Green Cleaning for Schools

- 2005 – Chicago Public Schools adopt Green Cleaning Policy
- 2006 - NYS passes legislation for all public and private schools K-12
- 2007 – Illinois passes similar legislation
- 2008 – Missouri passes guidelines, Maine a resolve, under discussion in RI, MA, VT
- 2009 – Connecticut, Nevada, Hawaii and Maryland pass legislation
- 2010 – Iowa
- 2011 - Vermont
Why Switch to Green Cleaning?

- A single custodial worker uses, on average, 194 lbs. of chemicals annually, approximately 25% of which are hazardous substances.
- Custodians experience one of the highest rates of occupational asthma, 6 out of 100 custodians are injured each year:
  - 20% are serious burns to the eyes or skin
  - 12% are a result of breathing chemical vapors
Children and Asthma

- 1 out of every 8 school-age child in VT has been diagnosed with asthma
- 1 in 20 children has been hospitalized overnight for asthma
- Childhood deaths due to asthma have tripled in the past 15 years
- Asthma costs society $15 billion per year in medical and indirect costs*

Trends in Asthma Morbidity and Mortality: http://www.lungusa.org/atf/cf/7A8D42C2-FCCA-4604-8ADE-7F5D5E762256\ASTHMA1/PDF
Why Switch to Green Cleaning?

Research tells us that frequent users of conventional cleaning and disinfecting products have

- an increased risk of certain types of cancer
- their children may have a greater risk of developing asthma

“Studies of Health Impacts Associated with Cleaning Products”
Informed Green Solutions,
Why Switch to Green Cleaning?

Children are at greater risk than adults when exposed to toxins because:

- They metabolize and eliminate toxins more slowly than adults.
- Their rapidly developing systems are more sensitive to the effects of toxins.
- They live and play close to the ground where toxic residues collect in air and dust.
Why Switch to Green Cleaning?

The Environmental Working Group tested 21 common products used in California schools. They found:

- 457 chemicals were emitted into the air
- 6 known asthmagens
- 11 known, probable or possible cancer-causing agents and
- Others – endocrine disruptors/health effects are unknown
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<th>Cleaning Products</th>
<th>Air Contaminants</th>
<th>Ingredients Disclosed</th>
<th>Asthmagens Detected</th>
<th>Carcinogens Detected</th>
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Asthma and Cleaning Products

- Common asthmagens
  - Ammonia
  - Disinfectant ingredients
    - Quaternary ammonium compounds
      - benzalkonium chloride and more
  - Fragrance ingredients
  - Volatile organic compounds (VOCs)
VOC is the name given to a substance that contains carbon and that evaporates (becomes a vapor) or “off-gases” at room temperature.

Found in aerosol products, paints, cleaners, disinfectants, pesticides, new carpeting, gasoline, furniture, scented candles and other scented products.

VOCs are also associated with cancer.
Endocrine Disrupting Chemicals

- Girls are entering puberty earlier – six years old
- Birth defects in boys – deformed genitalia
- Phthalates found in plasticizers, vinyl, scented products, sealants etc.
Routes of entry

Inhalation...

Absorption...

Ingestion...
Acute health effects are felt or noticed almost immediately. Often within minutes or hours.

Chronic health effects may not be felt for months or even years, such as in cases involving asbestos fibers.

The latency period is the time between, when a person comes in contact with a substance, and the time that the effects are noticed.
Why Switch to Green Cleaning?

- Part of the Envision program – Vermont’s comprehensive indoor air/environmental quality program
  - Purchasing of Least/non-hazardous products
- It’s the law!
- It’s the right thing to do to protect your health and the health of the children and other building occupants in your care
Key Points

- The legislation
  - Does not include disinfectants!
  - Does include floor strippers and finishes
  - Does include gym floor finishes
    - However, we don’t know yet if there is a third-party category for them
Key Points

- Does include air fresheners
- Does include hand soaps
- Your vendors can tell you the categories of products that are third-party certified
This Means

Products may not have a fragrance

- What is more important, triggering an asthma episode or having a scented product?
- Scents in products can affect asthmatics and others with respiratory problems.
Issues

- Teachers, secretaries and other staff members should not be bringing products into the school
  - Liability issue – no material safety data sheets, contain hazardous ingredients that may be used around the students
- Teachers and other staff members should be given a labeled bottle of all-purpose cleaner and this is what they should use in the classroom
Cleaning for Healthier Schools

Cleaning that protects public health, without adversely affecting the health of staff, building occupants and the environment.

