Why ‘Green’ Your Facility?

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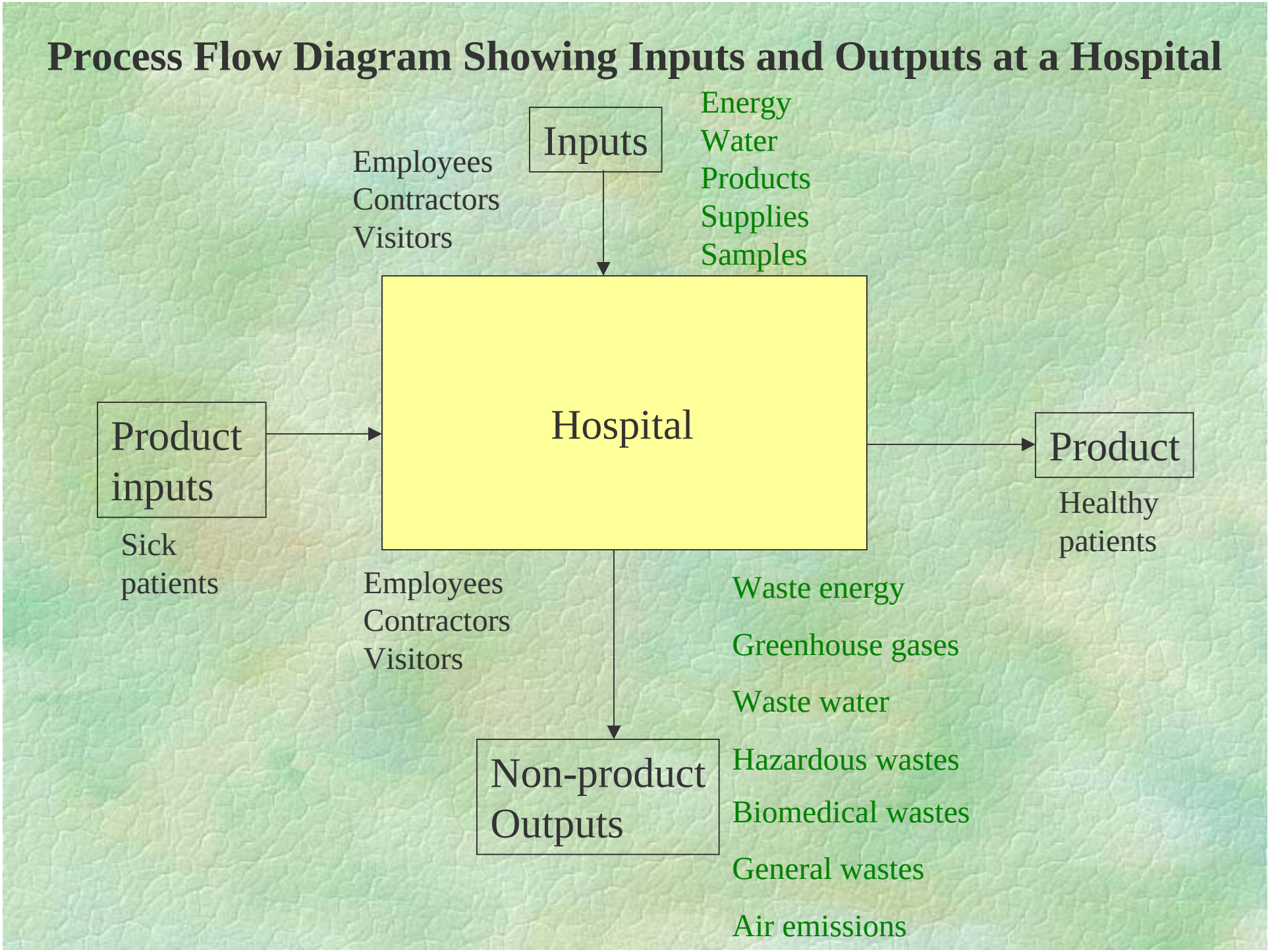
Presentation Outline

- Examples of Environmental and Health concerns in a Health care facility
- Examples of energy, health and environmental concerns of products used
- Pollution prevention
- What about the costs?

