



## Translating Research to Practice: Motivating the Reduction of Occupational Safety and Health Risks

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Workplace Safety and Health

## Outline

- About NIOSH
- Outcomes and Impact
- Regulation and Enforcement
- Partnerships Solutions
- Communicating Risk
- Summary

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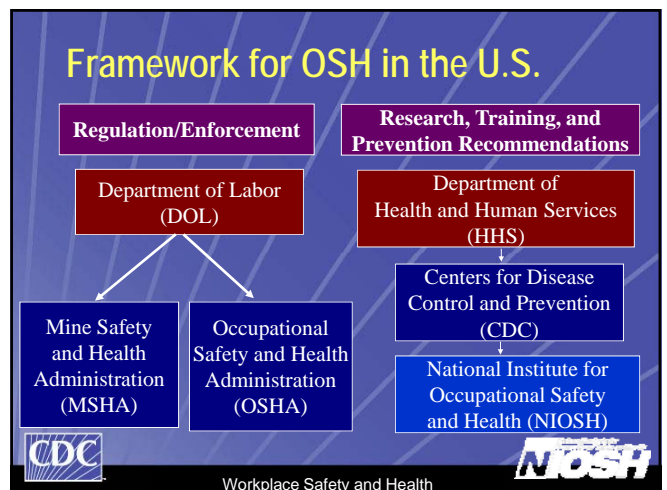
## U.S. National Institute for Occupational Safety and Health (NIOSH)

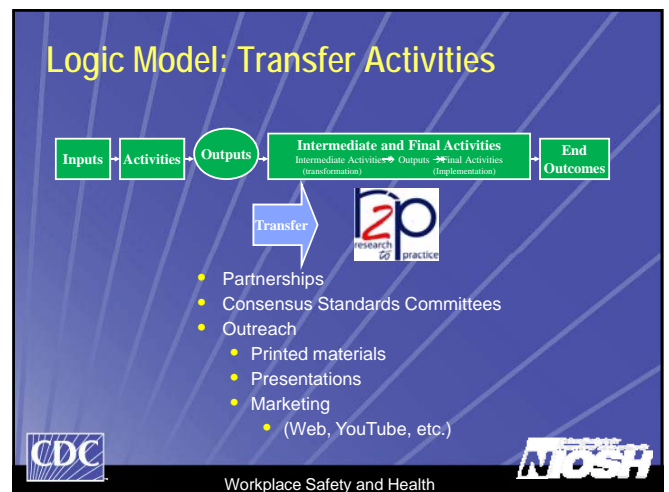
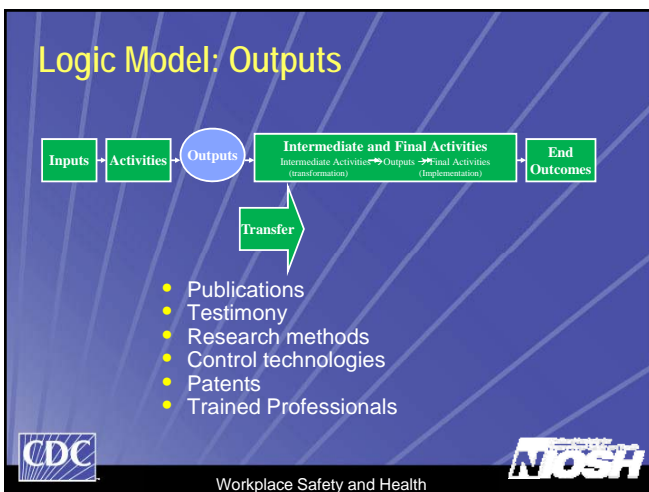
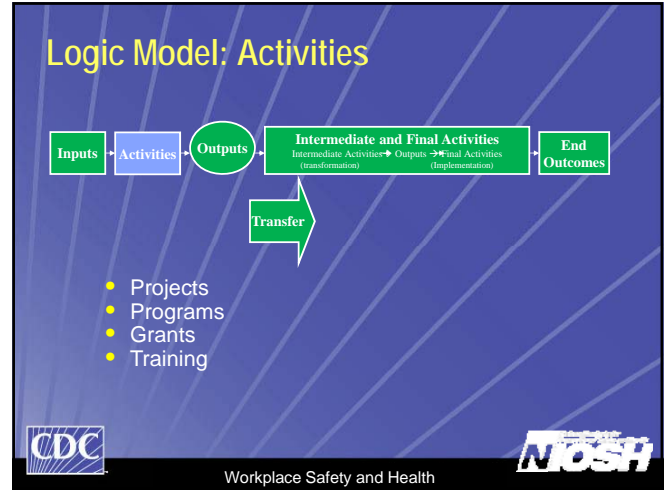
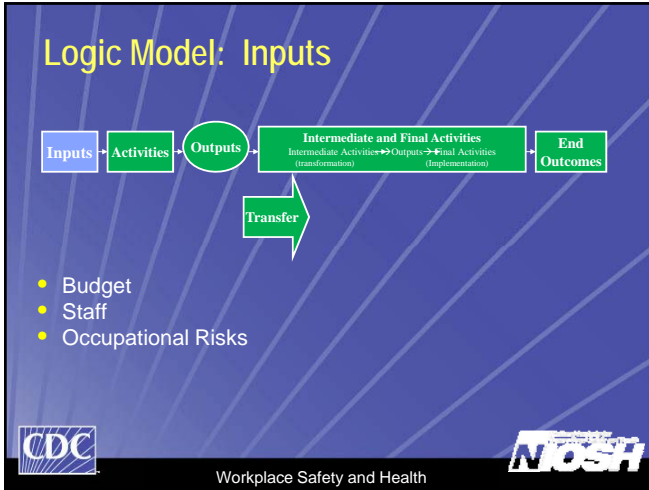
- Conduct research to reduce work-related illnesses and injuries.
- Promote safe and healthy workplaces through interventions, recommendations and capacity building.
- Enhance global workplace safety and health through international collaborations

