Clean, Green & Healthy
Identifying Potential Environmental Health Toxins at Home

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New York State Pollution Prevention Institute (NYSP2I)
Rochester Institute of Technology (RIT)

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Agenda

• Why should we be concerned about environmental health?
• Product safety regulations
• Chemicals that have been found in products
  – Fragrance
  – Cleaners
  – Personal care products
  – Foam products
Why should we be concerned about environmental health?

We are exposed to hundreds of chemicals every day – children are exposed to some chemicals more than adults and exposed to chemicals that adults may not be exposed to.

Chemicals enter our body – breathe them in, they pass through our skin, or we eat them – and many are stored in body fat.

Children are more vulnerable & at higher risk of suffering effects than adults.
Product Safety Regulations

- Companies do not have to disclose to consumers what is in toys and other children’s & consumer products
- Consumer Product Safety Commission
  - Protects the public from unreasonable risk from consumer products
  - Protects from products that pose fire, electrical, chemical, or mechanical hazard or can harm children
  - Operates voluntary recall program
- CPSC can’t test products before sale to ensure they are safe
Fragrance

What is the concern?

• We are exposed to a lot of scented products – personal care, cleaners, air fresheners, laundry soap, etc.
• Usually made up of a blend of chemicals
• May be from natural or synthetic sources

<table>
<thead>
<tr>
<th>Phthalates</th>
<th>Musks</th>
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</thead>
<tbody>
<tr>
<td>Solvents/carriers for chemicals that create the scent</td>
<td>Man-made chemicals that replicate musk scents originally obtained from deer &amp; ox</td>
</tr>
<tr>
<td><strong>Also in</strong> nail polish &amp; moisturizers</td>
<td></td>
</tr>
<tr>
<td><strong>Look for</strong> fragrance, -phthalate, parfum on the product label</td>
<td><strong>Look for</strong> fragrance, synthetic musk, musk on the product label</td>
</tr>
<tr>
<td><strong>Linked to</strong> diabetes and asthma, potential risks to reproductive system &amp; thyroid</td>
<td><strong>Potential hormone disruptors</strong> that may <strong>break down the body’s defenses against other chemicals</strong></td>
</tr>
</tbody>
</table>

Fragrance

How are we exposed?

- **Breathe it in** – perfume, cleaners, air freshener, scented candles, other airborne products
- **It is absorbed through the skin** – shampoo, soap, lotion, other personal care products, laundry soap on clothes & bed sheets

Can hide many chemicals as the composition does not have to be disclosed on the label

During use, fragrance can become airborne and is easily inhaled

Nearly 38% of Americans report adverse effects when exposed to some kind of fragranced product

a: This statistic is based on the observation that nearly 38% of Americans report adverse effects when exposed to some kind of fragranced product.
Fragrance

What you can do

✗ Avoid products with “-phthalate”, “musk”, “parfum”, or “fragrance” as an ingredient
✗ Avoid air fresheners and scented candles
✓ Choose fragrance free products labeled “free of perfumes and dyes,” “fragrance free”, or “unscented”
✓ Use homemade unscented cleaners & personal care products
✓ Choose naturally scented products
Cleaners

What is the concern?

- Many cleaning product ingredients are linked to health effects
  - Many cause skin, nose, throat, and eye irritation and/or are suspected endocrine disruptors
- Cleaning products are released to the environment through evaporation and rinsing down the drain
  - Many chemicals are not removed from water before it is discharged to the environment
  - Phosphorus can contribute to nutrient-loading in water bodies, affecting water quality
  - May have other negative effects on plants and animals living in water
  - May accumulate in the food chain
Cleaners Used Around the House

- **Glass & Surface Cleaners**
  - Oven Cleaners, Dishwashing Soap

- **Disinfectants**
  - Floor & Carpet Cleaners

- **Floor & Carpet Cleaners**
  - Stain Removers

- **Furniture Polish, Laundry Detergents**

- **Toilet Bowl Cleaners, Mildew Removers, Air Fresheners, Drain Openers**

Cleaners

What you can do

✓ Choose cleaners without harmful chemicals
  X Avoid cleaners labeled “danger” or “poison”
  X Avoid air fresheners & choose “fragrance-free”
  ✓ Choose third-party certified cleaning products

✓ Choose cleaners with environmentally preferable packaging

✓ Make your own cleaning products

✓ Use & store cleaners safely
  ✓ Use in well ventilated areas away from pregnant women, infants, children, seniors, people with asthma, and others who may be sensitive
  ✓ Follow the manufacturer’s use, storage, and disposal instructions carefully

✓ Use online tools to help you choose safer products
What’s under your kitchen sink, in your garage, in your bathroom, and on the shelves in your laundry room? Learn more about what’s in these products, about potential health effects, and about safety and handling.