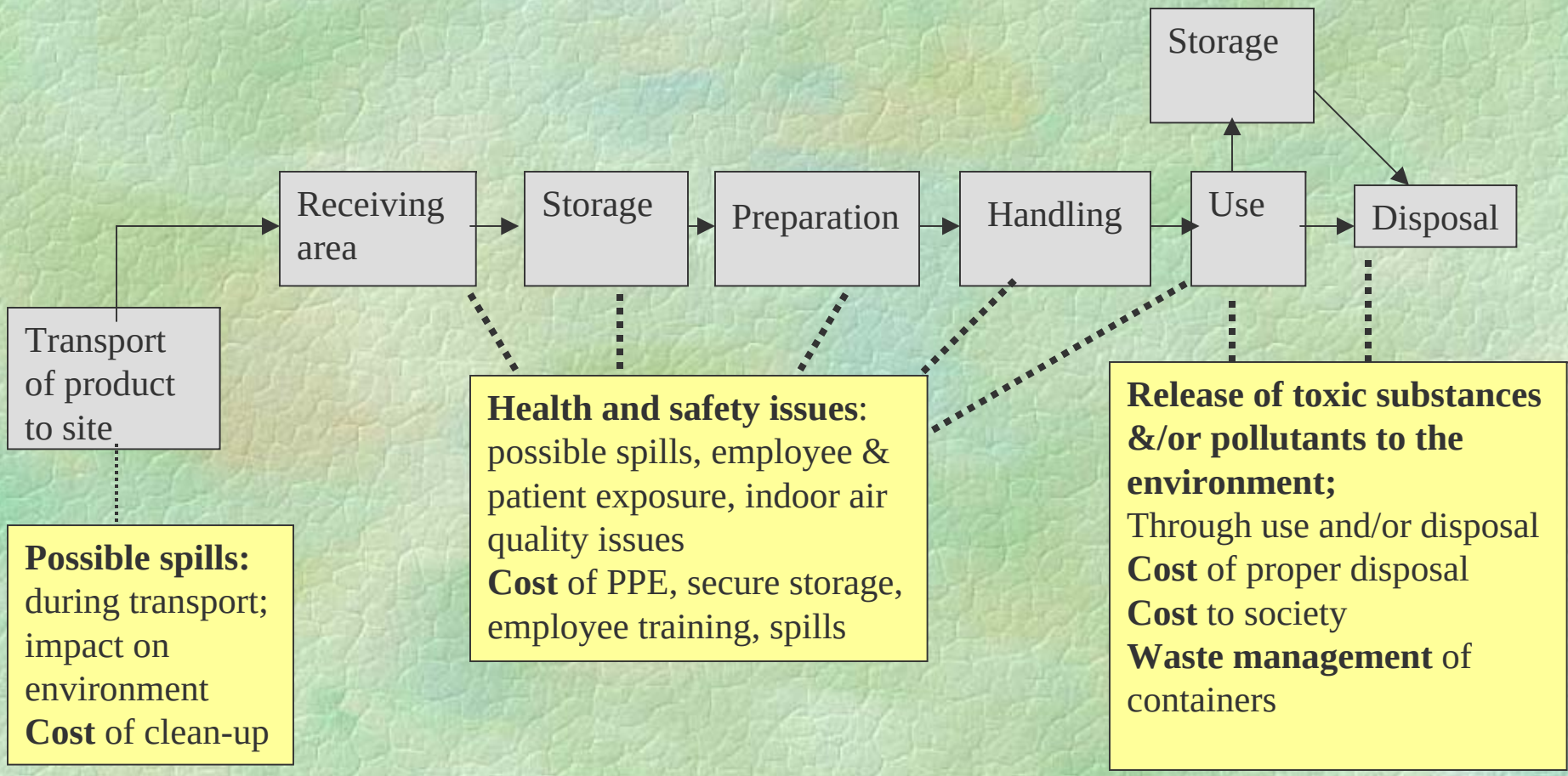
What are the Environmental and Health Concerns at a Health Care Facility?

- What comes in must go out…..

Process Flow Diagram Showing Inputs and Outputs at a Hospital



Example of Product and Waste Issues Through Material Flow



What are the Health and Environment Concerns of Some Pollutants?

- Pollutant: Mercury
  - found in many products deliberately (lab stains, thermometers, switches, lights) and as a contaminant (bleach); and from spills
- Health effects:
  - potent neurotoxin
  - Bio-accumulates in living organisms
- Environmental effects:
  - persistent in the environment
  - is not treated by wastewater treatment plant

What are the Health and Environment Concerns of Some Pollutants?

- Pollutant: Nonylphenol ethoxylates (NPE)
  - non-ionic surfactant, e.g. found in cleaning products
- Health effects:
  - suspected of causing disruption to human and wildlife endocrine systems (environmental estrogen)
- Environmental effects:
  - persistent in the environment
  - does not degrade well in wastewater treatment plant

What are the Health and Environment Concerns of Some Pollutants?

