Potential Hidden Dangers of Personal Care Products

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Disclaimer

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), the New York State Department of Environmental Conservation (NYSDEC), or the US Environmental Protection Agency (EPA).
Agenda

• Personal care product safety in the US
• Potential EHS effects of personal care products
• Ingredients of concern in personal care products
  – Where are they found?
  – Why are they used?
  – Why are they a concern?
  – Ways to limit our and the environment’s exposure
• Children’s personal care product use
• Ecofriendly products
• Safe Cosmetics Act of 2011
• Resources for more information

Funding provided by 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.
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.

Safer Household Products
What do cookware, food storage containers, light bulbs, and furniture have in common? All may affect your health and the environment! Learn more about these and other everyday products, your options, and how to limit your exposure. Make better choices without sacrificing your budget!

Hazardous Waste@Home
Ever wonder what to do with unwanted paint cans, batteries, and pharmaceuticals? Not sure what to do with outdated computers? Protect your family and pets by learning how to store and dispose of hazardous waste found in your home!

Potential Hidden Dangers of Personal Care Products
What’s really in your deodorant, perfume, or makeup? How safe are your personal care products? Learn more about the ingredients in everyday products that can affect your health and the environment.
Areas of Concern

- There are 30 areas of concern in the US Great Lakes
- These are places where chemical contamination of sediments from the lakes has seriously endangered the quality of life for people and wildlife
- There are 6 AOCs in NYS
  - Buffalo River
  - Eighteen Mile Creek
  - Niagara River
  - Oswego River/Harbor
  - Rochester Embayment
  - St. Lawrence River at Massena

"Safer Chemicals Healthy Families." *Failing the Great Lakes.* (2009)
### Beneficial Use Impairments

<table>
<thead>
<tr>
<th>Buffalo Area</th>
<th>Syracuse Area</th>
<th>Rochester Area</th>
<th>Massena Area</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Buffalo River</strong></td>
<td><strong>Oswego River/ Harbor</strong></td>
<td><strong>Rochester Embayment</strong></td>
<td><strong>St. Lawrence River</strong></td>
</tr>
<tr>
<td>1. Restrictions on fish and wildlife consumption</td>
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<td>1. Restrictions on fish and wildlife consumption</td>
<td>1. Restrictions on fish and wildlife consumption</td>
</tr>
<tr>
<td>2. Fish tumors or other deformities</td>
<td>2. Degradation of fish and wildlife populations</td>
<td>2. Eutrophication or undesirable algae</td>
<td>2. Loss of fish and wildlife habitat</td>
</tr>
<tr>
<td>5. Restriction on dredging activities</td>
<td></td>
<td>5. Beach closings</td>
<td>5. Loss of fish and wildlife habitat</td>
</tr>
<tr>
<td><strong>Eighteen Mile Creek</strong></td>
<td></td>
<td>7. Bird or animal deformities or reproduction problems</td>
<td>7. Degradation of phytoplankton and zooplankton populations</td>
</tr>
<tr>
<td>1. Restrictions on fish and wildlife consumption</td>
<td></td>
<td>8. Added costs to agriculture or industry</td>
<td>8. Degradation of fish and wildlife populations</td>
</tr>
<tr>
<td>2. Fish tumors or other deformities</td>
<td></td>
<td>9. Degradation of benthos</td>
<td>9. Degradation of fish and wildlife populations</td>
</tr>
<tr>
<td>4. Restriction on dredging activities</td>
<td></td>
<td>11. Restriction on dredging activities</td>
<td>11. Degradation of fish and wildlife populations</td>
</tr>
<tr>
<td>5. Loss of fish and wildlife habitat</td>
<td></td>
<td>12. Loss of fish and wildlife habitat</td>
<td>12. Degradation of fish and wildlife populations</td>
</tr>
</tbody>
</table>

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Personal Care Products (PCPs)

- **Cleansing**: soap, body wash, shampoo, conditioner, bubble bath, toothpaste, mouthwash, etc.
- **Hair styling**: spray, gel, pomade, etc.
- **Shaving**: cream, gel
- **Moisturizing**: face & body lotion
- **Nail**: polish, remover
- **Perfume**: cologne, body spray, etc.
- **Deodorant and antiperspirant**
- **Cosmetics**: foundation, concealer, mascara, eyeshadow, eyeliner, lipstick, lip gloss, etc.

