

| TPG academic training programs 2014-2015 | | | |
|---|---|---|---|
| **Program Area** | Trainees | Graduates | Employed in OSH field or seeking advanced training in OSH |
| **Industrial Hygiene** | 174 | 45 | 44 (98%) |
| **Occupational Safety** | 117 | 57 | 49 (86%) |
| **Occupational Medicine** | 31 | 13 | 13 (100%) |
| **Allied Disciplines** | 74 | 33 | 30 (91%) |
| **Total** | 396 | 148 | 136 (92%) |

# Where are the IH Graduates going?

| ERC Graduate Employment OSH by Work Setting, FY 2015 | | | | | | |
|---|---|---|---|---|---|---|
| Employer | Industrial Hygiene (n= 85) | Occupational Health Nursing (n=41) | Occupational Medicine (n=27) | Occupational Safety (n=34) | Allied Disciplines (n=98) | Total (n=285) |
| Private/Industry | 37 | 8 | 7 | 10 | 25 | 87 |
| Federal Government | 14 | 0 | 2 | 5 | 15 | 36 |
| State/Local Government | 6 | 1 | 1 | 2 | 2 | 12 |
| Academic Institutions | 16 | 4 | 2 | 6 | 33 | 61 |
| Clinics/ Hospitals | 0 | 18 | 8 | 1 | 5 | 32 |
| Seeking Advanced OSH Degree | 1 | 3 | 0 | 10 | 8 | 22 |
| Other | | 0 | 0 | 0 | 6 | 6 |
| Seeking OSH Employment | 11 | 7 | 7 | 0 | 4 | 30 |
| TOTAL (in OSH Workforce) | 85 | 41 | 27 | 34 | 98 | 285 |

# NIOSH Survey



200-2000-08017, Task Order 18

## National Assessment of the Occupational Safety and Health Workforce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**October 3, 2011**


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# NIOSH 2011 Survey Report

- The survey shows that in December 2010 there were over 48,000 OS&H professionals in the U.S. workforce across the nine disciplines of interest
  - Safety professionals (59%), 28,722
  - Industrial hygienists (15%) 7,348: (4,415 to 10,282) 95% CL
  - Occupational health nursing (9%), 4498
  - Occupational medicine (3%), 1455

# NIOSH 2011 Survey Report

- Employers were expected to hire over 25,000 OS&H professionals over the next 5 years
- Employers generally seemed satisfied with the level of competency of current graduates.
- **For future hires, employers for some disciplines seemed to desire that new OS&H graduates also have training in non-core competencies and in other OS&H areas.**
- Over the next 5 years, about 69 percent of OS&H graduates will be from safety programs, 12 percent will be from industrial hygiene programs, and 3 percent each will be from occupational medicine and occupational health nursing programs
- **There appears to be a preference on the part of many employers to focus hiring among bachelor's-level graduates**

Bureau of Labor Statistics, U.S. Department of Labor, *Occupational Outlook Handbook, 2016-17 Edition*, Occupational Health and Safety Specialists


**Employment projections data for occupational health and safety specialists, 2014-24**

| Occupational Title | SOC Code | Employment, 2014 | Projected Employment, 2024 | Change, 2014-24 | |
|---|---|---|---|---|---|
| | | | | Percent | Numeric |
| Occupational health and safety specialists | 29-9011 | 70,300 | 73,100 | 4 | 2,800 |

Bureau of Labor Statistics, U.S. Department of Labor, *Occupational Outlook Handbook, 2016-17 Edition*, Occupational Health and Safety Specialists

- **Despite slower-than-average employment growth, job opportunities for individuals with advanced degrees are expected to be good.**
- Candidates with certification may enjoy more job opportunities.
- **A large number of currently practicing occupational health and safety specialists are expected to retire over the coming decade, creating opportunities for new specialists.**