- Pollutant: Para-dichlorobenzene (para):
  - used in urinal blocks as a deodorant
- Health effects:
  - possible human carcinogen, can cause symptoms such as chest pain, and poor coordination when workers breath large amounts of the vapours
- Environmental effects:
  - Persistent bio-accumulative toxic
  - can contaminate drinking water supplies and found in fish

Energy Use in Hospitals

- Hospitals use more than twice as much energy per square foot as office buildings.
  - e.g. Lighting on in some areas 24 hours/day
- Estimated that hospitals in Canada spend close to $1 billion each year on energy.
- Estimates in the US suggest on an average, 30% energy reduction possible at hospitals.
- Dollar savings can be re-invested into patient care.

Why is Energy Use of Concern?

- Greenhouse gas emissions from use of fossil fuels (CO_2) cause Climate Change,
- Depletion of nonrenewable resources,
- Health effects of air pollution from coal powered electrical generators,
- Smog production related to air emissions from energy use.

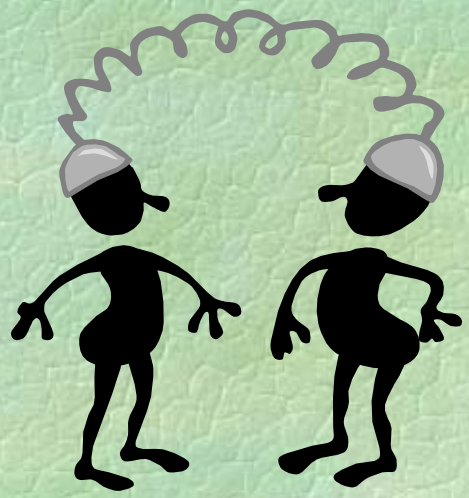
Examples of Where Hospitals Waste Energy

- Less efficient heating/air conditioning systems
- Less efficient hot water heating systems & use
- Inefficient building insulation
- Equipment and lighting is on when not used
- Less efficient electrical equipment
- Less efficient lighting

“*above all, do no harm*”

- Health care professionals have an ethical responsibility, embodied in the Hippocratic Oath.

Solution?
Use Pollution Prevention!



- to **eliminate or reduce wasted energy, toxic wastes or other pollutants at the source, and to reduce impacts on health and the environment**.

POLLUTION PREVENTION (P2)

Pollution prevention is defined as “the use of processes, practices, materials, products, substances or energy that avoid or minimize the creation of pollutants and waste, and reduce the overall risk to the *environment* and *human health.”*

Canadian Environmental Protection Act, 1999

What Does Pollution Prevention Look Like?

1. Product Re-design and Re-formulations

-Usually undertaken by the manufacturer or at the design stages of building a new hospital

- Manufacturer: Develop new cleaner that does not contain toxic solvents or Volatile Organic Carbons (VOCs)

- New Facilities: increase day-lighting, decrease use of carpets

2. Equipment Modification and Process Changes

-Micro analyzers for lab that uses less or non toxic chemicals

-Micro Fibre Mops for cleaning instead of regular mops

-Electronic information transfer instead of paper

- Peroxide sterilization to replace Ethylene Oxide

What Does Pollution Prevention Look Like? (cont.)

3. Material Substitution

-Digital thermometers instead of ones with mercury

- Environmental Choice Certified cleaners instead of more toxic cleaners

4. Operating Efficiency and Training

-Train staff on spill avoidance and containment

- Develop procedures for equipment maintenance/service

What Does Pollution Prevention Look Like? (cont.)

5. Purchasing Techniques and Inventory Management

-Establish Green purchasing programs with green specs for products/services

-Purchase only what you need

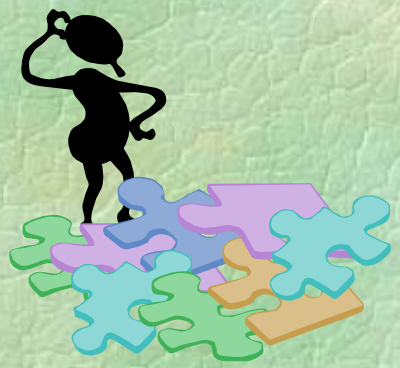
6. On-site Reuse and Recycling

-Use of rechargeable batteries where possible

-Use of solvent distillation units for lab chemicals (i.e. xylene or substitute) and formaldehyde

How Does a Facility Begin Greening?

- Become aware of the issues and concerns
- Develop a **Pollution Prevention Plan**



What is a Pollution Prevention Plan?