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PCP Safety in the US

- Personal care products & cosmetics are regulated by the FDA
- Cosmetics & ingredients are not tested by the FDA before sale
  - US: 11 chemicals banned/limited
  - Europe: 1,100 chemicals banned/limited
- Companies responsible for ensuring the safety of products before they go to market

Ingredients Prohibited & Restricted by FDA Regulations, [http://www.fda.gov/Cosmetics/ProductandIngredientSafety/SelectedCosmeticIngredients/ucm127406.htm](http://www.fda.gov/Cosmetics/ProductandIngredientSafety/SelectedCosmeticIngredients/ucm127406.htm)
FDA Banned & Restricted Ingredients

**Banned**
- **Bithionol**: may cause photo-contact sensitization
- **Chlorofluorocarbon propellants**: environmental concern
- **Chloroform**: animal carcinogenicity and likely hazard to human health
- **Halogenated salicylanilides (di-, tri-, metabromsalan and tetrachlorosalicylanilide)**: may cause photocontact sensitization
- **Methylene chloride**: animal carcinogenicity and likely hazard to human health
- **Vinyl chloride**: prohibited as an ingredient of aerosol products, because of its carcinogenicity
- **Zirconium-containing complexes**: use in aerosol cosmetic products is prohibited because of their toxic effect on lungs
- **Prohibited cattle materials**: to protect against bovine spongiform encephalopathy (BSE), also known as "mad cow disease," cosmetics may not be manufactured from, processed with, or otherwise contain, prohibited cattle materials.

**Restricted**
- **Hexachlorophene**: Because of its toxic effect and ability to penetrate human skin, may be used only when an alternative preservative has not been shown to be as effective
  - concentration may not exceed 0.1%
  - may not be used in cosmetics that may be applied to mucous membranes, such as lips
- **Mercury compounds**: compounds are readily absorbed through the skin and tend to accumulate in the body. They may cause allergic reactions, skin irritation, or neurotoxic manifestations.
  - limited to eye area cosmetics at concentrations not exceeding 0.0065%
  - permitted only if no other effective and safe preservative is available for use
  - all other cosmetics may contain less than 0.0001%
- **Sunscreens in cosmetics.** The term "sunscreen" generally causes the product to be regulated as a drug. Sunscreen ingredients may also be used in some products for nontherapeutic, nonphysiologic uses (ie, color additive or to protect the color of the product)

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US FDA, Ingredients Prohibited and Restricted by FDA Regulations, [http://www.fda.gov/Cosmetics/ProductandIngredientSafety/SelectedCosmeticIngredients/ucm127406.htm](http://www.fda.gov/Cosmetics/ProductandIngredientSafety/SelectedCosmeticIngredients/ucm127406.htm)
PCP Safety in the US (cont)

- FDA does not have authority to recall products containing a toxic chemical
- Example: Brazilian Blowout
  - Salon workers & customers began complaining of breathing problems, headache, dizziness, rashes
  - Investigation found formaldehyde
  - Formaldehyde is a known carcinogen
- FDA has yet to limit formaldehyde

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PCP 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

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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

**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

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

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http://www.dailymail.co.uk/femail/beauty/article-1229275/Revealed--515-chemicals-women-bodies-day.html
Potential Health & Environmental Effects

Personal care product ingredients may have or be linked to one or more of the following effects:

**Consumer:**
- Irritate eyes & skin
- Cause endocrine disruption
- Cancer

**Environment:**
- Bioaccumulation
- Toxic to fish or other animals

Environment Canada,
http://www.ecoinfo.org/env_ind/region/toxin_descript/toxin_descripti on_e.cfm

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Endocrine Disruption

• Disruption of the endocrine system can occur in various ways
  – mimic a natural hormone, fooling the body into over-responding to the stimulus (e.g., a growth hormone increases muscle mass), or responding at inappropriate times (e.g., producing insulin when it is not needed)
  – block the effects of a hormone from certain receptors (e.g. growth hormones required for normal development)
  – directly stimulate or inhibit the endocrine system and cause overproduction or underproduction of hormones (e.g. an over or underactive thyroid)

• A number of chemicals have been found to disrupt the endocrine systems of animals in laboratory studies

• Relationship of human effects and exposure to environmental contaminants is scientifically controversial

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Environmental Effects

- PCPs end up in the environment when they are rinsed down the drain
- Studies have shown PCP ingredients are in our water bodies and more research is needed to determine the extent of harm they cause
- Reasons for concern:
  - Large quantities enter the environment after use
  - There are no municipal sewage treatment plants that are engineered to remove PCPs from water
  - The risks posed are uncertain because the concentrations are low
  - In 2007, over 100 different PCPs were identified in environmental samples and drinking water

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US EPA, Pharmaceuticals and Personal Care Product FAQs, [http://www.epa.gov/ppcp/faq.html](http://www.epa.gov/ppcp/faq.html)
US EPA, Beaches, [http://water.epa.gov/type/oceb/beaches/seasons_2010_ny.cfm#duration](http://water.epa.gov/type/oceb/beaches/seasons_2010_ny.cfm#duration)
Cosmetics & Personal Care Products

