Clean, Green & Healthy
Identifying Potential Environmental Health Toxins in Cleaners & Personal Care Products

Kate Winnebeck
Sr. Environmental Health & Safety Specialist

Rochester City School District
February 4, 2015

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

Copyright © 2015 Rochester Institute of Technology (RIT)
Contains portions of some materials initially prepared with support of the US Environmental Protection Agency Great Lakes Restoration Initiative in the amount of $104,192 and by the NYS Pollution Prevention Institute through a grant from the NYS Department of Environmental Conservation.
Disclaimer

Although the information in this document has been funded wholly or in part by the United States Environmental Protection Agency under assistance agreement NE97201911-0 to the Rochester Institute of Technology, it has not gone through the Agency’s publications review process and, therefore, may not necessarily reflect the views of the Agency and no official endorsement should be inferred.

Any opinions, findings, and conclusions or recommendations expressed in this presentation and/or discussion do not necessarily reflect the views of the New York State Pollution Prevention Institute (NYSP2I) or the New York State Department of Environmental Conservation (NYSDEC).
Cleaners Used Around the House

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

Glass & Surface Cleaners

Disinfectants

Floor & Carpet Cleaners

Furniture Polish, Laundry Detergents

Oven Cleaners, Dishwashing Soap

Stain Removers

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

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
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

AMMONIUM HYDROXIDE: High Concern: acute aquatic toxicity; Moderate Concern: respiratory effects; Some Concern: damage to vision, skin irritation/allergies/damage
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>
</tr>
</thead>
<tbody>
<tr>
<td>Solvents/carriers for chemicals that create the scent Also in nail polish &amp; moisturizers</td>
<td>Man-made chemicals that replicate musk scents originally obtained from deer &amp; ox</td>
</tr>
<tr>
<td>Look for fragrance, -phthalate, parfum on the product label</td>
<td>Look for fragrance, synthetic musk, musk on the product label</td>
</tr>
<tr>
<td>Linked to diabetes and asthma, potential risks to reproductive system &amp; thyroid</td>
<td>Potential hormone disruptors that may break down the body’s defenses against other chemicals</td>
</tr>
</tbody>
</table>

EPA http://www.epa.gov/oppt/existingchemicals/pubs/actionplans/phthalates.html
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
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


Personal Care Product Safety in the US

- Personal care products & cosmetics are regulated by the Food & Drug Administration
- Cosmetics & ingredients are not tested by the FDA before sale
  - US: 11 chemicals banned/limited
  - Europe: 1,100 chemicals banned/limited
- Companies are responsible for ensuring product safety before they go to market
- FDA does not have authority to recall products containing a toxic chemical

Ingredients Prohibited & Restricted by FDA Regulations, 
http://www.fda.gov/Cosmetics/ProductandIngredientSafety/SelectedCosmeticIngredients/ucm127406.htm
Europe List of Substances Prohibited in Cosmetics Products, 
Body Burden

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

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

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

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

**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

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

**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

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

http://www.dailymail.co.uk/femail/beauty/article-1229275/Revealed--515-chemicals-women-bodies-day.html
Nail Polish

- May contain the “toxic trio”: dibutyl phthalate, toluene, and formaldehyde
- DBP is prohibited in cosmetics in Europe because it’s a possible human reproductive or developmental toxin¹
- USEPA restricts toluene in drinking water because it can cause nervous system disorders and damage the liver and kidneys²
- Formaldehyde is “known to be a human carcinogen”³

<table>
<thead>
<tr>
<th>Dibutyl phthalate (DBP)</th>
<th>Toluene</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adds flexibility</td>
<td>Helps suspend color</td>
</tr>
<tr>
<td>Moisturizing sheen</td>
<td>Helps form a smooth finish</td>
</tr>
<tr>
<td>Helps dissolve other ingredients</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Formaldehyde</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reproductive &amp; developmental toxin, linked to feminizing effects in boys</td>
<td>Can cause headaches, dizziness, fatigue and is a possible reproductive &amp; developmental toxin</td>
</tr>
<tr>
<td></td>
<td>Known carcinogen; irritates the eyes, nose, and throat; can cause skin irritation</td>
</tr>
</tbody>
</table>

Nail Polish

- Look for brands that advertise as “three free” on the product packaging or company website
- May contain other ingredients of concern

<table>
<thead>
<tr>
<th>Organic Solvents</th>
<th>Acrylics</th>
<th>Prevents Chipping</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Xylene</strong>: toxic by all routes of exposure, can cause headache, dizziness, skin and eye irritation, kidney and liver impairment&lt;sup&gt;1&lt;/sup&gt;; very persistent in air&lt;sup&gt;2&lt;/sup&gt;</td>
<td><strong>Methyl methacrylate</strong>: vapors irritate eyes, nose, and throat; irritates skin&lt;sup&gt;1&lt;/sup&gt;; toxic to fish&lt;sup&gt;2&lt;/sup&gt;</td>
<td><strong>Benzyl acetate</strong>: irritating to skin, eyes, and respiratory tract&lt;sup&gt;1&lt;/sup&gt;; toxic to fish, very persistent in air&lt;sup&gt;2&lt;/sup&gt;</td>
</tr>
<tr>
<td><strong>Methyl ethyl ketone</strong>: vapors irritate eyes, nose &amp; throat&lt;sup&gt;1&lt;/sup&gt;; very persistent in air&lt;sup&gt;2&lt;/sup&gt;</td>
<td><strong>Ethyl methacrylate</strong>: vapors irritate eyes and respiratory system, irritates skin&lt;sup&gt;1&lt;/sup&gt;; toxic to fish&lt;sup&gt;2&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td><strong>Acetone</strong>: vapors irritate eyes, nose, and throat&lt;sup&gt;1&lt;/sup&gt;; very persistent in air&lt;sup&gt;2&lt;/sup&gt;</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<sup>2</sup> PBT Profiler, [http://www.pbtprofiler.net](http://www.pbtprofiler.net)
Body Burden

