

---

# Toxics Use Reduction for Hotels

Rick Reibstein,  
Massachusetts Office of  
Technical Assistance

---

---

# Why Care About Toxics in Your Hotel?

- Toxic exposures in hotels are not often cause for suit or regulatory priorities--but they can be
  - Protect workers and customers
  - Real green beats shallow green
  - Can cost a lot to fix, but very little to prevent
  - Attract sensitive and conscientious customers
-

---

## **After Use, Toxics become Air Pollutants, Water Pollutants or Hazardous Waste**

When being stored, Toxics are a potential exposure hazard, a complicating factor in a fire or flood, or a reason for evacuation if spilled

If spilled Toxics create costly contamination of property

When used Toxics create regulatory burdens:

- Must train employees **to use** safely

- Must document hazardous waste management

- Must report spills

- May need air and water permits for use

---

---

GOOD NEWS! Much toxics use can be avoided. PROGRAMS ACROSS U.S. and THE WORLD HAVE PROVEN THIS POINT.

*Learn about your options for using safer alternatives!*

---

---

# Chemical Management System

Focus: EFFICIENT USE AND SAFER ALTERNATIVES

Continuous education and consideration of complex trade-offs – step by step, long-term – start with simple concepts but don't stop there

Understand constituents and reducing risks to workers, emissions to air, discharges to water, generation of waste and **associated costs**

Use contract specifications and conditions, responsible suppliers

Eliminate excess use: lower purchase cost, less waste, reduced regulatory burden, less potential liability

Simply tracking use will lead to more efficiency

Assign responsibility for carrying out your policy

Reward staff for good ideas, using less or identifying alternatives – make it something you do together

---

---

# Obtaining the Information

- Learn about certifications and labels
  - Learn about chemical use yourself
  - Material Safety Data Sheet: has info. about hazards even if they don't identify the constituent. Toxic Constituent information is an evolving field.
  - Federal household products database:  
<http://hpd.nlm.nih.gov/index.htm>.
  - Industry source on ingredients:  
<http://www.cleaninginstitute.org/ingredientcentral/>
  - **QUERY SUPPLIER!** They're getting used **to it.**
-

---

# From the Household Products Database: Example

## Glade Wisp Automatic Home Fragrancer Refill-Mystery Garden

- Caution: Combustible, eye irritant. Keep out of reach of children. If product gets in eyes, rinse with plenty of water for 20 minutes. If irritation persists, contact a physician. If swallowed, do not induce vomiting. Call a physician immediately. Do not use in small confined areas without adequate ventilation. Keep out of reach of children and pets.
  - Health rating, 2 (Moderate)
  - Combustible.
  - Store in a cool, dry place with adequate ventilation. Observe good personal hygiene practices.
-

---

# Rules of Thumb

- No information is not absence of risk
  - Transparency and responsiveness are clues
  - Independence, objectivity, verification are necessary for credibility
  - Ability to explain health and safety is key - Compare facile claims -"eco-friendly" or "green" to specifics about ingredients, manufacturing processes and company history
  - Natural can be toxic, but could be good
  - Hazard is not necessarily exposure but is vital starting point for assessment
  - Consider the life-cycle, impact on all life, & future
-

---

# Aspects to consider

- Carcinogenicity, reproductive toxicity
  - Endocrine disruption
  - Skin, eye irritation
  - Neurotoxicity and organ toxicity
  - Persistence, bioaccumulation
  - Aquatic toxicity
  - Hazards in storage, waste, transportation
  - Flammability, corrosivity, reactivity
  - Precautionary Proaction
  - Hidden costs, long-term costs, impact of liabilities
  - *Surprising benefits of alternatives*
  - *Improvements in knowledge of function and purpose through evaluation of options*
-

---

# Areas of Focus

- **INDOOR AIR QUALITY**

- VOCs:

- Paints and other coatings
- Carpets
- Sealants, caulks
- Adhesives
- Furniture, wallboard
- Spray-on insulation
- Cleaners

- Dusts and vapors: Mercury, Lead, Flame Retardants, Asbestos, Pesticides, Herbicides

- Combustion Sources

---

---

# Indoor Air Quality (IAQ)

- Two components: reduce inputs of bad things to breathe and ensure good ventilation.
  - Ventilation is an energy consumer. Learn good design, smart controls and heat-exchanging ventilation. Run when needed!
  - Smart controls can include occupant and humidity sensors.
  - Ventilation can be measured by air flow or by analyzing the gases: inexpensive methods exist for both, including estimating air flow with a strip of paper and using CO<sub>2</sub> as your proxy for other air contaminants.
  - Bad air in intake area: use of chemicals, truck idling, exhaust air
  - Routinely inspect vents, belts, fans, sensors and controls: can have energy efficiency benefits as well.
-

