

# Alternatives Assessment 102: *How Alternatives Assessment concepts are being and can be integrated into agency initiatives.*

March 6, 2012

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# Goals

- Continued education and dialog
- *“To advance the practice of alternatives assessment for informed substitution across federal, state, and local agencies through networking, sharing of experiences, development of common approaches, tools, datasets and frameworks, and creation of a community of practice.”*

# Purpose of this call

- Several state and federal agency regulatory or non-regulatory efforts on alternatives assessment for informed substitution
- Yet most other agencies have not incorporated alternatives assessment in a systematic way.
- Goal: To understand how alternatives assessment has and can be applied across agencies and what types of collaborations, tools, and support would be useful in supporting greater application of and cooperation around alternatives assessment.

# Speakers

- Rebecca Reindel, Industrial Hygienist, OSHA
- Donna Heidel, Prevention through Design Coordinator, NIOSH
- Julie Fishman, Associate Director for Program Development, CDC, NCEH



**Occupational Safety  
and Health Administration**

Directorate of Standards and Guidance

<http://www.osha.gov/dsg/>

**Opportunities for AA at OSHA**

Rebecca L. Reindel

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# Informed Substitution

- Changing the chemical used or the way someone works to reduce the cause of chemical risk.
  - Replacing chemical with less hazardous one
  - Reducing risk associated with the physical form
  - Replacing process used with less risky one
  - Replacing technology used with safer one
  - Finding safer work practices

# Current Approach to Chemical Management

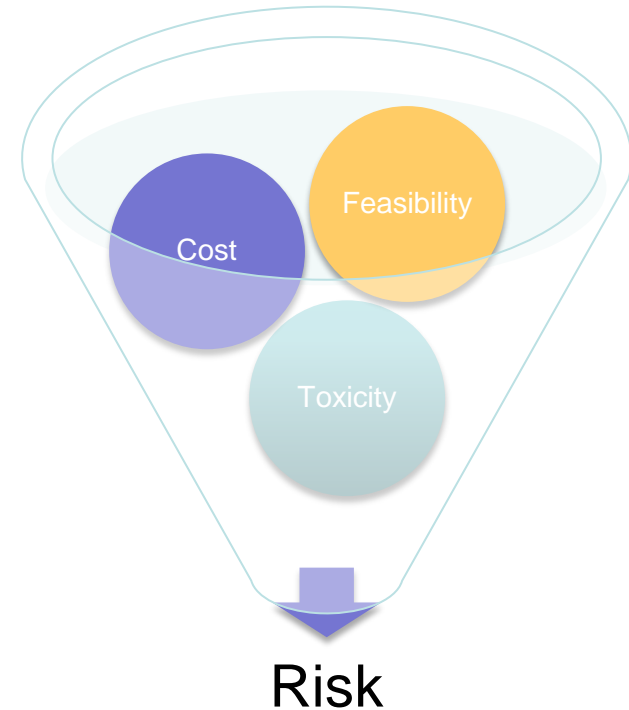
- Regulatory framework
- Chemical by chemical: Permissible exposure limit (PEL)
- The standard must be economically feasible.
- The standard must be technologically feasible.
- The standard must be cost-effective.



# Risk

## (Hazard x Exposure)

- The standard must be reasonably necessary or appropriate.
  - Health standard must eliminate significant risk or reduce it to the extent feasible.





# Prevention

- Need for more preventive chemical management framework that systematically promotes a transition from chemicals of concern to safer chemical or non-chemical alternatives.
- Integration of substitution approaches into Agency activities can help achieve this goal.
- Substitution in the hierarchy of controls.



# Informed Substitution: Benefits

- Reduces workers' adverse health effects associated with chemicals
- Aids employers in making more informed decision-making about chemicals used in their workplace
- Drives innovation

# Current OSHA Activities in Substitution

- PEL rulemaking process
  - Technological and economic feasibility analyses
    - Possibility of substitution mentioned, but focused on performance and cost measures
    - Identify concerns of possible hazardous substances
    - No formal assessment suggested or tools provided; broad, general
    - Concept of drop-in chemical substitutes
  - Technological feasibility findings
    - Primarily based on ability to implement work practice and engineering controls; substitution data sometimes used to support feasibility findings



# Opportunities

- OSHA recently has had an interest in searching for more effective ways to address chemical hazards in the workplace
- OSHA convened an expert panel to look at alternative methods for setting PELs (2010)
- OSHA held a web-based forum to solicit opinion on how to prioritize chemical activities (2010)
- OSHA uses the regulatory agenda to solicit information on how OSHA can better approach agency chemical activities
  - RFIs are opportunities for the public to submit comments and ideas to OSHA
  - Be part of the dialogue!



