TRANSITIONING TO SAFER CHEMICALS

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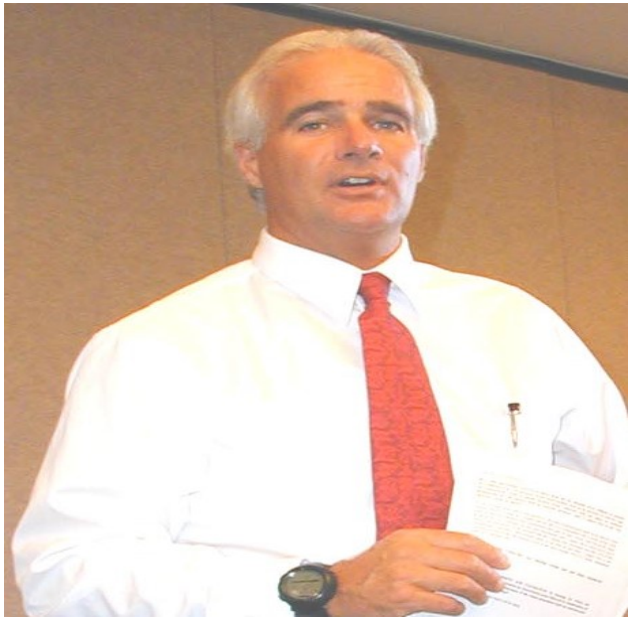

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Introduction

Course Purpose

Provide participants with a proactive approach to reduce use of hazardous chemicals in the workplace by furnishing information about, and hands-on experience with, the process for transitioning to safer chemicals.

Introduction

Course Objective

Guide participants through OSHA's 7-Step substitution planning process for evaluating current chemical use, identifying and assessing alternatives, and implementing those alternatives which are safer choices.

Target Audience:

① Business Owners
② Supply Chain Managers
③ Purchasing Staff
④ Maintenance Supervisors
⑤ Facility Managers
⑥ Workers who utilize hazardous chemicals at their worksites
⑦ Occupational Safety and Health professionals
⑧ Pollution Prevention Specialists
⑨ Health Professionals

Course Attendance Benefits:

① **Collaboration with other participants.**

② **Learning a systems approach for chemical use.**

③ **Learning how to build a Safer Alternatives Team.**

④ **Learning about the chemical use assessment process.**

⑤ **Learning about new assessment tools available.**

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Course Materials

- Course Description
- Course Matrix
- Course Virtual Lesson Plan
- USB Drive
- Transitioning to Safer Chemicals Manual

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	Day 1 of 2 Thursday, August 20, 2020
Contact Hours	
9:00 – 9:15	**Introductions** **Course Purpose and Objective** **Course Learning Objectives**
9:15 – 10:30	**Lesson 1** **Build a Team and Create a Plan (Step 1)**
10:30 – 10:45	Break
10:45 – 11:45	**Lesson 2** **Examine Current Chemical Use (Step 2)**
11:45 – 12:00	Break
12:00 – 1:30	**Lesson 3** **Identify Alternatives (Step 3)**
	Day 2 of 2 Friday, August 21, 2020
Contact Hours	
9:00– 10:30	**Lesson 4** **Assess and Compare Alternatives (Step 4)**
10:30 – 10:45	Break
10:45 – 11:45	**Lesson 5** **Select Safer Alternatives (Step 5)**
11:45 – 12:00	Break
12:00 – 1:15	**Lesson 6 (Step 6 & 7)** **Implement Alternatives and Evaluate**
1:15 - 1:30	**Summary and Review** **Course Evaluation**

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BREAK OUT GROUP

TEAM MEMBER GUIDELINES

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Guidelines for Teamwork

Designate:

- **Team Leader**
  - Supervises Team Discussions
- **Recorder**
  - Records the Team's Ideas
- **Reporter**
  - Briefs the Whole Class
- **Timer**
  - Ensures Team w/in Time Limits