---

# Bad Things to Breathe, 1

- Combustion sources: Sterno, gas stoves, furnace, cars. Reduce with CO monitors and by sealing ducts (also improves ventilation efficiency).
  - Paints, carpets, composite woods, adhesives, sealers, caulks. Buy these products with low or no VOC's. Avoid formaldehyde in countertops, glued wood, particleboard, insulation. Install during times of no use and allow off-gassing before enclosing. Understand certifications and labels.
-

---

## Bad Things to Breathe, 2

- Buildup of contaminants in carpets. Reduce by using removable carpets that trap what's brought in. Remove and clean regularly, or place removable pad at entrance-way over fixed carpet.
  - Cleaners. Adds to indoor air problems (and employee exposures) when used and when mixing/dispensing. Possibly in storage, too. *Many greener alternatives* – benefits include reduced worker exposure, reduced environmental impact from discharges, reduced safety concerns from storage.
-

---

# Mercury

- Bulbs, thermostats, switches, gas and water flow meters, boilers, standing pilot lights.
  - Ensure proper disposal at end of life. If you use a drum crusher: recycling rules
  - Crusher and filter will be contaminated and need to be disposed of as hazardous waste
  - Faulty seals and preparation for disposal can cause exposure and vapor emissions
  - Substitute other products when upgrading – easy to do
  - Request disclosure when purchasing.
-

---

# Integrated Pest Management

- No calendar spraying
  - Contractor tells you about the pest
  - Uses least risk approach
  - Tries nonchemical remedies first
  - Addresses routes of entry
  - Eliminate water and food attractants
  - Never apply chemicals without justification
-

---

# Polyvinyl Chloride (PVC)

- Throughout the PVC life cycle, from manufacturing, product use, and disposal or destruction by fire, it releases some of the most toxic substances including dioxins, hexachlorobenzene, metal stabilizers, and phthalates. HCl in fire. Not easily recycled.
  - Found in resilient flooring, carpet backing, scrub-able floor coverings, shower curtains, acoustical ceiling tiles, roofing membranes, window and door frames, gutters, pipes, siding.
  - Many available alternatives
-

---

# Flame retardants

- PBDEs persist and accumulate. (EPA) liver toxicity, thyroid toxicity, and neurodevelopmental toxicity. Traces found in the arctic.
  - EU restricts them under ROHS to 0.1% of separable component.
  - Request disclosure when purchasing.
  - Purchase computers w/o them – they're making them for the EU.
  - Natural fabrics are not likely to have them as they are generally more fire-resistant. Natural fabrics may be more expensive but this may be offset **by increased** durability and reduction in chemical hazard.
-

---

# Lead

- Pre-1978 paint: residences and child-occupied facilities - regulatory focus is not the limit of potential harm. Potential for civil liability or public image damage.
  - Friction and impact surfaces (windows, doors, stairs) + poor maintenance = dusts. Keep in good condition until replacement – (new windows for energy savings).
  - New regulation requiring containment of dusts in renovation. <http://www.epa.gov/fedrgstr/EPA-TOX/2008/April/Day-22/t8141.pdf>. Definition of residential structure or child-occupied facility may not cover you, but be aware of the ethical focus of this rule.
  - Be aware of lead in water: flush for a minute in the morning. Brass fittings as well as solder and old pipes can contribute.
-

---

# MORE

- Cooling water treatment chemicals – Nonchemical and less toxic alternatives
  - Pools – storage hazards, alternatives, overuse, demand for nonirritating **chemicals**
  - Organic lawn care
  - Dry cleaning and laundering alternatives (wet cleaning, ozone)
  - Endocrine disruptors (e.g., BPA in plastics)
  - Asthmagens (e.g., formaldehyde-containing items, diisocyanate insulation, diesel exhaust)
  - PCBs (in caulk, fabulon floor finish from '50's)
-

---

# Dry cleaning and laundering

- From CBS news story, (Early Show, 2/23/07) “In the first study of its kind, Consumer Reports magazine measured PERC emissions from freshly dry-cleaned blazers and the results, Smith says, were "startling.””
  - Safer chemical alternative processes available
  - “Wet cleaning” and CO2 processes markedly safer
  - For laundering, reduce energy water and chemical use with ozone system, or systems that use environmentally preferable soaps and minimize water consumption
-

---

# Important Certifying Bodies

- Greenguard
  - Green Label
  - Green Seal
  - Ecologo
  - Know what criteria certifiers use – know who they are
-

---

# EPA Criteria for Green Certifiers

- An open, public process that involves key stakeholders (businesses, environmental and consumer groups, states etc.) in developing its criteria or standards.
  - award criteria, assumptions, methods and data used to evaluate the product or product categories that are transparent (i.e., they are publicly available, easily accessed and understandable to the lay person).
  - a system of data verification and data quality.
  - a peer review process (with representation of all stakeholders) for developing the standards or criteria.
  - criteria which are developed based on a "systems" or life cycle approach (i.e., "cradle to grave").
-

- an outreach program to educate the consumer, which includes clear communications to consumers that provide key information concerning environmental impacts associated with the product.
- an established goal of updating standards or criteria as technology and scientific knowledge advance.
- authority to inspect the facility whose product is certified to ensure compliance with the standards or criteria.
- testing protocols for the products that are certified which ensure testing is conducted by a credible institution.
- access to obtaining the seal by small and medium sized companies (e.g., the cost of the seal is not so high as to prevent access by companies).
- compliance with the Federal Trade Commission's (FTC) Guides for the Use of Environmental Marketing Claims.