Health first!
Cleaning for Health Principles

- Keep the dirt out
- Use less-toxic, third-party certified, cleaning and paper products and hand soaps
- Disinfect only in high-risk areas
- Update and maintain equipment
- The smell of clean is no smell!
The Program

- **Step One** - Choose “green” (environmentally preferable) cleaning and other products
  - Safer, less-toxic, certified by independent third-party
  - Recycled content paper products
- **Step Two** – Best Practices – practice state-of-the-art cleaning methods
- **Step Three** – Replace worn-out equipment with state-of-the-art versions
Cleaning for Healthier Schools

Program Components Checklist

Includes:

1. Environmentally preferable chemicals
   - Safer, less-toxic, with third-party certification* for environmentally preferable qualities

*Certification: a third-party (e.g. Green Seal and EcoLogo) gives written assurance that a product or service conforms to specific requirements
Less-toxic Alternatives

Environmentally preferable products

Use these:
- Alcohol ethoxylates and/or polyglucosides
- Hydrogen peroxide
- Corn based esters
- Vegetable derived surfactants
- Fruit derived solvents and acids

Instead of these:
- Nonylphenol ethoxylates or alkylphenol ethoxylates
- Harsh acids/alkali builders
- Petroleum distillates
- Petroleum derived surfactants
- Petroleum solvents or harsh acids
Program Components Checklist

- Cleaning chemicals for everyday use
  - Third-party-certified cleaning chemicals
    - One concentrate that is diluted for the following cleaning tasks:
      - bathroom/ restroom
      - all-purpose
      - carpet spotter/extraction
      - glass and window
      - neutral floor
  - One heavy-duty cleaning product
Program Components Checklist

- Specialty cleaning products
  - Environmentally preferable disinfectant product
  - Third-party-certified
    - Floor care products
      - wax stripper
      - floor sealer & finish
  - Hand soaps, not anti-bacterial
  - Graffiti remover
  - Mineral build-up remover (toilets etc.)
  - White board cleaner and markers
  - Others
2. State-of-the-art cleaning methods (commonly called “best practices”)

- Written protocols
- Infection control plan
- Training programs
Infection Control Plan

- Covers everyday cleaning procedures and procedures for infectious disease outbreaks
- Targeted disinfecting
Cleaning for Healthier Schools
Program Components Checklist

- Best Practices
  - New York State’s green cleaning program
    https://greencleaning.ny.gov/entry.asp
- Product distributors
Program Components Checklist

- Training programs
- Best practices
- Blood-borne pathogens and chemical right-to-know
- Certified products
- Equipment operation
Cleaning for Healthier Schools
Program Components Checklist

3. The use of advanced technology cleaning supplies
   - Microfiber cloths and mopping systems
   - Cleaning equipment and devices
     - Steam
     - Spray and vac
     - Devices
Program Components Checklist

- Additional products and equipment
  - High-filtration vacuum cleaners (upright and/or back pack)
    - Air flow greater than 90 CFM
    - Capture 96% of particulates 0.3 microns in size
  - High-filtration floor care equipment
    - Floor buffers
    - Cord electric and battery burnishers
  - Sound levels less than 70 decibels
Program Components Checklist

Recycled content paper products
Trash and recycling programs
Environmentally preferable disinfectants
Walk-off mats
Best Practices
Infection Control
Disinfectants: Selection

- EPA does not currently allow “green” claims
- A 2 year EPA Pilot Project involving Design for the Environment started in fall 2010 will allow some claims
  - Spartan GS Restroom Cleaner
  - Comet Bathroom Cleaner
  - Consume Bowl Cleaner
  - Others that aren’t out yet
Disinfectants

Chlorine / Sodium Hypochlorite
- Very effective antimicrobial
- Corrosive to eyes and skin
- Damages floor finishes, carpets, clothing, etc.
- Respiratory irritant
- Environmental concerns from production, contaminants, byproducts
- Mixing can create poisonous gas

Quats
- Typically not proven effective against spores
- Not effective against some viruses
- Toxic to aquatic life
- Some quats are asthmagens

Accelerated Hydrogen Peroxide
- Superior health & environmental profile compared to bleach and quats
- Low pH when in concentrated form
Disinfecting: Issues

- Research has found links between disinfectants, superbugs and antibiotic resistance
  - Benzalkonium chloride
  - Improper use of disinfectants
  - Restrict use to high-risk areas
    - Use exactly as directed by the label instructions
Know the dwell time for the disinfectants you use?
Pre-Cleaning Tasks

Why?