# Opportunities

- Occupational exposure to food flavorings containing diacetyl and diacetyl substitutes: Long-term activity
- Hazard communication/  
Globally Harmonized System of Classification and Labeling Chemicals (GHS)
- Green chemistry/sustainable manufacturing efforts
  - Identify methods for collaborating with other agencies
  - Explore ways OSHA can use green chemistry principles to help employers reduce risks of workplace chemical exposures
  - OSHA's interest in not leaving workers behind in the green chemistry movement



# Implementation: Challenges & Suggestions

- OSHA not a research agency
- Prioritization
- Defining criteria for what is “safer”
- Inter-agency collaboration is key
- Tools needed
- Consistency with other messages





**Occupational Safety  
and Health Administration**

[www.osha.gov](http://www.osha.gov)  
800-321-OSHA



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# Including Worker Health Considerations in the Selection of Alternatives

Donna S. Heidel, MS, CIH

CDC/NIOSH

# Importance of including workers in selection of alternatives

## 1-Bromopropane

- An environmentally-acceptable replacement for PERC (perchloroethylene) and other chlorofluorocarbons, but....
- Worker exposure can result in nervous system disorders, and...
- There is evidence of reproductive and developmental effects in animals



**PtD question:** How can we assure that alternatives meet environment and social goals while assuring the safety and health of workers?"

# Prevention through Design (PtD)

**Mission:** Design out hazards and minimize risks associated with:



Facilities



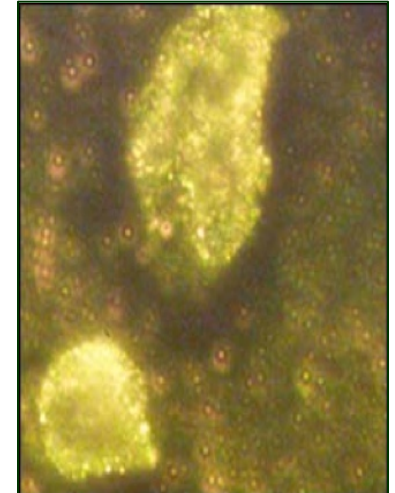
Work  
methods



Processes

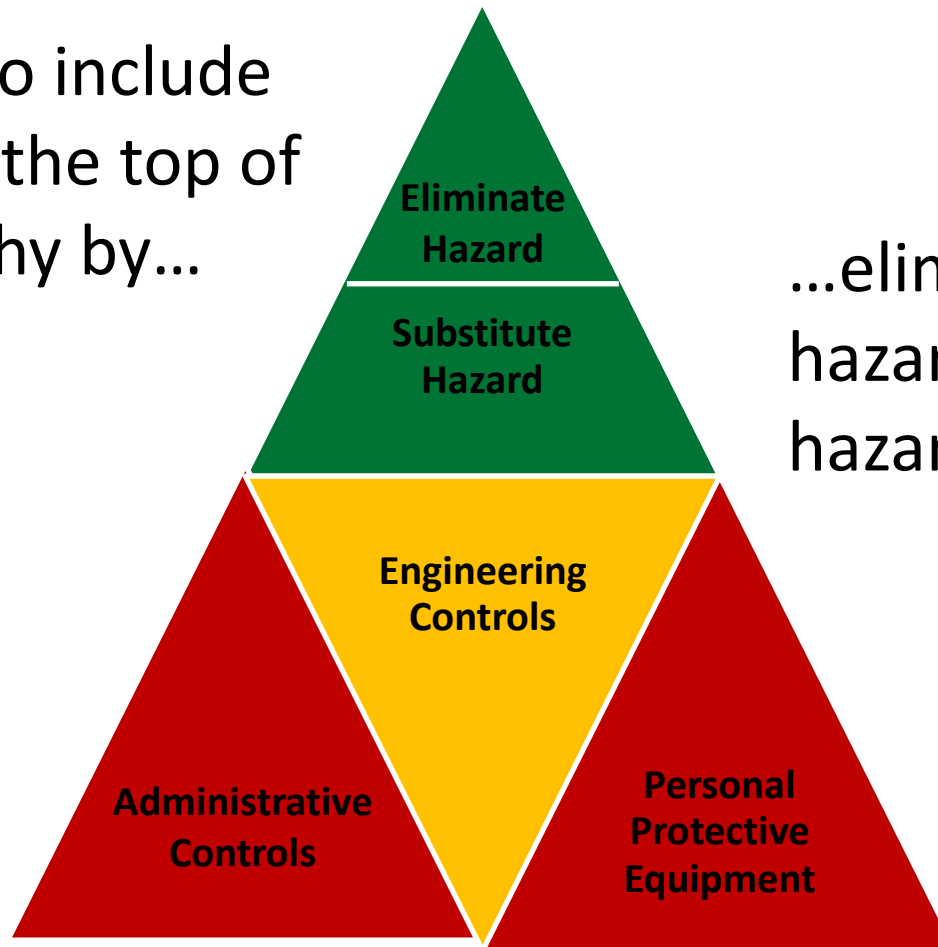


Equipment



Products & new  
technologies

PtD seeks to include controls at the top of the hierarchy by...