Water Based

Nail Polish

Scented

pH Balanced

Color

Lather

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How to read a PCP label

- What’s required on a PCP label:
  - Quantity in the container
  - Identity statement
  - Name of the manufacturer & distributor
  - Warning & caution statements
  - Ingredients

- Ingredients listed from highest to lowest quantity

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Preservatives

- Prevent bacteria from growing in water based products
- **Parabens** are the most widely used preservatives and the most common parabens are methyl-, ethyl-, and butyl-
- Studies have detected parabens in breast tumors but it’s unclear whether the presence leads to cancer

<table>
<thead>
<tr>
<th>Parabens</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Look for</strong> methyl, ethyl, propyl, butyl parabens on product labels</td>
</tr>
<tr>
<td><strong>Found in</strong> moisturizers, face &amp; skin cleansers, shampoo, conditioner, sunscreen, toothpaste, makeup</td>
</tr>
<tr>
<td><strong>Linked to</strong> cancer, endocrine disruption, reproductive toxicity, immunotoxicity, neurotoxicity, skin irritation</td>
</tr>
</tbody>
</table>

FDA Parabens, [http://www.fda.gov/Cosmetics/ProductandIngredientSafety/SelectedCosmeticIngredients/ucm128042.htm](http://www.fda.gov/Cosmetics/ProductandIngredientSafety/SelectedCosmeticIngredients/ucm128042.htm)

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Antimicrobials

- Kills or slows the growth of bacteria
- Triclosan is commonly used in cosmetics, PCPs, & other consumer products

**Triclosan**

**Look for** triclosan on the product label

**Found in** antibacterial soap, toothpaste (to prevent gingivitis), deodorant, face & body wash, cosmetics, mouthwash, and other consumer products

**Linked to** thyroid function and emergence of bacteria resistant to antibacterial products, studies show it’s interaction with hormone receptors

**Toxic to** aquatic bacteria at levels found in the environment and inhibits photosynthesis in algae

*FDA does not have evidence that triclosan added to antibacterial soaps and body washes provides extra health benefits over soap and water.*
“Fragrance”

- Add scents to cosmetics and personal care products
- Usually made up of a blend of chemicals
- Can hide many chemicals as the composition does not have to be disclosed on the label

<table>
<thead>
<tr>
<th>Phthalates</th>
<th>Synthetic musks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Look for fragrance, -phthalate on the product label</td>
<td>Look for fragrance, synthetic musk, musk on the product label</td>
</tr>
<tr>
<td>Found in fragrance, Also found in nail polish and moisturizers (helps chemicals absorb into the skin)</td>
<td>Found in fragrance</td>
</tr>
<tr>
<td>Linked to diabetes and asthma, potential risks to reproductive system &amp; thyroid</td>
<td>Linked to endocrine disruption, bioaccumulates</td>
</tr>
</tbody>
</table>

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Agency for Toxic Substances and Disease Registry, Public Health Statements
# Phthalate Use in PCPs

- Used at concentrations of less than 10% in nail polish, hair spray, and solvents & perfumes in other products

<table>
<thead>
<tr>
<th>Common Uses</th>
<th>Potential Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dimethyl phthalate (DMP)</strong></td>
<td></td>
</tr>
<tr>
<td>Dye carrier, plasticizer in hair spray, plasticizer in PVC, used in the past as a pesticide⁶</td>
<td>Human immune system toxicant⁵ Limited evidence of reproductive toxicity⁵</td>
</tr>
<tr>
<td><strong>Dibutyl phthalate (DBP)</strong></td>
<td></td>
</tr>
<tr>
<td>carpets, paints, glue, insect repellents, hair spray, nail polish, and rocket fuel⁶</td>
<td>Human immune system toxicant⁵ Strong evidence of endocrine disruption⁴ Possible human developmental toxicant⁶ Limited evidence of reproductive toxicity⁵</td>
</tr>
<tr>
<td><strong>Diethyl phthalate</strong></td>
<td></td>
</tr>
<tr>
<td>toothbrushes, automobile parts, tools, toys, food packaging, cosmetics, insecticides, and aspirin⁶</td>
<td>Human immune system toxicant⁵ Strong evidence of endocrine disruption⁴ Limited evidence of reproductive toxicity⁵</td>
</tr>
</tbody>
</table>

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US FDA, Phthalates and Cosmetic Products, [http://www.fda.gov/Cosmetics/ProductandIngredientSafety/SelectedCosmeticIngredients/ucm128250.htm](http://www.fda.gov/Cosmetics/ProductandIngredientSafety/SelectedCosmeticIngredients/ucm128250.htm)