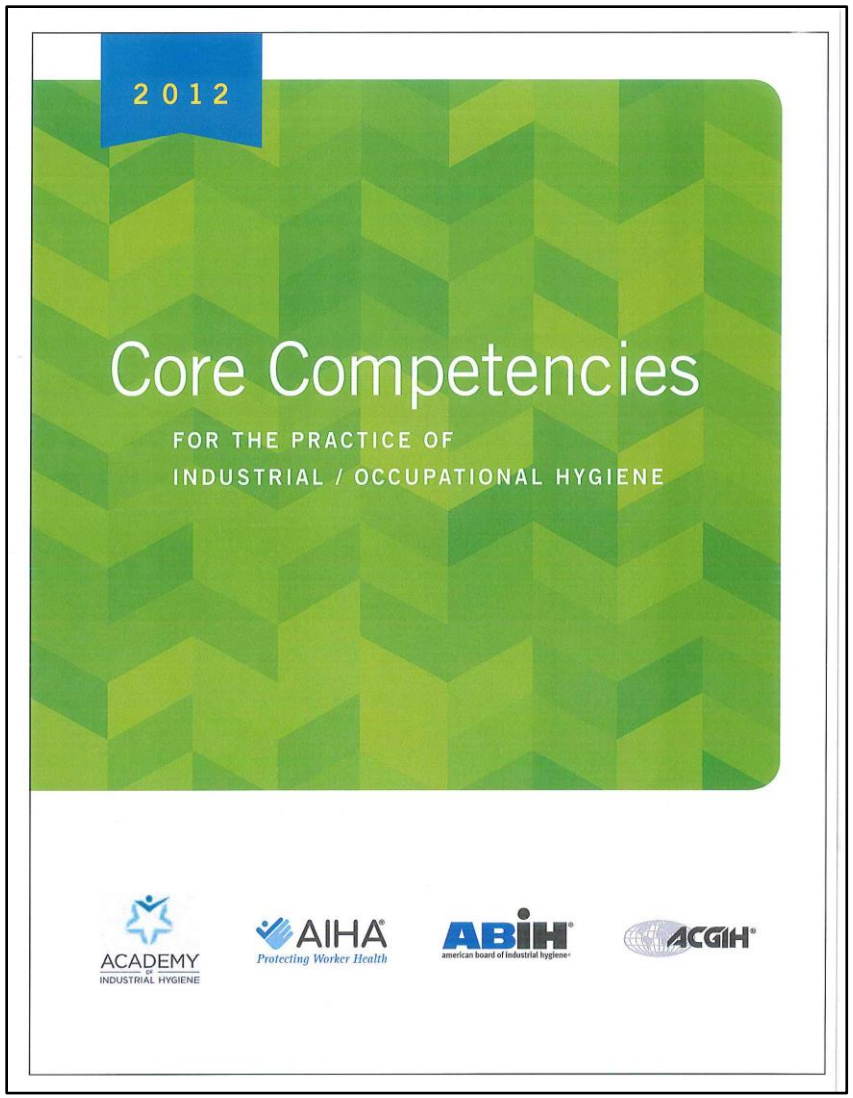
# IH Educational Topics

- Graduate Curriculum
- Graduate Faculty
- Funding
- Recruiting

# Core Curriculums

- "Core Competencies for the Practice of Industrial hygiene/Occupation Hygiene"
  - 2012 Joint publication (AIHA, ACGIH, ABIH and AIH)
- ABET Reviews
  - Academy accreditation committee
- NIOSH ERC Reviews
  - Curriculums are part of the review process
  - Reviewers come from academia
- AIHA Academic SIG
  - Meet and regularly discuss their IH curriculums

# Core Competencies Guidance



# Graduate Curriculum Issues

- Public Health Schools (CEPH requirements adding non traditional IH courses)
- Need for courses to fit the demand
  - Employers desire new hires to have training in additional areas, primarily relating to leadership and various forms of communication, and to have training in one or more of the other disciplines.
- Internships/field courses
- Advanced scientific/engineering concepts vs. compliance