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Exercise Objectives

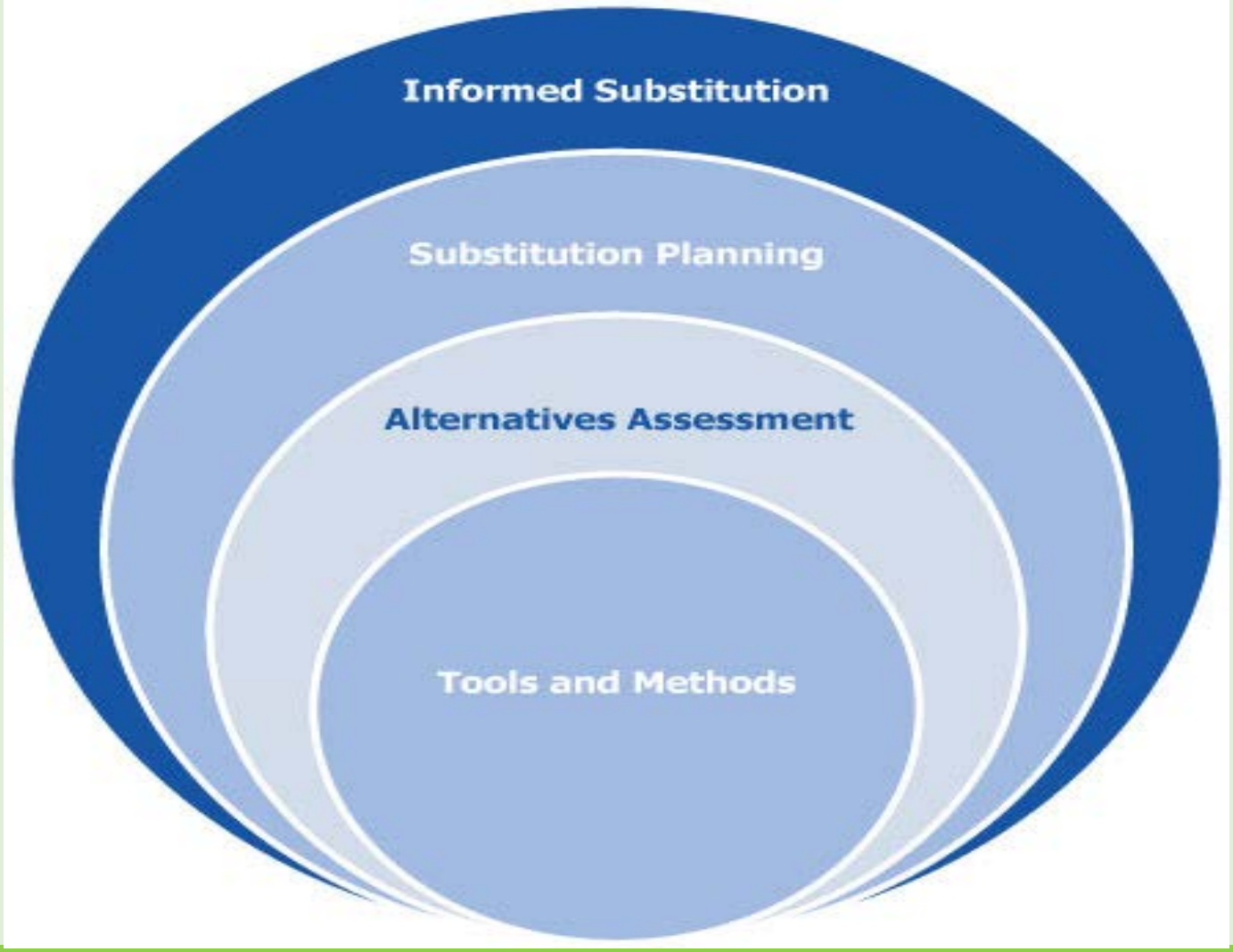
Review Learning Objectives

Discuss Individual Responses to the Questions

Identify Key Issues for Large Group Discussion


Steps for Transitioning to Safer Chemicals
1
Engage
2
Inventory & Prioritize
3
Identify
4
Assess & Compare
5
Select
6
Test
7
Evaluate

Basics of Informed Substitution and Alternatives Assessment



Key Definitions

Informed Substitution, replacing hazardous substances with safer alternatives, is the goal of a solutions-oriented approach to chemical management. It involves identifying alternatives and evaluating their health and safety hazards, potential trade-offs, and technical and economic feasibility.

Substitution Planning is a process to systematically set goals and priorities to reduce hazards, develop a chemical use inventory, evaluate alternatives, identify preferred alternatives, and implement alternatives.

An **Alternatives Assessment** is a process for identifying, comparing, and selecting safer alternatives for hazardous chemicals on the basis of their hazards, performance, and economic viability. An alternatives assessment is a key component of a substitution planning process and is used in the evaluation and comparison of alternatives.

A **Safer Alternative** is an option that is less hazardous for workers than the existing means of meeting that need.

Safer Chemicals in the Workplace: A Priority for Workers

- Serious, well-documented worker health issues associated with chemical exposures.
- Increasing numbers and volumes of chemicals in workplace.
- Inadequate regulatory protection of workers from hazardous chemicals.
- Regulated hazardous chemicals sometimes replaced by even more dangerous unregulated alternatives.