⁵ Agency for Toxic Substances and Disease Registry, Public Health Statements
⁶ National Library of Medicine, HazMap — Occupational Exposure to Hazardous Agents
⁴ European Commission on Endocrine Disruption
⁴ California, Proposition 65
⁶ US Hazardous Substances Data Bank

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Perfume

Environmental Working Group & Campaign for Safe Cosmetics tested 17 name brand fragrances in 2010 & found:

- 24 chemical sensitizers
- 12 hormone disrupting chemicals
- 38 chemicals detected that were not listed on the product label

<table>
<thead>
<tr>
<th>Chemical Ingredients</th>
<th>Average for all 17 fragrances</th>
<th>Extreme product (highest number)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Secret chemicals (found in testing, not on label)</td>
<td>14</td>
<td>24 - American Eagle Seventy Seven</td>
</tr>
<tr>
<td>Sensitizing chemicals (can trigger allergic reactions)</td>
<td>10</td>
<td>19 - Giorgio Armani Acqua Di Gio</td>
</tr>
<tr>
<td>Hormone disruptors (can disrupt natural hormones)</td>
<td>4</td>
<td>7 - Halle by Halle Berry, Quicksilver, Jennifer Lopez J. Lo Glow</td>
</tr>
<tr>
<td>Chemicals not assessed for safety (by government or industry)</td>
<td>12</td>
<td>16 - Chanel Coco, Halle by Halle Berry, American Eagle Seventy Seven</td>
</tr>
</tbody>
</table>

Source: EWG analysis of 91 chemicals in 17 products – including 51 chemicals listed on product labels, and 38 unlabeled chemicals found in tests commissioned by the Campaign for Safe Cosmetics – combined with analysis of chemical hazard and toxicity data from government and industry assessments and the published scientific literature.
Colorants

- Metals are traditionally used to give cosmetics & PCPs color
- Potential health effects range from allergies & skin irritation to impact to the reproductive system

<table>
<thead>
<tr>
<th>Metal</th>
<th>Color</th>
<th>Found in</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ultramarine</td>
<td>blue</td>
<td>eye shadow</td>
</tr>
<tr>
<td>Manganese</td>
<td>violet</td>
<td>eye shadow</td>
</tr>
<tr>
<td>Titanium dioxide</td>
<td>white</td>
<td>sunscreen, foundation, concealer, cosmetics</td>
</tr>
<tr>
<td>Zinc oxide</td>
<td>white</td>
<td>sunscreen, foundation, concealer main ingredient of mineral makeup</td>
</tr>
<tr>
<td>Iron oxides</td>
<td>shades of rust</td>
<td>eye shadow, blush, concealers</td>
</tr>
<tr>
<td>Chromium oxides</td>
<td>green</td>
<td>eye shadow, blush, concealers</td>
</tr>
<tr>
<td>Aluminum</td>
<td>red-orange</td>
<td>lip gloss, lipstick, nail polish</td>
</tr>
</tbody>
</table>
pH Balance

- pH of skin is below 7, typically basic solutions are used to clean the skin
- Triethanolamine typically used and works well at removing make up
- Potential for TEA to convert to carcinogenic nitrosamines

| Triethanolamine | | |
|-----------------|-----------------|
| **Look for** triethanolamine on the product label | | |
| **Found in** mascara, shampoo, face cleanser, face moisturizer, skin lotion, and other pH balanced products | | |
| **Linked to** allergic skin reactions; suspected immunotoxicant, respiratory toxicant, skin or sense organ toxicant | | |
| **Possibly toxic to fish** with short term and long term exposure | | |

Lather & Penetration Enhancer

- Lather: causes soaps to foam up
- Penetration enhancer: makes it easier for other chemicals to absorb through the skin, meaning more chemicals will enter the body

<table>
<thead>
<tr>
<th>Sodium lauryl sulfate</th>
<th>Sodium laureth sulfate</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Look for</strong> sodium dodecyl sulfate (SDS or NaDS), sodium laurilsulfate or sodium lauryl sulfate (SLS) on the product label</td>
<td><strong>Look for</strong> sodium laureth sulfate or sodium lauryl ether sulfate on the product label</td>
</tr>
<tr>
<td><strong>Found in</strong> bubble bath (thickens &amp; lathers), toothpaste, shampoo, saving cream, and other cleaners that remove oil</td>
<td><strong>Found in</strong> products that lather</td>
</tr>
<tr>
<td><strong>Linked to</strong> skin &amp; eye irritation</td>
<td><strong>Linked to</strong> skin &amp; eye irritation</td>
</tr>
</tbody>
</table>
Antiperspirant & Deodorant

