



*Sustainable*  
**HOSPITALS**



REGISTER  
GLOSSARY  
FEEDBACK  
SITE MAP  
HOME

# Sustainable Hospitals Program

University of Massachusetts Lowell

***Catherine Galligan,  
Project Manager***

***[www.sustainablehospitals.org](http://www.sustainablehospitals.org)***



*Sustainable*  
**HOSPITALS**

# **Sustainable Hospitals Program (SHP)**

*Reduce occupational and  
environmental hazards*



*Sustainable*  
**HOSPITALS**

# Sustainable Hospitals Project

- In-hospital and field research
- Speak at meetings and conferences
- Technical literature
- Website of alternative products and practices ([www.sustainablehospitals.org](http://www.sustainablehospitals.org))



*Sustainable*  
**HOSPITALS**

## **Mercury in Healthcare**

- Why is mercury a problem?
- Environmentally Preferable Purchasing
- Alternative products



# Mercury

- Elemental - medical instruments (liquid & vapor)
- Organic - methyl mercury (liquid)
- Inorganic - mercury salts (solid)



## Why Mercury?

- Cohesive fluid
- Sensitive to temperature
- Favorable properties for pressure indication
- Good electrical conductor



*Sustainable*  
**HOSPITALS**

## So What's the Problem?

Persistent

Bioaccumulative

Toxic



*Sustainable*  
**HOSPITALS**

# Persistent

- long-lasting
- don't break down easily
- difficult to clean up



*Sustainable*  
**HOSPITALS**

# Bioaccumulative

- Bioaccumulate in food chains and build up in the body



*Sustainable*  
**HOSPITALS**

# Toxic

- poisonous



*Sustainable*  
**HOSPITALS**

## **So What's the Problem? Pollution**

Mercury contamination from:

- Spills from broken hospital devices
- Air pollution from coal
- Industrial waste



*Sustainable*  
**HOSPITALS**

## **Because of this...**

- More regulations and controls



## Elemental Mercury

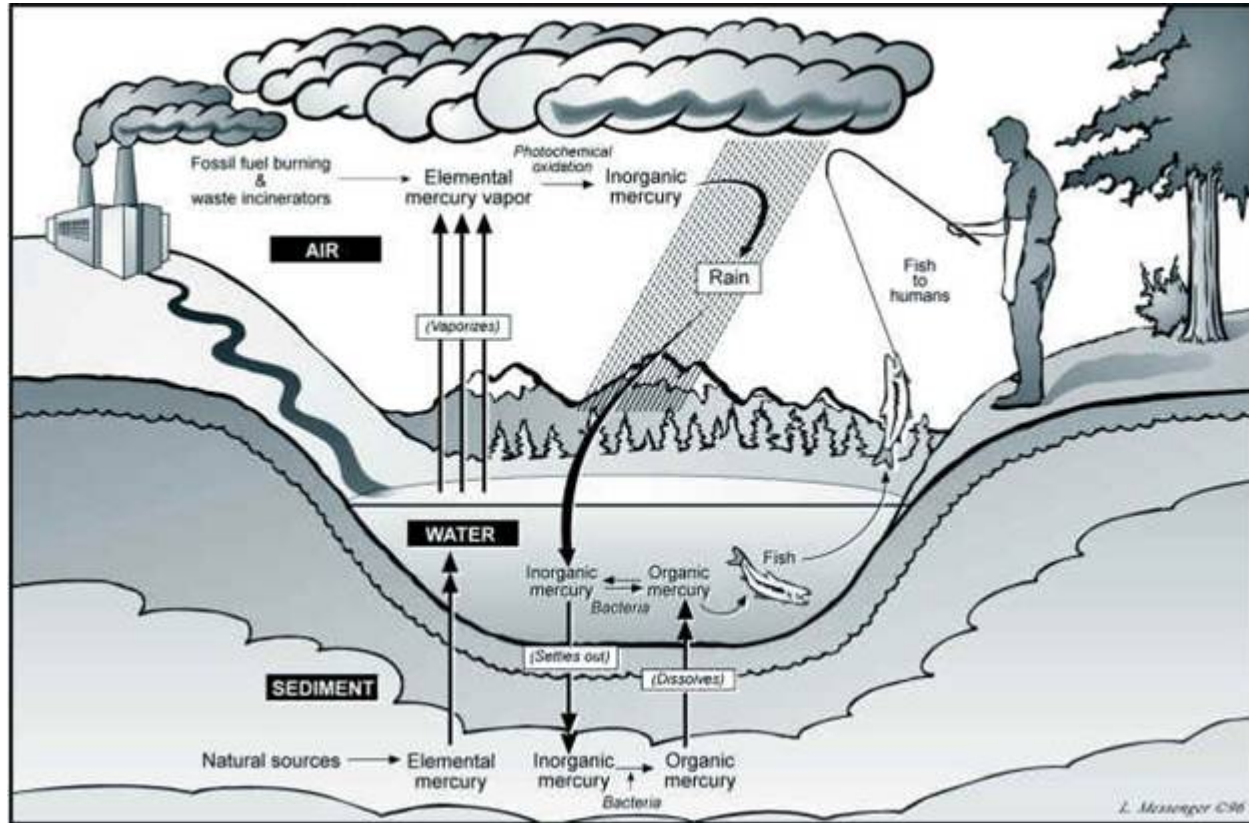
- Easily vaporizes
- Readily taken up from the lungs and delivered to brain and fetus
- $\text{Hg}^0$  oxidized in red blood cells, brain and fetus to  $\text{Hg}^{2+}$
- Trapped by virtue of being ionized
- Neurological damage