...eliminating the hazard or minimizing hazardous exposures

# Scope of challenge to “design-out” chemical hazards

- ~21,000,000 commercially available chemicals
- 107,067 REACH\* registrations (1-3-11) for >1000 tons production volume or those of high concern
- **But...only ~ 500 PELs, ~ 650 RELs, ~ 125 WEELs, ~ 650 TLVs**

**Message:** Process to identify hazardous agents, characterize the hazard, and assess the severity of risk from occupational exposures is required to eliminate or substitute chemical hazards

*\*REACH – Registration, Evaluation, Authorization, and Restriction of Chemicals*

# Occupational exposure bands (OEB)

- Based on the NIH/CDC Biosafety Level model
- Concept developed by the pharmaceutical industry in the late 1980s
- Anticipate 5 OEBs
  - “May be harmful,” “harmful,” “toxic,” “very toxic,” “super-toxic/fatal”
  - OEBs correlate with ranges of OEL values

# Value of occupational exposure bands

- Provides guidance for materials without OELs
- Identifies hazards that should be evaluated for elimination or substitution
- Aligned with globally harmonized system for hazard communication
- Logical approach for initiating Control Banding
  - i.e., linking to task-based, control-focused solutions
- Facilitates the application of PtD to eliminate hazards and minimize risks to chemical agents

# Project overview

- Health-, eco hazard-, and fire/explosion-hazard bands
- OEBs models
  - AIHA WEEL banding criteria
  - HSE COSHH Essentials, Stoffenmanager, ILO Chemical Control Toolkit
  - GHS hazard statements and criteria
  - Green screen
  - ANSI combined standard
  - Industry models



# Work in progress

- Finalize criteria for each band, including weight of evidence and dose-response considerations
- Develop process, decision logic, and algorithms
- Validate process and tools
- Develop stakeholder education materials and guidance document
- Develop database of links to hazard information for chemicals

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



**Addressing Public Health  
and Chemical Exposures**

An Action Agenda

***Alternatives Assessment 102 Webinar***

Julie Fishman, MPH

CDC – National Center for Environmental Health/Agency  
For Toxic Substances and Disease Registry

[www.nationalconversation.us](http://www.nationalconversation.us)

# National Conversation Vision

**Vision:** Chemicals are used and managed in ways that are safe and healthy for all people

**This vision requires:**

- Accurate information
- Improved scientific understanding
- Policies and practices
- Prevention, preparedness, and response
- Elimination of inequities
- Improved public and health care provider engagement
- Develop networks for collaboration and coordination

# Action Agenda

Released – June 2011

## Desired Outcomes/Action Agenda Chapters:

- Prevention of harmful exposures
- Scientific understanding of chemicals and their health effects
- Monitoring of chemical exposures and health outcomes
- Health and wellness in environmentally burdened communities
- Capacity of the public health and health provider workforce
- The public's ability to make health protective decisions
- Reduction in harm from chemical emergencies

# Prevention

## *Featured Recommendations:*

- Promote the substitution of hazardous chemicals with less toxic alternatives
- Reform the Toxic Substances Control Act and enact relevant state legislation
- Protect children's health

# Monitoring

## *Featured Recommendations:*

- Improve the quality, quantity, accessibility, and comparability of health outcome data
- Expand biomonitoring capacity and use biomonitoring to prioritize public health actions
- Enhance reporting of information on chemical source, use, and release

# CDC Activities

- Communication/education
- Biomonitoring/surveillance
- Workforce development
- Linkage between environment and health
- Sustainability/green purchasing



# The 10 Essential Public Health Services

- Monitor health status to identify and solve community health problems.
- Diagnose and investigate health problems and health hazards in the community.
- Inform, educate, and empower people about health issues.
- Mobilize community partnerships and action to identify and solve health problems.
- Develop policies and plans that support individual and community health efforts.
- Enforce laws and regulations that protect health and ensure safety.
- Link people to needed personal health services and assure the provision of health care when otherwise unavailable.
- Assure competent public and personal health care workforce.
- Evaluate effectiveness, accessibility, and quality of personal and population-based health services.
- Research for new insights and innovative solutions to health problems.

# Discussion Questions

- How have the concepts and tools of alternatives assessment been applied to date in different agencies?
- What are some current or pending initiatives in the agency where alternatives assessment could be applied in supporting policy goals?
- What are some of the challenges the agency faces in promoting safer chemical alternatives?
- What types of additional resources, information or tools would be helpful in supporting agencies' efforts to advance safer chemistry?

# Next Webinar

- Alternatives Assessment 103: Case examples and lessons learned
- April 24, 2012, 12pm EST
- Speakers:
  - Pam Eliason, MA Toxics Use Reduction Institute
  - Cal Baier-Anderson, USEPA, Design for Environment
  - Alex Stone, Washington Department of Ecology

# Slides and audiofile for webinar

- <http://www.ic2saferalternatives.org/page/Logistics+and+Communications>



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