Learning Objectives

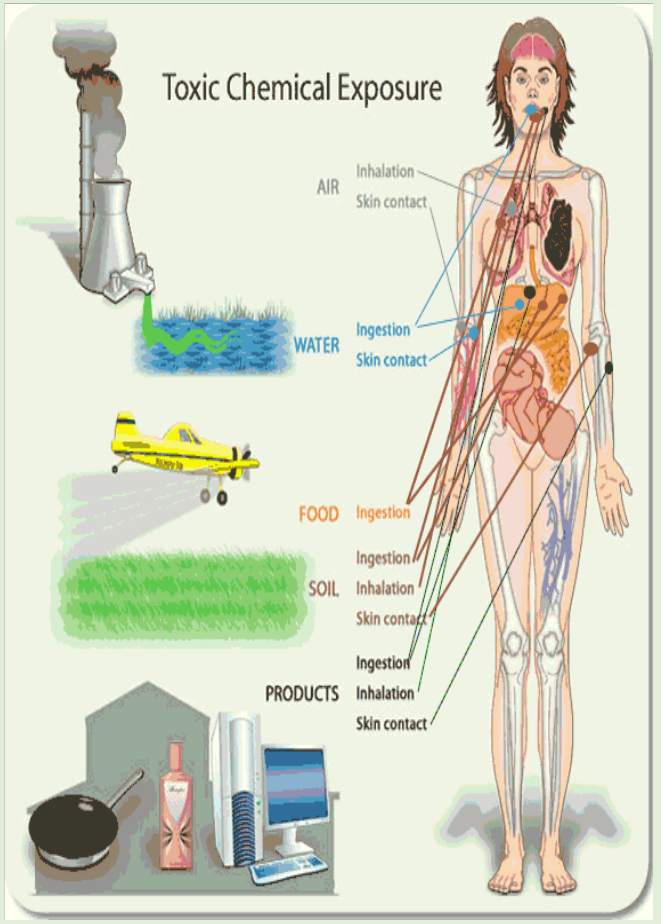
At the end of the training, participants will be able to:

- **Develop a Plan of Action** for transitioning to safer alternatives.
- **Examine** current chemical use.
- **Identify** a process for finding alternatives to hazardous chemicals/processes.
- **Understand** how to compare potential alternatives and identify safer alternative.
- **Develop** a strategy for implementing a safer alternative.

Potential Health Risks from Hazardous Chemical Exposures

Serious illnesses and early mortality from occupational exposure to many hazardous chemicals is well documented:

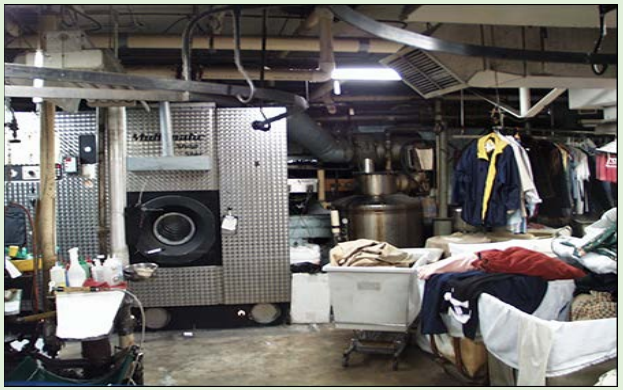
- From a long list of workplace chemicals such as **methylene chloride, lead, asbestos, 1-bromopropane, ammonium bifluoride, formaldehyde, hydrofluoric acid**, and others.
- Also **pesticides** in agricultural workplaces.
- Leading to a **wide variety of illnesses** from **skin inflammations, cardiovascular** and **neurologic disorders** or **cancer**.



Hazardous Chemicals Used Routinely in Workplace

Removing paint & coatings with methylene chloride-based stripper

Cleaning with anti-microbial products



Dry cleaning with 1-bromopropane

Using hair smoothing products containing formaldehyde

Limitations of OSHA PELs

- Most **PELs** for hazardous chemicals out of date, based on pre-1970s science.
- System for adopting new PELs broken – only 30 new or revised PELs since 1971, and just a few since 2000.
- **PELs** established for only ~470 of the tens of thousands of chemicals used in the workplace.

Dr. David Michaels, former Assistant Secretary of Labor, OSHA

Regrettable Substitutions

- **Uninformed use of substitutes** replace a regulated hazardous chemical with an unregulated chemical, about which little may be known, that turns out to have similar or worse health consequences.
- **Think first** before leaping to a new chemical alternative.
- **Learn/investigate** enough to make sure you won't regret your choice.