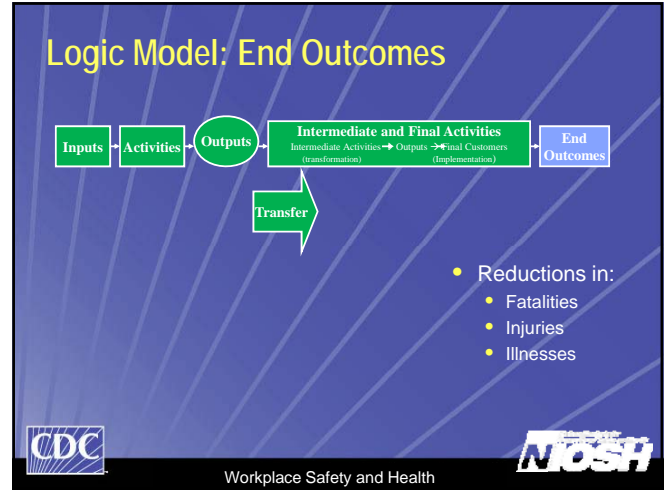
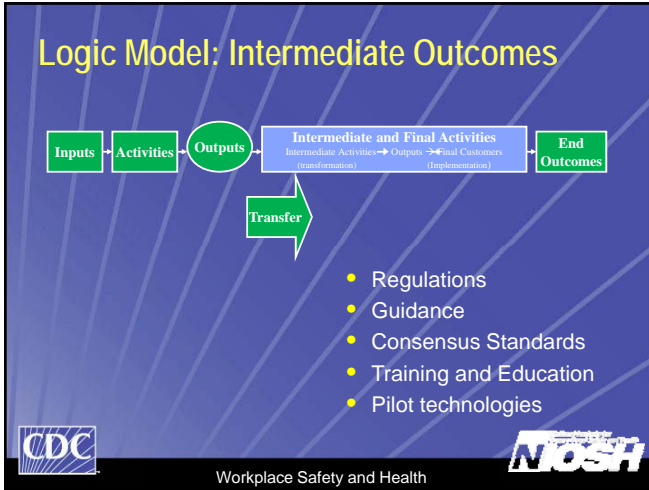




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### (1) Regulatory Approach

- Occupational Exposure Limits (OEL)
- Compliance (voluntary)
- Inspection and Enforcement

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### Issues for Regulation & Enforcement