Household Products Database
http://householdproducts.nlm.nih.gov/

Search for cleaning products by name
• Info available: Product info, manufacturer, health effects, handling/disposal, ingredients
http://www.ewg.org/guides/cleaners

Search for cleaning products by name
Search for cleaning product types
Search for companies
Search for ingredients
Windex Original Glass Cleaner with Ammonia-D

Asthma/Respiratory: Moderate Concern
Skin Allergies & Irritation: Some Concern
Developmental & Reproductive Toxicity: Low Concern
Cancer: Low Concern
Environment: Moderate Concern

How does it rate: Scores for similar cleaners ranged from A to F. Search for a better General Purpose Cleaner.

Top Scoring Factors: May contain ingredients with potential for acute aquatic toxicity; respiratory effects; skin irritation/allergies/damage.

Product ingredients

Known Ingredients

Ingredient  Health, Environment, and Disclosure Concerns  Score
AMMONIUM HYDROXIDE  High Concern: acute aquatic toxicity; Moderate Concern: respiratory effects; Some Concern: damage to vision, skin irritation/allergies/damage  F
HYDROXYETHYLAMMONIUM ETHANOATE  Moderate Concern: skin irritation/allergies/damage  D

Personal Care Products

Use in the US

• On average, women use 12 products containing 168 ingredients every day
• Men use 6 products with 85 ingredients
• Children are exposed to an average of 61 ingredients daily

What’s in Your Products?

**SHAMPOO**
Avg number of chemicals: 15
Possible side effects: irritation, possible eye damage

**HAIRSPRAY**
Avg number of chemicals: 11
Possible side effects: allergies, irritation to eyes, nose, and throat; hormone disruption

**PERFUME**
Avg number of chemicals: 250
Possible side effects: mouth, throat, and eye irritation; nausea; linked to kidney damage

**FAKE TAN**
Avg number of chemicals: 22
Possible side effects: rashes, irritation, hormone disruption

**BODY LOTION**
Avg number of chemicals: 32
Possible side effects: rashes, irritation, hormonal disruption

**NAIL VARNISH**
Avg number of chemicals: 31
Possible side effects: linked to fertility issues and problems in developing babies

**EYESHADOW**
Avg number of chemicals: 26
Possible side effects: linked to cancer, infertility; hormonal disruptions and damage to the body’s organs

**BLUSH**
Avg number of chemicals: 16
Possible side effects: rashes, irritation, hormonal disruption

**FOUNDATION**
Avg number of chemicals: 24
Possible side effects: allergies, disrupts immune system, links to cancer

**LIPSTICK**
Avg number of chemicals: 33
Possible side effects: allergies, links to cancer

**DEODORANT**
Avg number of chemicals: 15
Possible side effects: eye, skin, and lung irritation; headache; dizziness; respiratory problems

http://www.dailymail.co.uk/femail/beauty/article-1229275/Revealed-515-chemicals-women-bodies-day.html
Ingredients in Children’s Personal Care Products

2007 survey of 3,300 parents to identify the personal care products their children use

The survey found

- Infants are exposed to **45 chemicals every day** & 40% have not been found safe for kids
- 82% are exposed to 1+ ingredients linked to **brain and nervous system damage**
- 69% are exposed to 1+ **endocrine disruptor**
- 4% are exposed to 1+ ingredients linked to **cancer**
- 41% of products warn “keep out of reach of children”
Case Study: J&J Baby Shampoo

- March 2009: Compact for Safe Cosmetics reports that Johnson’s baby shampoo contains 2 cancer causing chemicals that aren’t listed on the label
- October 2011: J&J to phase out the carcinogenic preservatives from baby products
- January 2014: cancer causing preservatives replaced, will start seeing the product on store shelves in first half of 2014
Revising a Formula for Baby Shampoo

Responding to pressure from consumers’ groups, Johnson & Johnson revised the ingredients in its baby shampoo to remove a formaldehyde-releasing preservative called quaternium-15.

