Toxicity Reduction

Janet Brown
Director of Facility Engagement
Practice Greenhealth
Learning Objectives

- Understand the hazards associated with mercury and why elimination is a best approach.
- Identify other chemicals to focus on to eliminate or ensure safe work practices
- Understand the Green Guide for Health Care and how it can guide a facility through chemical use, assessment, reduction and safety.
MINAMATA: WORDS AND PHOTOS

Tomoko 1956-1977
Toxicity: The Fish Connection
Mercury -- A Risk to Human Health

- Mercury is well known for its toxic effects
- Long term exposure can permanently damage brain, kidneys and developing fetus
- Sources of mercury
- FDA Warning, Fish Advisories, NY Academy of Science Report, Consumer Reports
Virtual Mercury Elimination

- Dental
- Clinical Devices
- Electronics
- Thermometers
- Blood Pressure
- Laboratory
- Thermostats
- Pharmaceuticals
- Batteries
- Fluorescent Lamps
- Thimerosal
Toxicity issues

- Mercury
- Ethylene Oxide, Glutaraldehyde
- Disinfectants
- Cleaning Chemicals
- Pesticides
- Herbicides
- Hazardous Pharmaceuticals
- Laboratory Chemicals, solvents
- Bromated fire retardants
- Exhaust from vehicles
- DEHP in medical devices
- Electronics waste
- Materials and finishes
- Formaldehyde
Though scientists once thought that the womb protected developing babies from pollution, a study of umbilical cord blood from newborns found an average of 200 industrial chemicals, pesticides and other pollutants in 10 newborns. Of 287 chemicals detected, 180 have been linked to cancer, 217 are neurotoxins and 208 are linked to birth defects.
What We Know

- Every one of us is carrying a body burden of toxic chemicals
- Children are more susceptible to environmental exposures than adults
- The fetus may be harmed by amounts of chemicals that do not effect adults
- Already sick patients or the elderly may be less able to deal with environmental exposures
Learn! Research environmental updates

• Environmental News Network
  http://www.enn.com/

• Ethics & Sustainability
  The American Medical Associations “Virtual Mentor”
Ethics & medicine

- The principles of medical ethics state that “a physician shall recognize a responsibility to participate in activities contributing to the improvement of the community and the betterment of public health.”

- American Medical Association’s Principles of Medical Ethics
Public Health Paradigm

- An ounce of prevention
- The Precautionary Principle
  - implies that there is an ethical imperative to prevent rather than merely treat disease, even in the face of scientific uncertainty. This principle can be understood as: “when an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically”
- Opt for safer substitutes
• Void in the marketplace of health care specific green building tool
• Core content transfer from existing tools (e.g., LEED®) but need to tailor for healthcare
• Explicit health-based focus
• Sensitivity to an over-regulated sector → voluntary best practices with no certification thresholds
• Reinforces integrated design as essential
• Bridges design & construction with operational considerations
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1 – Integrated Operations
2 – Sustainable Sites Management
3 – Transportation Operations
4 – Facilities Management
5 – Chemical Management
6 – Waste Management
7 – Environmental Services
8 – Food Service
9 – Environmentally Preferable Purchasing
10 – Innovation in Operation
Integrated Operations

Green Team Development

- Administration
- Nursing/Clinical Staff
- Engineering
- Facility Management
- Environmental Services
- Food Services
- Infection Control
- Laboratory
- Marketing/Public Relations
- Pharmacy
- Materials Management
- Risk Management
- Safety
Prereq 1 – Polychlorinated BiPhenyl (PCB) Removal and Asbestos-Containing Materials (ACM) Management
Prereq 2 – Chemical Management Policy and Audit
Prereq 3 – Community Contaminant Reduction: Leaks & Spills
Credit 1.1 Indoor Chemical Contaminant Reduction: Sanitary Sewer
Credit 1.2-1.4 - Indoor Chemical Contaminant Reduction: Hand Hygiene Products, Sterilization & High Level Disinfection
Credit 1.5 - Indoor Chemical Contaminant Reduction: Laboratories
Credit 1.6 - Indoor Chemical Contaminant Reduction: Radiology
Credit 2.1-2.2 – Pharmaceutical Minimization, Management & Disposal
CM Prerequisite 2 – Policy & Audit