A systematic method of identifying ways to minimize or avoid the creation of pollutants or waste

- 5 Steps to a P2 Plan

P2 Planning Steps

1) Commitment and policy
2) Baseline review
3) Planning
4) Implementation
5) Monitoring & reporting
6) Evaluation, review and improvement

P2 Benefits

- **Reduced operational costs**
  - *(i.e. waste disposal and treatment, energy, raw material usage, operational & maintenance costs)*
- **Improved worker safety**
  - *(i.e. fewer complaints and incidences, more comfortable working conditions thus greater productivity)*

P2 Benefits cont.

- **Lower risks for public, staff, community and the environment**
  - *(i.e. less bad press, more community support for other intiatives)*
- **Reduced current and future liability**
  - *(i.e. $ for insurance & cleanup)*

P2 Benefits cont.

- **Reduced regulatory compliance expense**
  - *(i.e. reduced time and dollars spent on documentation and reporting)*
- **Reduced costs for borrowing money**
  - (i.*e. get better rates from banks when you show due diligence)*

P2 Benefits cont.

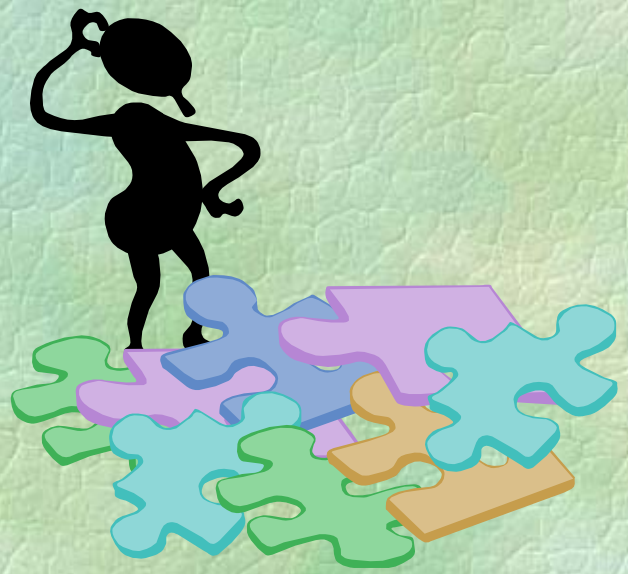
- **Improved employee morale, public image**
  - *(e.g. attract and keep good employees and therefore reduce costs of rehiring and training)*

What Can be Done Through Green Purchasing to Reduce Concerns?

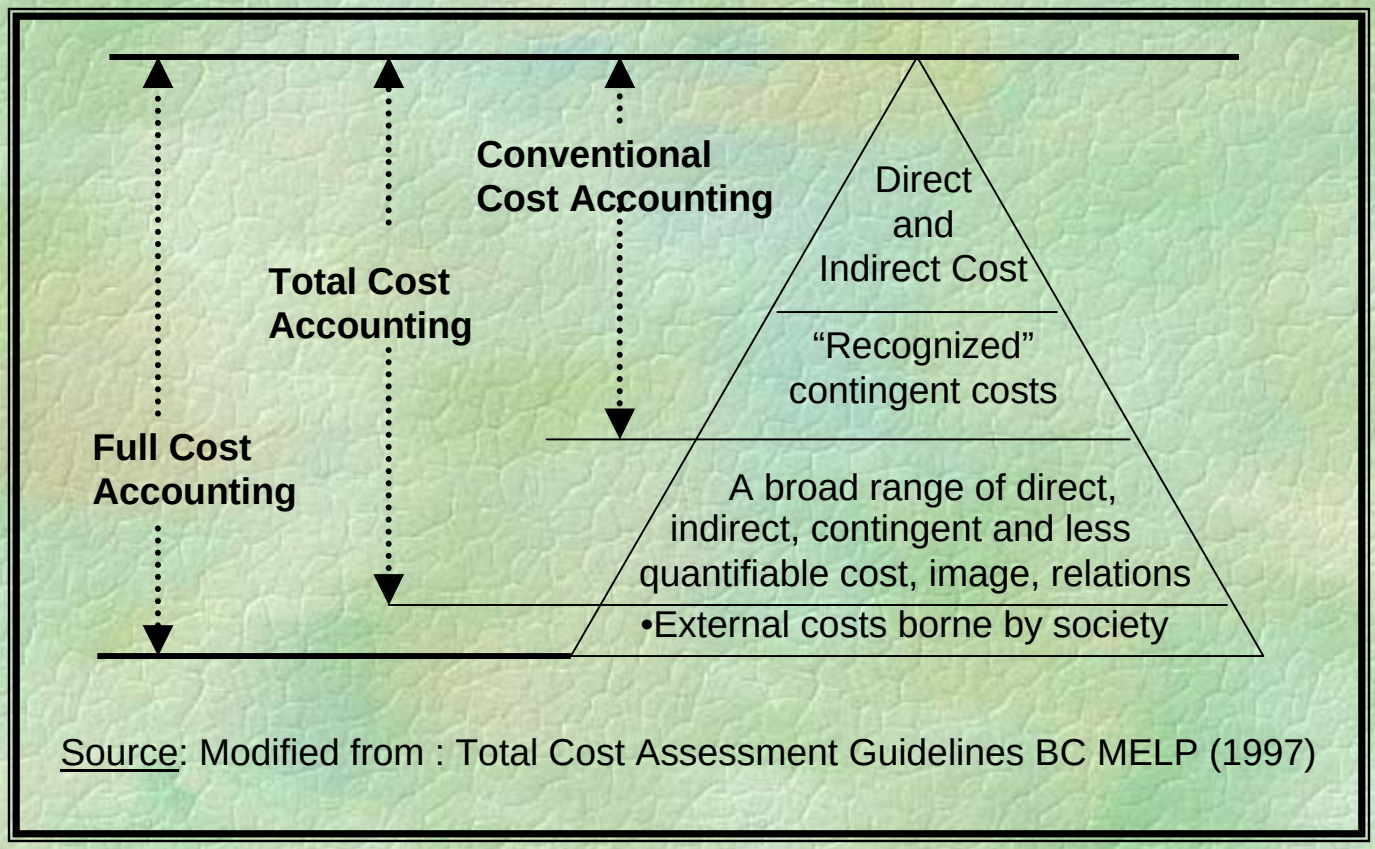
- Purchase the least toxic product that can do the job.
- Purchase the most energy efficient product available.
- Buy only what you need to reduce the quantity of outdated products disposed.
- Identify which products have undesirable materials in them and work with suppliers to obtain substitutes that work.

