Occupational Exposures in the Environment
Hazards from Dermal and Inhalation Exposures

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Introduction

Occupational Hazards for Environmental Samplers

Challenges for Identifying Hazards

Cannot rely upon the traditional Industrial Hygiene Approach. (Administrative Controls, Engineering Controls)

Protecting worker’s health and safety relies upon situational awareness and effective use of precautionary practices.
Typical Workplaces
Typical Workplaces
Your Workplaces
Your Workplaces
Occupational Hazards

Part 1: Dermal approach
Part 2: Inhalation toxins

The Skin... “where the rubber meets the road”
SKIN
The skin (dermis) is the body’s largest organ and is much more complex than it appears.

The primary role of the epidermis, the most external layer of the skin, is to maintain water homeostasis and to establish an immunologic barrier.

Diseases of the skin caused by physical or chemical agents or conditions at work continue to outnumber all other work-associated illnesses.

Estimated 20 to 25% of persons with occupational skin disease lose an average of 11 days of work annually. This translates to an economic loss of $222 million to $1 billion annually.
SKIN HAZARDS  
*(Occupational Dermatoses)*

- Chemical agents constitute the major cutaneous hazards; however, other agents threaten worker health & safety.
- Acids v. Bases
- Allergic Dermatitis
- UV Radiation – Sun Burn – Photosensitivity
- Photoallergens
- Mechanical abrasions, cuts, and punctures
- Microbial (Fungi & Bacteria)
- Parasites & Other Critters
SKIN EFFECTS
(How was Lunch?)

- Dermal Pathways

- Dermal Effects

- Protective Measures
Part 2: Inhalation toxins
Some common inhalation toxins

- Organoinsecticides
  - Neurotoxins
- Metals
  - Pb
  - As
- Microbes
  - Fungi
- Solvents
  - Aromatics
Organoinsecticides

- Neurotoxins
  - Affect CNS of higher organisms
- Symptoms of acute toxicity
  - Ataxia
  - Dizziness
  - Nausea
  - Tremor
- Remove from area
  - Decontamination
  - If symptoms persist, seek medical attention
Metals (in homes, soil/construction dust)

- **Lead (Pb)**
  - Pre-1970s homes
  - Roadway soils, industry

- **Symptoms of acute toxicity**
  - CNS effects, kidney damage, HBP, anemia

- **Arsenic (As)**
  - Background soil, smelters, chemical manufacturing

- **Symptoms of acute toxicity**
  - fever, cardiac arrhythmia, SOB, death

- **Remove from area**
- **Decontamination**
- **If symptoms persist, seek medical attention**
Microbes

- Cryptococcus neoformans (a yeast)
  - Lung, skin, brain infections
- Bird excrement, inhalation of spores
- Avoid areas of excrement concentration
Solvents (and combustion)

- **Gasoline (aromatic, can smell it)**
- **Symptoms of acute toxicity**
  - Respiratory tract irritation, CNS depression
- **Chlorinated solvents (PCE, etc)**
  - Dizziness (CNS), HA, skin rash, death

- **Removal from source**
- **Fresh air, oxygen**
- **Seek medical attention**

- **Carbon monoxide**
  - Can’t smell it
  - CNS, Can be fatal
- **Keep combustion engines well ventilated!**
Stay Safe

Florida Department of Health

www.doh.state.fl.us