- OELs difficult to update
  - ◆ Most U.S. PELs are > 40 years old
- OELs exist for few substances

| Agency/Country/Org | Number of OELs (approx.) |
|--------------------|--------------------------|
| NIOSH RELs         | 650                      |
| OSHA PELs          | 471                      |
| ACGIH TLVs         | 677                      |
| AIHA WEELs         | 114                      |
| German MAKs        | 900                      |

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## Scope of the Problem

- Coverage of chemicals low
  - ◆ 90,000 in TOSCA inventory
  - ◆ 9,000 in commercial quantities
  - ◆ 2,200 High Production Volume (HPV)
- OELs do not account for mixtures
- Few inspections, low penalties



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## (2) Partnerships for Prevention



- Asphalt Pavers Partnership
- National Fire Prevention Association (NFPA)
- Consensus Standards Committees: ANSI, ASTM



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## Asphalt Pavers Partnership

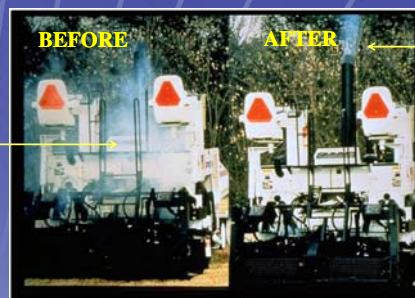
- Federal Government
- State Highway Depts.
- Labor Unions
- Trade Associations
- Equipment manufacturers



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## Asphalt Pavers Partnership Fume Exposure Reduction



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### (3) Communicating Risk

- Is there a hazard?
- How serious is the hazard?
- Is there exposure?
- How can the exposure be controlled?



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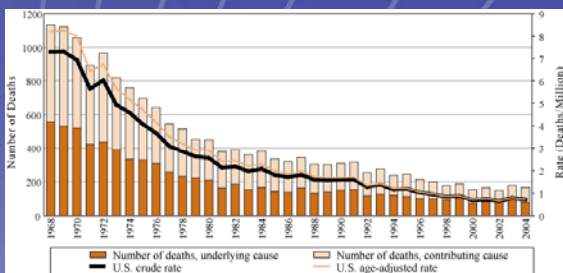
### Silicosis Example

- Hawks Nest Incident
- Project Started 1928
- Tunnel to divert Gauley River for hydroelectric plant
- Rock strata was 99% silica
- 436+ deaths from silicosis



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### Silicosis Death Rates 1968-2004




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### Not Just a Statistic




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### Stone Cutting



1955



Recent

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### Modern Drilling: Construction & Mining





Photo Credits: Ken Lynch & Joe Cocalis


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### Highway construction




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A 10-cent Euro or a Teaspoon of dust Spread over a Soccer Field is over the exposure limit.




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## How much dust is too much?




110 x 65 x 2.5 meters.  
= 17,875 meters<sup>3</sup>



2270 mg

$2270 / 17875 = 0.13 \text{ mg/m}^3$   
Global OELs = 0.05 - 15 mg/m<sup>3</sup>

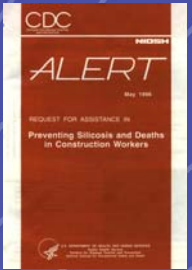
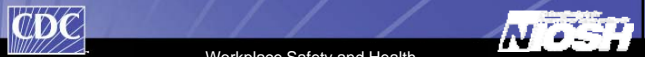


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## Alert: Construction Workers


### NIOSH: 1996


- Lack of awareness
- Failure to substitute
- Inadequate engineering controls
- Inadequate respiratory protection
- No exposure or medical surveillance

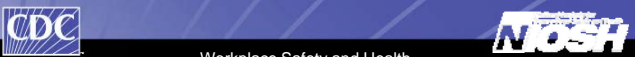



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## Simple Engineering Solutions



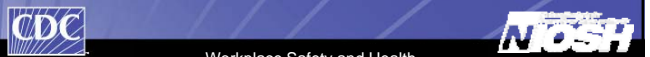






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## Prevention Campaign: "It's not just dust"

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## Messages Delivered

- There is no cure
- The disease is preventable
- Requires constant vigilance



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## Communicating Solutions

- Traditional Documents
- DVDs
- Internet



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## The NIOSH Science Blog

**NIOSH Science Blog**

**Nanotechnology: Should carbon nanotubes be handled in the workplace like asbestos?**

Nanotechnology poses a question for occupational health and safety professionals: Does this technology, and the tiny nanoparticles that make its tools, pose an additional risk of illness or injury for workers employed in the industry?