ALSO: ISO standard, Global Ecolabelling Network,  
Ecowarranty

---

## Be Aware of Available Advice – e.g., Environmental Working Group

**GREEN CLEANERS:** Once you know the ingredients, you should avoid these seven:

2-butoxyethanol (or ethylene glycol monobutyl ether) and other glycol ethers  
Alkylphenol ethoxylates (some common ones are: nonyl- and octylphenol ethoxylates, or non- and octoxynols)

Dye (companies often hide chemical information behind this word; when it's unknown, it's safer to skip it)

Ethanolamines (such as: mono-, di-, and tri-ethanolamine)

Fragrance

Pine or citrus oil (on smoggy or high ozone days, compounds in the oils can react with ozone in the air to form the carcinogenic chemical formaldehyde)

---

Quaternary ammonium compounds (look out for these: alkyl dimethyl benzyl ammonium chloride (ADBAC), benzalkonium chloride, and didecyl dimethyl benzyl ammonium chloride)

---

# And what your enviro-conscious customers might be looking for

<http://www.natural-living-for-women.com/green-cleaning-products.html>

Some more easily available brands are switching to safer and more eco friendly formulas and are seeking certification by the EPA. This allows them to use the DfE (Design for the Environment, a division of the EPA) logo.

Products with this logo have been reviewed by the DfE scientific review team for health and environmental safety. The [DfE list](#) of approved products contains companies like Bissell, Chlorox and Method and since this is a relatively new certification I expect others will follow.



---

# Green Seal's Green Lodging Standard

- **3.4 Waste Water Management**

- **3.4.1** Property shall demonstrate that chlorinated chemicals are used only where there is no less toxic alternative, and only in minimal amounts.

- **3.4.2** Property shall use automatic dishwashing detergent that is biodegradable, does not contain NTA (nitrilotriacetic acid), and does not contain chlorine bleach.

- **3.4.3** Property shall use non-phosphate, nontoxic, biodegradable, concentrated liquid or powder laundry detergents.

- **3.4.4** Property shall use non-phosphate, nontoxic, biodegradable, concentrated liquid or powder cleaning products.

- **3.4.5** Property shall seek out and explore the use of organic insecticides, fertilizers and biocides and/or integrated pest management (IPM) techniques.

---

---

## **3.5 Hazardous Substances**

**3.5.1** Property shall seek to replace hazardous substances with less hazardous alternatives (e.g., cleaning supplies, detergents, adhesives, paints, pesticides, etc.).

Purchases of hazardous materials will be based on accurate records of the current product inventory to avoid over-purchases and unnecessary storage.

**3.5.2** All chemical storage and mixing areas for housekeeping products shall allow for adequate and secure product storage with water in the space for mixing concentrated chemicals, have drains plumbed for the appropriate disposal of liquid waste products, and be equipped with access to fresh air (e.g., outside venting or air filtration unit).

---

- 
- **3.5.3** Drums and storage containers/areas located on the property shall be clearly marked, use spill containment measures to collect spills/drips/leaching of chemicals, and shall be checked regularly for leaks and replaced as necessary.
  
  - **3.5.4** Architectural paint purchased for use on the property shall not contain the following heavy metals or toxic organic substances:
    - Heavy Metals, Toxic Organic Substances: antimony, cadmium hexavalent chromium, lead, mercury, acrolein, acrylonitrile, benzene, 1,2-dichlorobenzene, ethylbenzene, formaldehyde, isophorone, methylene chloride, methyl ethyl ketone, methyl isobutyl ketone, naphthalene, phthalate esters, toluene (methylbenzene), 1,1,1-trichloroethane vinyl chloride
-

---

**3.6.5** Purchases of products with VOC off-gassing potential shall be evaluated and lower VOC products purchased where available. The VOC content shall not exceed:

Paints: Interior Flat 50 g/l; Interior Non-Flat 150 g/l; Exterior Flat 100 g/l; Exterior Non-Flat 200 g/l; Anti-Corrosive All Finishes 250 g/l. General Purpose Cleaning Products: less than 10% VOCs by weight.

Additional products that shall be considered include other building materials, rugs and carpets, furniture and furnishings, laminated products, adhesives, sealants, caulking compounds, and office supplies. An exception may be made for limited-use architectural paints used in historic areas or high-abuse areas if compliant options are not available.

---

---

# Contact Information

- Rick Reibstein
  - Massachusetts Office of Technical Assistance, Executive Office of Energy and Environmental Affairs
  - 617 626 1062
  - [Rick.reibstein@state.ma.us](mailto:Rick.reibstein@state.ma.us)
-