- Institute a comprehensive chemical management policy and audit process to establish a framework of policies and procedures to reduce and eliminate the use, emission and improper disposal of chemical hazards and toxic materials within the health care facility and to the surrounding community
  - Joint Commission
  - Inventory
  - Worker Exposure Plan
CM Prereq 3 Leaks & Spills

- Mitigate leaks and spills and waterborne effluents to prevent releasing waterborne environmental, health and safety burdens to the site neighbors and surrounding community.
  - SPCC PLAN
  - Emergency Response Plan
  - Storage Areas
  - Proper Disposal
Cm Credit 1.1 Sanitary Sewer

- Reduce and eliminate the use and improper disposal of chemical hazards and toxic materials within the health care facility to safeguard the health of building occupants.
  - Banning improper discharge into sanitary sewer without approval process.
  - Testing of water discharge quarterly to ensure toxic substances not entering sewer.
CM Hand Hygiene, Sterilization, High Level Disinfection

- Assess for proper use of antimicrobial hand soaps.
- Replace Eto Where possible
- Safe use of Eto equipment
- Reduce use of Glutaraldehyde
CM 1.5 laboratories

- Solvent Recycling
- Mercury elimination
- Engineering Controls
- Minimize sample size, chemical use..
CM 1.6 Radiology

- Recycle Silver
- Capture fixers from film processing (if applicable)
- Local exhaust for vapors
CM 2.1 & 2.2 Pharmaceuticals

- Formulary Review, characterization
- Policy and program for receipt, handling, management of pharmaceuticals.
- Minimize pharmaceutical waste
Pharmaceutical Waste Prevention

- PGH Webinar on Pharm Waste Prevention

- PGh Webinar on Blueprint Update, USGeological Survey, Stericycle and Albany Med Case Study

* Membership Benefit
Pharm Waste Prevention Case Study

- Catherine Zimmer, Mntap
  [www.mntap.umn.edu/health/94-PharmWaste.htm](http://www.mntap.umn.edu/health/94-PharmWaste.htm)
- Tri-County Hospital and Hennepin County Medical Center (HCMC)
  - Stock Rotation
  - Alternate Packaging
  - Operating Room
  - Purchasing/Inventory Management
  - Reverse Distribution
Environmentally Preferable Purchasing
Products = Waste & Emissions

- Almost everything going out as waste or emission can be attributed to a product or service that was purchased.
GGHC EP Credit 2.1-2.2 – Version 2.2
Operations Section

- Toxic Chemical Reduction in Purchasing
  - 2.1 – Policy/Structure Development
  - Development of a position and plan to address targeted classes of chemicals.
  - Phthalates included......
  - Annually review policy, progress, goal setting...
  - 2.2 – Implementation
    - Demonstrate active change in transitioning to safer materials.
Infection Control Definitions

- **Sterilization**
  - Validated process used to render a product free of all forms of viable microorganisms

- **Disinfection**
  - Destruction of pathogenic and other kinds of microorganisms by thermal or chemical means. Destroys most recognized pathogenic microorganisms, but not necessarily all microbial forms, such as bacterial spores

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Goals of Effective Sterilization & Disinfection Program

- **Balance** sporicidal, viricidal, and bactericidal effectiveness vs. human health effects and environmental toxicity of wastes

- Check material compatibility with delicate medical devices and equipment repair costs

- Design areas and processes to promote success

- Strive to assure patient and worker safety

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Keep Learning

- Discuss sterilization and high level disinfection when purchasing equipment.
- Continuously assess new technologies through supply chain and organizations such as AORN and APIC.

http://www.cdc.gov/ncidod/dhqp/sterile.html
Awards and Recognition!

Get Recognition!

Awards Process

www.Cleanmed.org

See list of winners at:

- http://www.practicegreenhealth.org/awards/winners/
SAVE THE DATE

May 11-13, 2010
Baltimore Convention Center
Baltimore, Maryland

CleanMed 2010
Creating Healing Environments

The premier global conference on environmentally sustainable health care

VISIT WWW.CLEANMED.ORG FOR MORE DETAILS
Thank you!

Janet Brown – 413/253-0254
jbrown@practicegreenhealth.org
www.practicegreenhealth.org