- Aluminum compounds slow the flow of sweat
  - Usually listed as Aluminum Zirconium Tetrachlorohydrex GLY
- Controversial research: There is no conclusive research linking the use of underarm antiperspirants or deodorants and the subsequent development of breast cancer.
  - Some research suggests that aluminum-based compounds may be absorbed by the skin and cause estrogen-like effects
  - Estrogen has the ability to promote the growth of breast cancer cells
  - Some scientists suggest that aluminum-based compounds may contribute to the development of breast cancer
- Alternatives: aluminum free products, reduced aluminum content
Nail Polish

- May contain the “toxic trio”: dibutyl phthalate, toluene, and formaldehyde
- DBP is prohibited in cosmetics in the European Union because it’s a possible human reproductive or developmental toxin\(^1\)
- U.S. Environmental Protection Agency restricts toluene in drinking water because it can cause nervous system disorders and damage the liver and kidneys\(^2\)
- The U.S. National Toxicology Program classifies formaldehyde as “known to be a human carcinogen”\(^3\)

<table>
<thead>
<tr>
<th>Dibutyl phthalate (DBP)</th>
<th>Toluene</th>
<th>Formaldehyde</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adds flexibility</td>
<td>Helps suspend color</td>
<td>Found in nail hardeners</td>
</tr>
<tr>
<td>Moisturizing sheen</td>
<td>Forms a smooth finish</td>
<td></td>
</tr>
<tr>
<td>Helps dissolve other ingredients</td>
<td></td>
<td></td>
</tr>
<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>
<td>Known carcinogen; irritates the eyes, nose, and throat; can cause skin irritation</td>
</tr>
</tbody>
</table>

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Nail Polish

- Look for brands that advertise their polish as “three free” either on the product packaging or their 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 irritates 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)
# Cosmetics

<table>
<thead>
<tr>
<th>Product</th>
<th>Common ingredients</th>
<th>Ingredient concerns</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blush</td>
<td>Talc, powdered silica, alumina, coal tar dyes, acrylates, parabens</td>
<td>Neurotoxic, strong irritants, endocrine disruptors</td>
</tr>
<tr>
<td>Mineral makeup</td>
<td>Bismuth oxychloride</td>
<td>Irritate sensitive skin, cause redness &amp; itching</td>
</tr>
<tr>
<td>Face powder</td>
<td>Talc, powdered silica, coal tar dyes, quaternium-15, lanolin, fragrances, parabens, triclosan</td>
<td>Can release formaldehyde, allergic reactions, skin irritation, endocrine disruption</td>
</tr>
<tr>
<td>Foundation</td>
<td>Talc, powdered silica, alumina, octenylsuccinate, mineral oil, TEA, parabens, quaternium-15, fragrance, coal tar dyes</td>
<td>Neurotoxic, irritate skin, promote acne, may contain formaldehyde</td>
</tr>
<tr>
<td>Concealer</td>
<td>Propylene glycol, polyethylene glycol, parabens, retinyl palmitate, may be contaminated with 1.4-dioxane and ethylene oxide</td>
<td>Skin irritants, endocrine disruption, cause gene mutations &amp; damage DNA, contaminants are suspected &amp; known carcinogens</td>
</tr>
<tr>
<td>Eyeshadow</td>
<td>Coal tar dyes, talc, powdered silica, BHA, parabens&lt;br&gt;Cream: mineral oil, petrolatum, &amp; lanolin oil&lt;br&gt;Glitter: aluminum or bronze</td>
<td>Carcinogens, endocrine disruptors&lt;br&gt;Creams: allergens&lt;br&gt;Glitter: linked to cancer &amp; neurotoxic effects</td>
</tr>
<tr>
<td>Mascara</td>
<td>Petroleum distillates, phenoxyethanol, propylene glycol, TEA, parabens, synthetic plastics, parabens</td>
<td>Skin &amp; eye irritation, endocrine disruption, immune system toxicant</td>
</tr>
<tr>
<td>Lipstick</td>
<td>Coal tar dyes, parabens, sunscreen chemicals, fragrance</td>
<td>Skin irritation, endocrine disruption</td>
</tr>
</tbody>
</table>

# Metals in Cosmetics

May 2011 study of 49 cosmetics for heavy metals

- Foundation, concealer, powder, blush/bronzer, mascara, eye liner, eye shadow, lip tint/gloss/stick