What about the Costs ?

- In most cases, the total costs and savings are not recognized...



Cost Accounting Systems



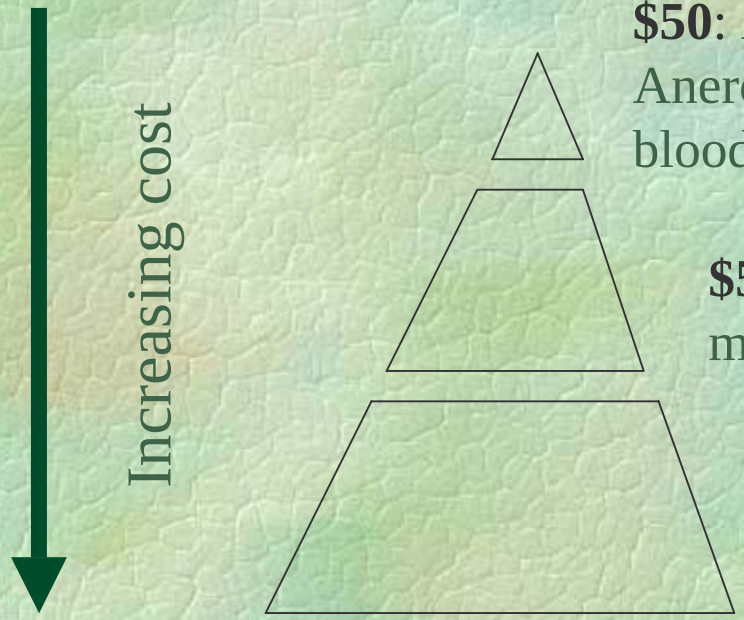
Source: Modified from : Total Cost Assessment Guidelines BC MELP (1997)

Examples of External Costs Born by Society

- Energy demand by society
- Water demand society
- Natural resource consumption
- Spills from product transport to facility
- Greenhouse gas emissions
- Effect on wastewater treatment plant operations
- Effect on freshwater supplies
- Community emergency response
- Landfill site use
- Air emissions (i.e. from biomedical waste disposal)

How Can We Measure Costs?

How Costs Increase the Further Downstream a Problem is Addressed*



$50: Additional cost to buy an Aneroid (instead of mercury) blood pressure cuff

$513: Clean up cost for broken mercury blood pressure cuff

$1009: Cost of Incinerator Environmental Control to Remove Mercury Normalized for One mercury blood pressure cuff

*Reference: Mercury Elimination and Reduction Challenge (MERC), "Mercury in the Health Care Sector: The Cost of Alternative Products" November, 1996, pp 1424.

Group Discussion

- Using a volunteer from the audience, develop an outline of how to start a ‘Greening Program’ for that healthcare facility.