Regrettable Substitution

March 30, 2013

Link to Video

Spray Adhesive

1,1,1-trichloroethane (TCA) (methyl chloroform)

- damaged ozone layer
- Neurotoxicant

Methylene Chloride

- Safe for ozone
- Carcinogen/Neurotoxicant

n- Propyl bromide (no PEL)

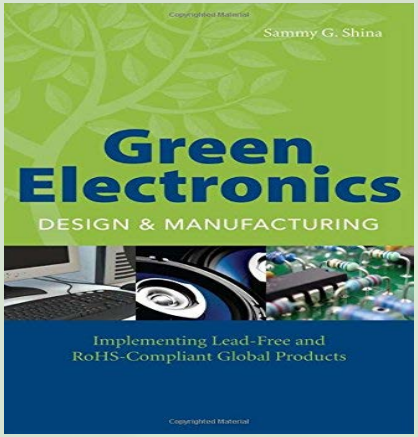
- Safe for ozone
- Carcinogen/Neurotoxicant
- **2013 TLV 10 to 0.1ppm**

What is a “Safer Alternative”?

- A different, **less hazardous chemical** that achieves the same, or better, results.
- An **alternative material, product or process** that eliminates the need for using hazardous chemical.
- **Re-design or reformulation** of a product that eliminates need for a process or material requiring hazardous chemical.
- Generally, no nirvana. **‘Safer’** an improvement over current chemical. New technologies, new knowledge lead to innovative still ‘safer’ alternatives.

Case Study: History of Lead & Innovation

- Unleaded gasoline
- Lead-free solder
- Lead-free paint
- Lead-free cosmetics
- Lead-free electronic components and systems
- Lead-free plumbing products (valves, fittings, etc)
- Lead-free toys



Obstacles to Adoption of Safer Alternatives

- Lack of awareness of health impacts.
- Efficiency of currently used processes and materials.
- Cost of alternative materials or new equipment.
- Inadequate/uncertain availability of alternatives.
- Familiarity from years of experience with current materials and processes.
- Weak regulations.

Safer Alternatives Process

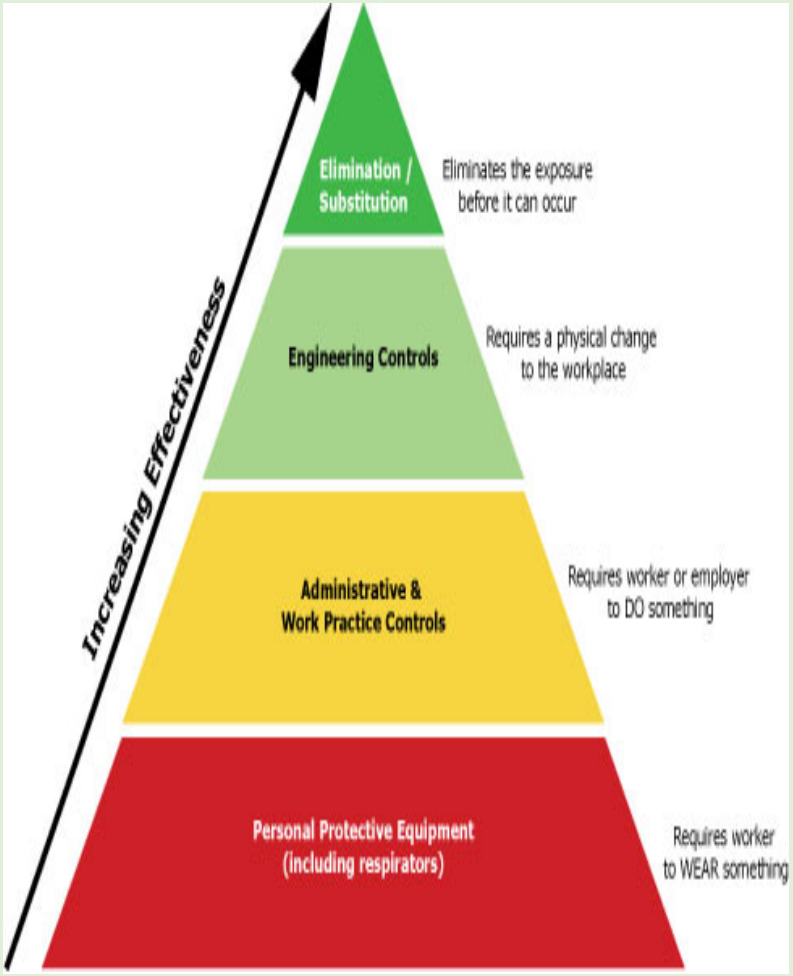
- OSHA'S 7 Step Process to eliminate or reduce hazardous chemicals.
- Applicable in any type of workplace or with any process.

https://www.osha.gov/dsg/safer_chemicals/index.html

Chemical Management Strategies

- **Elimination** and **Substitution** are the best solutions for reducing workplace health impacts.

- The bulk of the pyramid reflects the reality that **most facilities manage exposure rather than implementing safer alternatives.**



Next Steps

- Build a team and create a plan.
- Examine current chemical use.
- Identify alternatives.
- Assess and compare alternatives.
- Select safer alternatives.
- Implement alternatives.