<table>
<thead>
<tr>
<th>Products contained the metal¹</th>
<th>Potential effects²</th>
</tr>
</thead>
<tbody>
<tr>
<td>0% mercury</td>
<td>neurotoxin</td>
</tr>
<tr>
<td>14% selenium</td>
<td>high exposure can cause neurological effects, brittle hair &amp; deformed nails</td>
</tr>
<tr>
<td>20% arsenic</td>
<td>long term exposure causes kidney damage in animals</td>
</tr>
<tr>
<td>51% cadmium</td>
<td>damages the kidneys, lungs, and bones</td>
</tr>
<tr>
<td>61% thallium</td>
<td>large amounts cause vomiting, diarrhea, temporary hair loss, and effects on the nervous system, lungs, heart, liver, and kidneys</td>
</tr>
<tr>
<td>90% beryllium</td>
<td>may become sensitive to beryllium, which causes inflammatory reaction in the respiratory system</td>
</tr>
<tr>
<td>96% lead</td>
<td>damage the nervous system, kidneys, and reproductive system</td>
</tr>
<tr>
<td>100% nickel</td>
<td>contact may cause an allergic skin reaction</td>
</tr>
</tbody>
</table>


Funding provided by 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.
Alpha and Beta Hydroxy Acids

**AHAs:** cause exfoliation
- May be found in products marketed to “reduce the signs of aging” (smoothing fine lines & wrinkles, improving skin texture & tone, unblocking and cleansing pores, improving skin condition in general)
- FDA received 114 adverse dermatologic experience reports for AHA-containing skin care products between 1992 & 2004: burning (45), dermatitis or rash (35), swelling (29), pigmentary changes (15), blisters or welts (14), skin peeling (13), itching (12), irritation or tenderness (8), chemical burns (6), increased sunburn (3), more serious adverse reactions appear to occur most often with products that cause the greatest degree of exfoliation, such as "skin peelers"

**BHAs:** claimed that BHAs are effective in reducing the appearance of fine lines and wrinkles, and improving overall skin texture, without the occasional irritation associated with the use of AHAs
- BHA ingredients may be listed as – salicylic acid (or salicylate, sodium salicylate, willow extract), beta hydroxybutanoic acid, tropic acid, or trethocanic acid

Studies by the FDA & National Toxicology Program are examining the long-term effects of both glycolic acid (an AHA) and salicylic acid on the skin’s response to ultraviolet (UV) light. These studies have determined that applying glycolic acid to the skin can make people more susceptible to the damaging effects of the sun, including sunburn.

**FDA advises precautions be taken for the use of cosmetics containing AHAs and BHAs:**
- Test any product that contains a BHA on a small area of skin before applying it to a large area. If you experience skin irritation or prolonged stinging, stop using the product and consult your physician.
- Follow the use instructions on the label. Do not exceed the recommended applications.
- Avoid using BHA-containing products on infants and children.
- Use sun protection if you use a BHA product.

US FDA, Alpha and Beta Hydroxy Acids (AHAs & BHAs),
http://www.fda.gov/Cosmetics/ProductandIngredientSafety/SelectedCosmeticIngredients/ucm130912.htm
Mercury Poisoning Linked to Skin Products

FDA warning consumers not to use skin creams, beauty and antiseptic soaps, or lotions that might contain mercury.

- Products marketed as skin lighteners and anti-aging treatments that remove age spots, freckles, blemishes and wrinkles
- Products with mercury have been found in at least seven states
- Products manufactured abroad and sold illegally in the United States—often in shops in Latino, Asian, African or Middle Eastern neighborhoods and online

Exposure & dangers

- Mercury can damage the kidneys and the nervous system, and interfere with the development of the brain in unborn children and very young children
- Children can be exposed to mercury from breathing vapors from a product or touching the product and then putting their fingers in their mouth
How to Protect Yourself from Mercury containing Products

1. **Check the label** of any skin lightening, anti-aging or other skin product you use. If you see the words “mercurous chloride,” “calomel,” “mercuric,” “mercurio,” or “mercury,” stop using the product immediately.

2. **If there is no label or no ingredients are listed**, do not use the product. Federal law requires that ingredients be listed on the label of any cosmetic or drug.

3. **Don’t use products labeled in languages other than English** unless English labeling is also provided.

4. **If you suspect you have been using a product with mercury, stop using it immediately.** Thoroughly wash your hands and any other parts of your body that have come in contact with the product. Contact your health care professional or a medical care clinic for advice.

5. **If you have questions**, call your health care professional or the Poison Center at 1-800-222-1222; it is open 24 hours a day.

6. **Before throwing out a product** that may contain mercury, seal it in a plastic bag or leak-proof container. Check with your local environmental, health or solid waste agency for disposal instructions. Some communities have special collections or other options for disposing of household hazardous waste.