# Changing the Curriculum

Table 3-20b. In what additional aspects of their jobs do you believe that at least some of your industrial hygiene professionals could benefit from additional training?

| | Estimate* | Standard error | 95% Confidence interval | |
|---|---|---|---|---|
| | | | LB | UB |
| Communicating with workers/training skills | 34% | 7% | 20% | 47% |
| Communicating with upper management | 29% | 7% | 16% | 42% |
| Organizational science | 15% | 4% | 7% | 23% |
| Technical writing | 25% | 6% | 13% | 36% |
| Leadership skills | 33% | 7% | 19% | 46% |
| Understanding of workers' jobs | 8% | 3% | 3% | 14% |
| Understanding of our industry (e.g., products, markets, practices) | 5% | 2% | 1% | 9% |
| Local, state, or Federal regulations | 10% | 3% | 4% | 17% |
| Workers' Compensation | 10% | 4% | 2% | 18% |
| Environmental regulations | 16% | 4% | 8% | 25% |
| Other needs | 11% | 5% | 1% | 20% |

* Percentage of establishments employing at least one industrial hygiene professional.

Respondents could indicate as many training needs as desired.

# Graduate Faculty Issues

- Graduate Faculty
  - Jazzing up the message
  - Research driven
    - Use of adjunct, outside lecturers
  - Employer needs driven
  - ABET requires CIHs on Faculty
  - Recruiting the next generation of educators
    - What sort backgrounds will/should they have?

# Funding Issues

- NIOSH
- Foundation
- Other Scholarships and Grants

# Funding Trends, 2011

Table 4-27b. Over the last 5 years, has the level of general (recurring) funding from your university/college for training in [*OS&H discipline*] increased, decreased, or remained about the same? (by discipline)*

| | Percentage of providers | NIOSH funded | Non-NIOSH funded |
|---|---|---|---|
| **Occupational Safety** | | | |
| Increased | 10% | 10% | 10% |
| Decreased | 36% | 31% | 37% |
| Remained about the same | 55% | 59% | 53% |
| **Industrial Hygiene** | | | |
| Increased | 10% | 9% | 13% |
| Decreased | 36% | 30% | 50% |
| Remained about the same | 54% | 61% | 37% |

# Recruiting Issues

- The most frequently cited obstacles for students were financial aid and lack of knowledge of the program (NIOSH 2011).
- **Fewer opportunities for undergraduate engineers and discovery driven scientists to seek IH graduate education since there are fewer challenging technical problems in US workplaces, true or false?**
- Have our educational programs painted a picture that IH is now a nanny profession?

# Obstacles for Students Going into IH

Table 4-20. What obstacles (if any) exist at your institution for the typical student who may wish to study [*OS&H discipline*]? (by discipline)*

| | Percentage of providers | NIOSH funded | Non-NIOSH funded |
|---|---|---|---|
| **Occupational Safety** | | | |
| No obstacles | 7% | 0% | 9% |
| Financial | 63% | 77% | 58% |
| Job prospects | 21% | 10% | 24% |
| Lack of knowledge of the program | 65% | 41% | 72% |
| Program rigor | 25% | 24% | 25% |
| Other obstacles | 13% | 4% | 16% |
| **Industrial Hygiene** | | | |
| No obstacles | 0% | 0% | 0% |
| Financial | 62% | 74% | 38% |
| Job prospects | 7% | 4% | 13% |
| Lack of knowledge of the program | 80% | 76% | 88% |
| Program rigor | 22% | 26% | 13% |
| Other obstacles | 18% | 9% | 38% |

# Acknowledgements


- Elizabeth Maples-Scientific Program Official, NIOSH/CDC
- Larry Whitehead-University of Texas at Houston
- Kwangseog Ahn- University of Wisconsin at Whitewater
- Two relatively IH master's graduates