- Soil and organic matter can reduce effectiveness of disinfectant by:
  - Providing shelter for the microbes to hide
  - Absorbing ingredients. Disinfectants need to be in contact with microbes to kill them
  - Changing the chemical nature of the disinfectant
Germ Control Hierarchy

1. Cleaning with a third-party certified all-purpose cleaner and a microfiber cloth can remove most germs, good for most situations

2. Sanitizing is required for some areas
   Sanitizers – “reduce, but not necessarily eliminate microorganisms . . . to levels considered safe as determined by public health codes or regulations” (99.9%)

3. Disinfectants should be used only where required or in the highest risk areas
   Disinfectants – “destroy or irreversibly inactivate all forms of microbial life but not necessarily their spores” (99.99%)
General Surface Cleaning

- Physically removes, viruses, fungi and bacteria and conditions they need to survive (e.g. organic matter)
- Accomplished with water, detergent, and abrasion of the surface
- Microfiber can enhance this process by removing up to 99% of microbes
Microfiber: Infection Control Attributes

- **Requires Less Chemical:** reduces need for disinfectants for most cleaning tasks since the fiber removes a high % of organic matter

- **Controls Cross-Contamination:** by color coding & changing mop pads after each room

- **Prevents Aerosolization of Dust:** The fibers have a static electric charge that attracts dust and holds it when dry dusting (Dust can transmit microbes)
Sanitizing

- Reduces but does not necessarily eliminate all the **bacteria** on a treated surface. Sanitizers do **not** have claims for viruses or fungi.

- Registered by EPA for:
  - Food contact surfaces - sanitizing rinses for surfaces such as dishes and cooking utensils.
  - Non-food contact surfaces – carpet, laundry, toilet bowl, etc.
Disinfecting

- Destroys – destroys or irreversibly inactivates infectious or other undesirable microbes, but not necessarily the spores of bacteria and fungi.
- Use on hard nonporous high-risk surfaces which have higher transmission rates
Disinfectants may be needed or required by law for:

- Athletic departments
- Bathrooms
- Cafeterias
- Child care areas
- Kitchens
- Nurse’s office
- Bloodborne pathogens
**Ensure Safe & Effective Work Practices**

- Allow time for disinfectants to react with the microbes to kill them (AKA - dwell, contact or kill time): follow directions for time required for the disinfectant to be wet on the surface

- Reduce quantity: use the smallest possible amount of disinfectant as recommended

- Rinse: if required, any residue may be hazardous when it comes in contact with skin
Disinfectants: Claims

- All disinfectants do not kill all types of microbes
- EPA categorizes & registers products by their *Disinfectant Claims* based on what they kill:
Disinfectants: Claims

- To comply with OSHA BBP Standard, use:
  - A tuberculocide, or
  - Product that lists the specific BBP viruses - HIV and hepatitis B

- For MRSA, H1N1(Influenza A) and other specific diseases, check the label
Benefits of Green Cleaning

- Prevents occupational exposures for custodians
- Protects the health of building occupants
- Protects the physical building
- Protects the environment
- Improves indoor environmental quality
Best Practices
Integrated Pest Management
Integrated Pest Management (IPM)

Is a common sense approach to:

• Preventing pest problems by
  • keeping pests out
  • getting rid of their food, water and shelter

• Managing pest problems by
  • using non-chemical approaches (exclusion, sanitation, traps, barriers)
  • using least-toxic pesticides when necessary (baits, gels)
  • eliminating the use of harmful pesticides (aerosols, foggers, sprays)
How Do We Control Pests?

1. Exclusion
   - Seal up entry ways
   - Remove pests’ food, water & shelter

2. Inspect and Monitor

3. Identify Pests

4. Manage Existing Problems

Routine spraying is not a part of IPM!
Keep Pests Out

Check screens for rips, tears, and holes.

Fill all holes like these…
Remove Pests’ Shelter

Clutter provides lots of hiding spots AND covers up evidence of a growing problem.

Yes, that is a roach.
Monitor for Pests

DON’T WAIT FOR THIS!

USE AN EARLY WARNING SYSTEM!
If You Have a Pest Problem

- Refer to your IPM Handbook to
  - Identify the pest
  - Determine how the pest is getting in and where it might be coming from
  - Find the best way to remove the pest
    - Baits, gels, traps, pest vacuums
  - Fill out the logs to keep track of problems and actions taken
Effects of Pesticides

- Asthma
- Cancer
- Neurological damage (ADHD)
- Immune system damage
- Damage to wildlife and the environment
Special thanks to the following for use of IPM slides:

- University of California, San Francisco School of Nursing’s California Childcare Health Program, IPM Presentation - http://www.ucsfchildcarehealth.org/html/pandr/trainingcurrmain.htm
Resources


- Environmental Working Group - http://www.ewg.org/schoolcleaningsupplies/overview

- Tools for Schools - http://www.epa.gov/iaq/schools/
For more information contact:
Carol Westinghouse
President, Informed Green Solutions
Phone: 802-626-8643
email: westies@ecoisp.org