**Johnson's No More Tears Baby Shampoo**

**OLD FORMULATION**

Ingredients: Water, Cocamidopropyl Betaine, PEG-80 Sorbitan Laurate, Sodium Trideceth Sulfate, PEG-150 Distearate, Fragrance, Tetrasodium EDTA, Polyquaternium-10, Quaternium-15, Sodium Hydroxide, Citric Acid, Yellow 10, Orange 4.

**REMOVED:**
Quaternium-15 *a formaldehyde-releasing preservative*

**NEW FORMULATION**

Ingredients: Water, PEG-80 Sorbitan Laurate, Cocamidopropyl Betaine, Sodium Trideceth Sulfate, PEG-150 Distearate, Phenoxyethanol, Glycerin, Citric Acid, Fragrance, Sodium Benzoate, Tetrasodium EDTA, Polyquaternium-10, Ethylhexylglycerin, Sodium Hydroxide, Potassium Acrylates Copolymer, Yellow 6, Yellow 10.

**ADDED:**
- Potassium Acrylates Copolymer *helps maintain proper shampoo thickness*
- Phenoxyethanol, Sodium Benzoate and Ethylhexylglycerin *components of the new preservative system*
- Glycerin *helps with moisturization*

Personal Care Products

What you can do

- Eliminate unnecessary products
- Prioritize high exposure, frequently used products for replacement
- Choose organic products
- Buy from companies you trust
- Make your own products
- Choose products without harsh chemicals
- Consider if the ingredient is necessary – i.e. Does hand soap have to be antimicrobial? Does face soap have to be pH balanced? Does the scent matter?
- Use tools like SkinDeep to help you choose safer products
Skin Deep Cosmetics Database
http://www.ewg.org/skindeep
Search for personal care products by name
Search for personal care product types
Search for companies
Search for ingredients
Tips & ingredient facts
Johnson's Baby Bedtime Bubble Bath & Wash

**Ingredient Concerns:**

- Overall Hazard
- Cancer
- Developmental & reproductive toxicity
- Allergies & immunotoxicity
- Use restrictions

**Other HIGH concerns:** Endocrine disruption, Multiple, additive exposure sources, Contamination concerns, Irritation (skin, eyes, or lungs), Miscellaneous, Occupational hazards; **Other MODERATE concerns:** Biochemical or cellular level changes, Organ system toxicity (non-reproductive); **Other LOW concerns:** Enhanced skin absorption, Data gaps, Ecotoxicology

**Ingredient Concerns Table:**

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Concerns</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROPYL PARABEN</td>
<td>Developmental/reproductive toxicity, Ecotoxicology, Endocrine disruption, Allergies/immunotoxicity, Miscellaneous, Use restrictions</td>
<td>10</td>
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</tbody>
</table>
### Ingredient Concerns

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Concerns</th>
<th>Score</th>
<th>Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROPYLPARABEN</td>
<td>Developmental/reproductive toxicity, Ecotoxicology, Endocrine disruption, Allergies/immunotoxicity, Miscellaneous, Use restrictions</td>
<td>10</td>
<td>Limited</td>
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<tr>
<td>FRAGRANCE</td>
<td>Ecotoxicology, Allergies/immunotoxicity, Irritation (skin, eyes, or lungs), Miscellaneous, Organ system toxicity (non-reproductive)</td>
<td>8</td>
<td>Fair</td>
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<tr>
<td>PEG-80 SORBITAN LAURATE</td>
<td>Allergies/immunotoxicity, Contamination concerns (ETHYLENE OXIDE, 1,4-DIOXANE, ETHYLENE OXIDE, 1,4-DIOXANE), Organ system toxicity (non-reproductive)</td>
<td>5</td>
<td>Fair</td>
</tr>
<tr>
<td>COCAMIDOPROPYL BETAINEN</td>
<td>Ecotoxicology, Allergies/immunotoxicity, Contamination concerns (COCAMIDOPROPYL DIMETHYLAMINE, 3-DIMETHYLAMINOPROPYLAMINE, NITROSAMINES-in the presence of nitrosating agents), Use restrictions</td>
<td>4</td>
<td>Fair</td>
</tr>
<tr>
<td>METHYLPARABEN</td>
<td>Biochemical or cellular level changes, Endocrine disruption, Allergies/immunotoxicity, Use restrictions</td>
<td>4</td>
<td>Limited</td>
</tr>
<tr>
<td>PHENOXYETHANOL</td>
<td>Allergies/immunotoxicity, Irritation (skin, eyes, or lungs), Organ system toxicity (non-reproductive), Occupational hazards, Use restrictions</td>
<td>4</td>
<td>Limited</td>
</tr>
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</table>
EWG’s Guide to Sunscreens