## Mercury in Fish

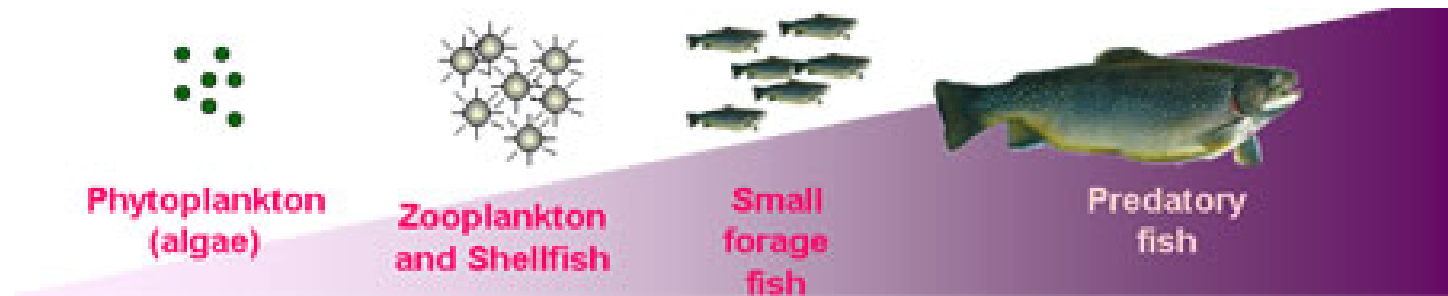
- Mercury enters the environment and collects in lakes and rivers
- Microorganisms convert mercury to methylmercury
- Methylmercury bioaccumulates in fish
- Biomagnification up the food chain

## Atmospheric Transport of Mercury





## Moving up the food chain



Bacteria in soils and sediments convert mercury to methylmercury.

Methylmercury is taken up by tiny aquatic plants and animals.

Fish eat these organisms & build up methylmercury in their bodies.

Bigger fish eat smaller ones & methylmercury is concentrated up the food chain.

**This process is called "bioaccumulation"**



## **Methyl Mercury (Organic)**

- Lipid-soluble
- Distributed to central nervous system
- Crosses placenta and concentrates in fat tissue and brain of fetus
- Oxidized to  $\text{Hg}^{2+}$
- Neurological damage



*Sustainable*  
**HOSPITALS**

# Environmentally Preferable Purchasing:



## Reducing Waste, Hazards, and Cost At the Source

CREDIT

The following EPP slides are product of the EPP workgroup of the Hospitals for Healthy Environment (H2E) cooperative project between the US EPA and the American Hospitals Association. The Sustainable Hospitals Program was a member of this workgroup.

[http://www.geocities.com/EPP\\_how\\_to\\_guide/](http://www.geocities.com/EPP_how_to_guide/) (Accessed 7/30/09)



*Sustainable*  
**HOSPITALS**

# What is Environmentally Preferable Purchasing?

- Selecting products and services whose environmental impacts have been considered and found to be **preferable** to those of comparable alternatives.