The National Institute for Occupational Safety and Health is at the forefront of the effort to understand the health and safety implications of working with nanomaterials. There have been an increasing number of scientific publications from the research community, at large—including a new study issued just this week—that address one type of nanomaterial in particular, carbon nanotubes, and seek to determine if they behave differently from asbestos. That is, if related, are carbon nanotubes likely to behave differently and lead to effects such as those associated with asbestos exposure? The effects of asbestos include severe lung disease or scarring, lung cancer, including mesothelioma (a form of lung or pleura called mesothelioma).

The question of a comparison between carbon nanotubes and asbestos arises for several reasons. Some varieties of carbon nanotubes have been shown in laboratory studies to persist in the lungs of laboratory animals. Some animal studies have even shown effects similar to those of asbestos.

Carbon nanotubes are tiny, cylindrical, manufactured forms of carbon. There is no single type of carbon nanotube. One type can differ from another in terms of shape (single-walled or multi-walled) or in chemical composition (pure carbon or containing metals or other materials). Carbon nanotube exposures can potentially occur not only in the process of manufacturing them, but also at the point of incorporating these materials into polymer composites, medical nanodevices, and electronics.

The release of these novel agents, used in a research lab in Japan (Fujita et al., J Toxicol 33: 155-176).



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## Wikipedia

**Fire Fighter Fatality Investigation and Prevention Program**

The **Fire Fighter Fatality Investigation and Prevention Program (FFFIPP)** is administered by the National Institute for Occupational Safety and Health (NIOSH), part of the Center for Disease Control and Prevention (CDC). It performs independent investigations of firefighter fatalities in the United States, also referred to as loss of duty deaths (LODD). The program goals are: 1) to better define the characteristics of loss of duty deaths among firefighters; 2) to develop recommendations for the prevention of deaths and injuries; and 3) to disseminate prevention strategies to the fire service.<sup>[1]</sup> In 1998, Congress funded NIOSH to implement FFFIPP recognizing the need for further efforts to address the continuing national problem of occupational fire fighter fatalities—an estimated 100 each year.<sup>[2]</sup> The NIOSH FFFIPP currently has a 14 person staff and a \$2 million dollar budget<sup>[3]</sup> and has conducted over 400 investigations since its inception in 1998.<sup>[4]</sup>

**See also**

- Case Resource Management
- Firefighter
- Hazard Factors Analysis and Classification System
- National Fire Fighter Near-Miss Reporting System

**References**

- <sup>[1]</sup> "Toxicology: Occupational Injuries - @ Fire Fighter Fatality Investigation and Prevention Program. Accessed July 16, 2007." Retrieved on 2007-10-23.
- <sup>[2]</sup> "A Commitment to National Fire Fighter Fatality Investigation and Prevention Program (FFFIPP) with thanks to CIOFF investigators." International Association of Fire Chiefs: Safety, Health, and Survival Section, June 4, 2007. Accessed September 3, 2008.

**External links**

- Fire Fighter Fatality Investigation and Prevention Program
- Fire Fighter Fatality Investigation Reports
- National Fallen Firefighters Foundation
- National Fallen Firefighters Memorial Database
- National Fire Fighter Near-Miss Reporting System



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NIOSH - Nat Inst for Occupational Safety & Health's photostream

NIOSH-Flaker\_juan

Air Tank

Health Care & Senior

Phone Line Truck Repair

School bus on the way home

Manufacturing

Construction

CDC

NIOSH

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YouTube

NIOSH Working with Stress Part 1 of 2

NIOSH National Institute for Occupational Safety and Health

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## Summary & Conclusions

- Multifaceted Approach Needed.
- Regulation & Enforcement Not Enough
- Partnerships Promote Tech Transfer
- Create the Will to Change
- Provide the Means to Change
- New Mediums Available for Social Marketing of Solutions

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