http://www.ewg.org/2013sunscreen/

• Rates the safety and efficacy of 1,800 SPF products
• Products with high ratings provide broad spectrum, long lasting protection, with ingredients that pose low human health concerns
• Anticipate 2014 released mid-May
Foam Products

What is the concern?

- **Chemical flame retardants** are added to products to make them less likely to catch fire and burn
- These chemicals are released from the product they’re in, and we **inhale them or ingest dust** that contains them
- **Children’s exposure may be greater than adult’s**

**Bromine** is toxic to the liver, brain, reproductive system & may affect thyroid function

**High levels of antimony** can cause fertility problems and lung cancer in animals

**Chlorinated compounds** may cause cancer; damage to the liver, kidney, brain, and testes; and reproductive harm
Flame Retardants

What children’s products typically contain them?

Foam Products

Car Seats

Sleepwear
Sleepwear & Flame Retardants

Children’s sleepwear 9mo-14yr must be flame resistant

Two ways to do this:

1. Snug fitting cotton or cotton blend
2. Flame resistant materials
   • Polyester or other materials that are naturally flame resistant
   • Chemical flame retardant is applied

No or negligible cost difference

Sleepwear Tips

Sleepwear smaller than 9 months is exempt

Look for yellow tag when purchasing snug-fitting sleepwear

Don’t buy oversized snug-fitting sleepwear

Not advised for baby to sleep in loose, non flame resistant, clothes
Sleepwear Labels
Flame Retardants

Many household products typically contain them

carpet
foam furniture
electronics

curtains
Flame Retardants

Actions you can take

✓ Infants and pregnant women should avoid spending significant time on products treated with flame retardants

✓ Choose safer crib mattresses

X Avoid children chewing on electronic & foam products, including remote controls

✓ Vacuum your home regularly with a HEPA filter

✓ Dust your home regularly

✓ Wash foam products frequently

✓ Inspect and replace foam items when they start to rip, tear, or degrade

choose soft pillows (above) instead of hard, shaped pillows (below) as soft pillows are less likely to contain FRs
Safer Product Tips

- Use safer versions of **high exposure and frequently used** products
- Only buy **products you really need and will use**
- Consider **purchasing gently used toys/products and accept hand me downs** – check recall notices to ensure products meet safety standards
- Replace toys and products when they start to **show signs of wear**
- **Read product labels before purchasing** to understand the materials and how to use, clean, and dispose of the product
- **Find brands you trust** and shop from them
- **Donate** used/unused toys and products
Upcoming Events

March 4

Webinar Series
1hr presentation followed by Q&A starting at 2:00 on the dates below

How Green is Your Clean?
Are the products you use to clean your house affecting your health?
Learn about the household cleaning product choices you have to make your home clean and safe for your family.

March 18 How Green is Your Clean?

March 26 Safer Household Products

April 2 Hazardous Waste at Home

April 9 Potential Hidden Dangers of Personal Care Products

Contact NYSP2I at greenhomes@rit.edu to register

March 26, 7-9pm
Breast Cancer Coalition of Rochester, University Ave

Clean, Green, & Healthy: Choosing Safer Household and Personal Care Products
Learn how to identify and protect yourself and your family from potential health hazards found in products around your home.

March 26, 7-9pm
1hr presentation followed by Q&A
Kate Winnebeck, LCACP
Sr. Environmental Health & Safety Specialist
Email: kate.winnebeck@rit.edu
Phone: 585-475-5390

New York State Pollution Prevention Institute
http://www.nysp2i.rit.edu
Why should pregnant women be concerned about environmental health?
Johns Hopkins Women’s and Children’s Health Policy Center, Environmental Toxicants and Maternal and Child Health: An Emerging Public Health Challenge


Critical Window

Children are Vulnerable
USEPA, Office of Children’s Health Protection, [http://www.epa.gov/aboutepa/ochp.html](http://www.epa.gov/aboutepa/ochp.html)
Landrigan, et. al., Assessing the Effects of Endocrine Disruptors in the National Children’s Study, Environmental Health Perspectives, 111:13, October 2003.