**SHAMPOO Old Spice High Endurance**
Number of chemicals: 13 + fragrance
Possible side effects: cancer; toxic to organs; allergies; & irritation

**SHAVING CREAM Edge Shave Gel Clean & Refreshing**
Number of chemicals: 13
Possible side effects: affects development, reproductive system and organs; hormone disruption; allergies & irritation; persistent & bioaccumulative

**DEODORANT Axe Antiperspirant/Deodorant - Phoenix**
Number of chemicals: 9 + fragrance
Possible side effects: affects development, nervous & reproductive systems, and organs; hormone disruption; cancer; allergies & irritation

**COLOGNE Hollister Newport Beach**
Number of chemicals: 8 + fragrance
Possible side effects: affects development, nervous & reproductive systems, and organs; hormone disruption; cancer; allergies & irritation; persistent & bioaccumulative

**HAIR GEL Redkin for Men Maneuver**
Number of chemicals: 27 + fragrance
Possible side effects: biochemical or cellular level changes; affects development, reproductive system and organs; cancer; endocrine disruption; allergies & irritation; persistent & bioaccumulative

**FACIAL SOAP Clean & Clear Facial Scrub, Morning Burst**
Number of chemicals: 27 + fragrance
Possible side effects: biochemical or cellular level changes; affects development, reproductive system and organs; cancer; hormone disruption; allergies & irritation; persistent & bioaccumulative

**MOUTHWASH Listerine Cool Mint**
Number of chemicals: 12
Possible side effects: affects development, nervous & reproductive systems, and organs; persistent & bioaccumulative

**SOAP Irish spring**
Number of chemicals: 15 + fragrance
Possible side effects: cancer; toxic to organs; allergies & irritation; persistent & bioaccumulative

Product & ingredient info, including number of chemicals & possible side effects from EWG's SkinDeep at [www.ewg.org/skindeep](http://www.ewg.org/skindeep), accessed 5/28/13
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
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 – ie. 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
### Pantene Pro-V Classic Shampoo, All Hair Types

**Score:** 4

**Data available:** Limited

**Product Summary**

**Ingredient Concerns**

<table>
<thead>
<tr>
<th>Ingredient Concerns</th>
<th>low</th>
<th>moderate</th>
<th>high</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall Hazard</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cancer</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Developmental &amp; reproductive toxicity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Allergies &amp; immunotoxicity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use restrictions</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Other HIGH concerns:** Multiple, additive exposure sources, Contamination concerns, Irritation (skin, eyes, or lungs), Miscellaneous, Persistence and bioaccumulation; **Other MODERATE concerns:** Organ system toxicity (non-reproductive); **Other LOW concerns:** Enhanced skin absorption, Cancer, Data gaps, Ecotoxicology, Neurotoxicity

**Data last updated:** October 2012

**EWG's 2012 Holiday Gift Box Is Here!**

Filled with brand new tips &...
### Ingredient Concerns

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Concerns</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>FRAGRANCE</td>
<td>Ecotoxicology, Allergies/immunotoxicity, Irritation (skin, eyes, or lungs), Miscellaneous, Organ system toxicity (non-reproductive)</td>
<td>8</td>
</tr>
<tr>
<td>METHYLISOTHIAZOLINONE</td>
<td>Ecotoxicology, Allergies/immunotoxicity, Irritation (skin, eyes, or lungs), Neurotoxicity, Use restrictions</td>
<td>5</td>
</tr>
<tr>
<td>METHYLCHLORISOTHIAZOLINONE</td>
<td>Cancer, Ecotoxicology, Allergies/immunotoxicity, Irritation (skin, eyes, or lungs), Use restrictions</td>
<td>5</td>
</tr>
<tr>
<td>COCAMIDE MEA</td>
<td>Contamination concerns (NITROSAMINES-in the presence of nitrosating agents), Use restrictions</td>
<td>1</td>
</tr>
</tbody>
</table>

**Data available:** Limited

**Data last updated:** October 2012

**EWG's 2012 Holiday Gift Box Is Here!**

Filled with brand new tips & products for a healthier, greener new year – supplies are limited!

**Donate Now!**

**Sign Up!**

Stay informed by signing up to receive EWG's free electronic newsletter!
Example Baby Shampoos & Wash

1. Burt's Bees Soothing Naturals
2. Earth's Best Baby Shampoo & Body Wash
3. Aveeno Baby Moisturizing Body Wash & Shampoo
4. Johnson's Baby Vanilla Oatmeal Baby Wash
5. Baby Magic Hair & Body Wash
6. pHisoderm Baby Moisture Wash
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
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