*Sustainable*  
**HOSPITALS**

## **What are the Benefits of EPP?**

- Reduced impact on the environment from hospital operations
- Healthier environment for patients and employees
- Potential cost savings
- Positive publicity



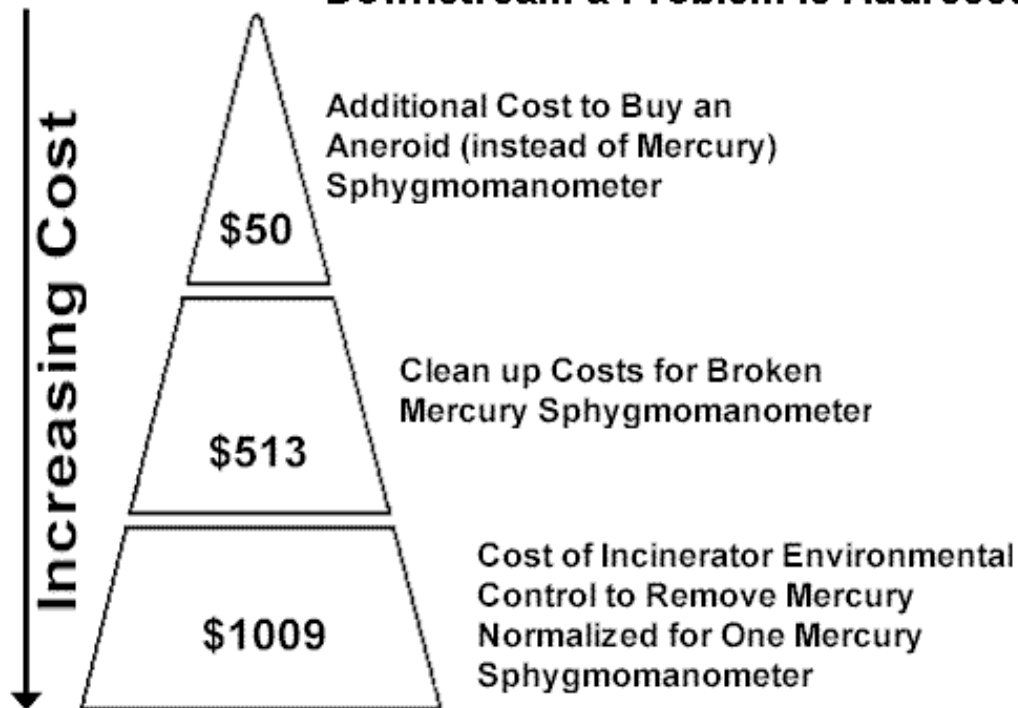
*Sustainable*  
**HOSPITALS**

## Why Purchasing?

- Central point for procuring nearly every hospital product or service
- Money changes hands here
- Proactive pollution prevention



## How Costs Increase the Further Downstream a Problem is Addressed





*Sustainable*  
**HOSPITALS**

## **Keys to EPP Success**

- A hospital policy to implement and support environmentally preferable purchasing
- Measurable goals
- Education of staff, patients, GPOs, manufacturers



*Sustainable*  
**HOSPITALS**

# **Example of a Hospital Purchasing Policy**

Kaiser Permanente



*Sustainable*  
**HOSPITALS**

## **Kaiser Permanente's RFPs state that Kaiser is:**

- Favoring products that cause the least environmental harm
- Partnering with suppliers who demonstrate a commitment to environmental quality
- Collaborating with distributors, manufacturers, and suppliers in designing/refining products to minimize environmental impact



*Sustainable*  
**HOSPITALS**

## **Kaiser asks vendors to submit information on:**

- Vendor's Sustainable Practices
- Pollution prevention attributes of products
- How products reduce solid waste
- Mercury content of products



*Sustainable*  
**HOSPITALS**

## **Kaiser EPP Results**

- Kaiser no longer procures:
  - Hg thermometers or sphygmomanometers
  - Certain Hg-containing lab products
- Kaiser recycles fluorescent lights
- Kaiser recycles xylene and alcohol
- Kaiser switched from latex to nitrile gloves



## **Examples of measurable goals**

- Reduce purchase of mercury-containing products by 80% by next year.
- Increase purchase of recyclables or reusables by 30% by next fiscal year.
- Reduce packaging waste or total solid waste by 20% in 12 months.



*Sustainable*  
**HOSPITALS**

## **Reducing Mercury With EPP**

- Thermometers
- Sphygmomanometers
- Calibrators
- Gastrointestinal tubes
- Lab Chemicals
- Batteries, Lighting, Switches



*Sustainable*  
**HOSPITALS**

## **Summary:**

# **Mercury in Healthcare**

- Mercury is a problem
- Environmentally Preferable Purchasing is a solution
- Alternative products have a good track record in many U.S. hospitals



*Sustainable*  
**HOSPITALS**



REGISTER  
GLOSSARY  
FEEDBACK  
SITE MAP  
HOME

# Sustainable Hospitals Program

University of Massachusetts Lowell

***[www.sustainablehospitals.org](http://www.sustainablehospitals.org)***