Endocrine Disruption

Consumer Product Safety Improvement Act
USCPSC, CPSIA, available at [http://www.cpsc.gov/about/cpsia/cpsia.html](http://www.cpsc.gov/about/cpsia/cpsia.html)

Bisphenol A
Vendenberg, et. al., Human exposure to BPA, Reproductive Toxicology, 24 (2007), 139-177
National Toxicology Program, Bisphenol A fact sheet, [http://www.niehs.nih.gov/health/assets/docs_a_e/bisphenol-a-factsheet.pdf](http://www.niehs.nih.gov/health/assets/docs_a_e/bisphenol-a-factsheet.pdf)
Phthalates
2Engel, S, et. al., Prenatal Phthalate Exposure is Associated with Childhood Behavior and Executive Functioning, Env Health Persp, 118:4, April 2010.
3Swan, S., Prenatal phthalate exposure and reduced masculine play in boys, Int J Androl, 2010 April, 33(2): 2590269
5Whyatt, R., et. al., Maternal Prenatal Urinary Phthalate Metabolite Concentrations and Child Mental, Psychomotor, and Behavioral Development at 3 years of age, Env Health Persp, 120:2, Feb 2012
ASTDR, ToxFAQs, DEHP http://www.atsdr.cdc.gov/toxfaqs/tf.asp?id=377&tid=65

Phthalates & Toys
http://www.cpsc.gov/PageFiles/126540/toxicityDNOP.pdf

Metals & Toys

Flame Retardants
United States Environmental Protection Agency, PBDEs, http://www.epa.gov/oppt/pbde/
<table>
<thead>
<tr>
<th>Slide Reference(s)</th>
</tr>
</thead>
</table>
| **Car Seats and Brominated Flame Retardants**  
United States Environmental Protection Agency, PBDES, [http://www.epa.gov/oppt/pbde/](http://www.epa.gov/oppt/pbde/)  
| **Sleepwear & Flame Retardants**  
| **Wood Toys & Furniture**  
ASTDR, Formaldehyde ToxFAQs, [http://www.atsdr.cdc.gov/tfacts111.pdf](http://www.atsdr.cdc.gov/tfacts111.pdf) |
| **Fabrics**  
Washington Toxics Coalition, [http://watoxics.org/chemicals-of-concern/perfluorinated-compounds-pfcs](http://watoxics.org/chemicals-of-concern/perfluorinated-compounds-pfcs)  
| **Personal Care Product Safety in the US**  
FDA Recall Policy for Cosmetics, [http://www.fda.gov/Cosmetics/ProductandIngredientSafety/RecallsAlerts/ucm173559.htm](http://www.fda.gov/Cosmetics/ProductandIngredientSafety/RecallsAlerts/ucm173559.htm)  
Ingredients Prohibited & Restricted by FDA Regulations, [http://www.fda.gov/Cosmetics/ProductandIngredientSafety/SelectedCosmeticIngredients/ucm127406.htm](http://www.fda.gov/Cosmetics/ProductandIngredientSafety/SelectedCosmeticIngredients/ucm127406.htm)  
| **Personal Care Product Use**  
### Slide Reference(s)

**Ingredients of Concern**
- FDA Parabens, [http://www.fda.gov/Cosmetics/ProductandIngredientSafety/SelectedCosmeticIngredients/ucm128042.htm](http://www.fda.gov/Cosmetics/ProductandIngredientSafety/SelectedCosmeticIngredients/ucm128042.htm)
- Agency for Toxic Substances and Disease Registry, Public Health Statements
- National Library of Medicine, Hazardous Substances Database

**Ingredients in Children’s Personal Care Products**
Environmental Working Group, Hazardous and Untested Chemicals in Children’s Products, [http://www.ewg.org/files/Child%27sStudyAttachment.pdf](http://www.ewg.org/files/Child%27sStudyAttachment.pdf)

**Case Study: J&J Baby Shampoo**