US FDA, Mercury Poisoning Linked to Skin Products, http://www.fda.gov/ForConsumers/ConsumerUpdates/ucm294849.htm
Children’s Vulnerability

Children are at higher risk of suffering effects than adults

1. Hand to mouth behavior
2. Children have greater pound-for-pound intake of air, water, and food
3. Heightened sensitivity as their bodies are growing and developing
4. Skin is 30% thinner than adults & can absorb more from the skin’s surface
5. May not have the same ability to excrete toxins
6. The blood brain barrier that helps block chemicals from penetrating the brain isn’t fully developed until 6 months of age
7. More years of future life left
Ingredients in Children’s PCPs

2007 survey of 3,300 parents to find out what PCPs their children use

The survey found:

- Children are exposed to 61 PCP ingredients every day & 27 of those have not been found safe for kids
- 82% exposed to 1+ ingredients linked to brain and nervous system damage
- 69% exposed to 1+ ingredients that are endocrine disruptors
- 3.6% exposed to 1+ ingredients linked to cancer

41% of products warn “keep out of reach of children”

Source: EWG analysis of 3,300 online survey responses on personal care product use for children from birth through age 9, coupled with EWG database of ingredients in more than 23,000 personal care products. Ingredients were compared against chemicals assessed for safety by the industry safety panel and by FDA.

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)
Alternatives

• Products that are paraben, triclosan, fragrance, phthalate, phosphate free
  – Price range varies significantly from cost competitive to significantly more
  – Performance range varies significantly from better than to not as good as conventional counterparts
  – Consider products without these ingredients may perform differently – ie. shampoo without sodium lauryl sulfate will not be as foamy
  – Consider if the ingredient is necessary – ie. Does my soap have to be antimicrobial? Does my face soap have to be pH balanced? Does the scent matter?

• Deodorant with lower levels of aluminum or are aluminum free
  – Many lower level aluminum versions are cost competitive
  – Aluminum free versions may cost more
  – Consider performance of products with less aluminum

• Nail polish without DBP, toluene, formaldehyde
  – Cost competitive, function as good as if not better than polish with these ingredients

• Organic products

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Eco Friendly Products

- The use of most eco friendly terms are not defined or regulated
- Third party certifications (someone other than the company) are preferable
- Just because a product or ingredient is ‘organic’, doesn’t mean it’s safe!

<table>
<thead>
<tr>
<th>Unregulated terms</th>
<th>Preferable terms &amp; labels</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non Toxic</td>
<td>USDA Organic Label</td>
</tr>
<tr>
<td>Natural</td>
<td>USDA Certified Biobased Product Label</td>
</tr>
<tr>
<td>Eco-friendly</td>
<td>NSF/ANSI 305: Personal Care Products Containing Organic Ingredients with logo</td>
</tr>
<tr>
<td>Eco-healthy</td>
<td>Free of phthalates, sulfates, parabens, etc</td>
</tr>
</tbody>
</table>

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Certified Organic Products

- FDA does not define or regulate “organic”
- USDA regulates “organic” as it applies to agricultural products through the National Organic Program
- If a PCP contains agricultural ingredients, and meets the USDA organic production, handling, processing and labeling standards, it may be eligible to be certified

<table>
<thead>
<tr>
<th>Package says</th>
<th>Composition of the PCP</th>
<th>USDA Organic Seal Certifying agent’s name &amp; address</th>
</tr>
</thead>
<tbody>
<tr>
<td>100% Organic</td>
<td>Must contain 100% organic ingredients</td>
<td></td>
</tr>
<tr>
<td>Organic</td>
<td>Must contain at least 95% organic ingredients</td>
<td></td>
</tr>
</tbody>
</table>
| Made with organic ingredients    | Must contain at least 70% organic ingredients               | Certifying agent’s name & address
Indicate which ingredients are certified organic |
| Cannot be labeled organic         | Products with less than 70% organic ingredients             | Indicate which ingredients are certified organic |

Certified Biobased Products

- Identify biobased content of products and packaging
- Biobased products: commercial or industrial products (other than food or feed) that are composed in whole, or in significant part, of biological products, renewable agricultural materials (including plant, animal and marine materials) or forestry materials
- Product must meet or exceed the minimum biobased content percentage in its given category in order to use the Certified Biobased Product label

<table>
<thead>
<tr>
<th>Product type</th>
<th>Min. biobased content</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hand cleaners</td>
<td>64%</td>
</tr>
<tr>
<td>Hand sanitizers</td>
<td>73%</td>
</tr>
<tr>
<td>Lip care products</td>
<td>82%</td>
</tr>
<tr>
<td>Bath products</td>
<td>61%</td>
</tr>
<tr>
<td>Shampoo</td>
<td>66%</td>
</tr>
<tr>
<td>Conditioner</td>
<td>78%</td>
</tr>
</tbody>
</table>


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What You Can Do

• Choose products without harsh chemicals
  – Shampoos & body washes without SLS, phthalates, parabens
  – Lotions without parabens
  – Nail polish without the toxic trio
  – Skip perfume & antibacterial products

• Eliminate unnecessary products

• Prioritize high exposure, frequently used products for replacement

• Buy from companies you trust

• Make your own products
Report Reactions to the FDA

To report a reaction to a cosmetic product:

- Report by phone to the Consumer Complaint Coordinator at your nearest FDA district office
  New York - (toll-free) 866-446-9055
- Report to FDA's MedWatch adverse event reporting system
  - Online via [https://www.accessdata.fda.gov/scripts/medwatch/](https://www.accessdata.fda.gov/scripts/medwatch/)
  - Call Medwatch at 1-800-332-1088 to request a reporting form by mail
  - MedWatch reports are covered under the HIPAA privacy rule
  - Report effects associated with FDA regulated drugs, biologics, medical devices, nutritional products, and cosmetics
  - DO NOT report effects associated with vaccines or investigational/study drugs

If you are a salon worker and want to file a complaint about your workplace conditions or chemicals used in the workplace, contact OSHA [http://www.osha.gov/as/opa/worker/complain.html](http://www.osha.gov/as/opa/worker/complain.html)
Safe Cosmetics Act of 2011

Bill introduced June 24, 2011

The legislation aims to

1. Require safety tests for all PCP ingredients
2. Give authority to the FDA to prohibit and restrict the use of ingredients
3. Give authority to the FDA to recall products that fail to meet safety standards
4. Require all ingredients to be disclosed on the label, including components of “fragrance”
5. Give priority to food grade ingredients

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Resources for More Information

Understand health & safety of specific products, product classes, and manufacturers

EWG’s SkinDeep Cosmetics Database www.cosmeticsdatabase.com, mobile app not available

The GoodGuide, www.goodguide.com, mobile app for iPhone and Android with bar scanner

Information about ingredients and the industry

Cosmetic Ingredient Review http://www.cir-safety.org

US FDA Cosmetics (regulatory & safety information), http://www.fda.gov/Cosmetics/default.htm

Campaign for Safe Cosmetics, http://safecosmetics.org
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**COMPANY POLICIES**

<table>
<thead>
<tr>
<th>Compact for Safe Cosmetics</th>
<th>Non-signer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Animal Testing Policy</td>
<td>According to PETA, this company conducts animal tests.</td>
</tr>
</tbody>
</table>

**LABEL INFORMATION**

- Sodium Lauroyl Isethionate
- Stearic Acid
- Sodium Isethionate
- Water
- Sodium Stearate
- Cocamidopropyl Betaine
- Sodium Cocoate
- Sodium Palm Kernelate
- Sodium Chloride
- Tetrasodium EDTA
- Tetrasodium Etidronate
- Maltol
- Titanium Dioxide (CI 77891)

**WHERE TO PURCHASE**
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<table>
<thead>
<tr>
<th>INGREDIENTS</th>
<th>concerns</th>
<th>score</th>
<th>Data:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cocamidopropyl Betaine</td>
<td>Allergies/Immunotoxicity, Ecotoxicology, Contamination concerns (Nitrosamines) in the presence of nitrosating agents, Use restrictions</td>
<td>5</td>
<td>Good</td>
</tr>
<tr>
<td>Titanium Dioxide</td>
<td>Organ system toxicity (non-reproductive), Occupational hazards</td>
<td>0</td>
<td>Fair</td>
</tr>
<tr>
<td>Sodium Palmitate</td>
<td>Multiple, additive exposure sources, Ecotoxicology</td>
<td>2</td>
<td>Limited</td>
</tr>
<tr>
<td>Tetrasodium EDTA</td>
<td>Organ system toxicity (non-reproductive), Enhanced skin absorption, Occupational hazards</td>
<td>2</td>
<td>Limited</td>
</tr>
<tr>
<td>Sodium Tallowate</td>
<td>Ecotoxicology</td>
<td>1</td>
<td>Limited</td>
</tr>
</tbody>
</table>
Our scientists have rated 1,735 Shampoo products

The average U.S. consumer uses about 10 cosmetic products every day, including soap, shampoo, lotions, deodorants and fragrances. These products can contain hundreds of ingredients, and their regular use can result in chronic exposures to low levels of potential hazards. Read below to learn about important issues associated with shampoos, including ingredient concerns, product certifications, and animal testing. Read More

Top Rated

- A Wild Soap Bar Yucca Root Shampoo & ...
  - 8.5 Health
  - 7.9 Environment
  - 7.6 Society

- Burt’s Bees Rosemary Mint Shampoo Bar
  - 8.5 Health

Bottom Rated

- CVS Color Protect Moisturizing Shampoo
  - 3.0 Health
  - 1.0 Environment
  - 4.0 Society

- Freeman Papaya Pro-Vita Miracle Shampoo For Ul...
  - 3.5 Health

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Funding provided by 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.
Three things you can do right now to give the beauty industry a makeover:

1. Share *The Story of Cosmetics*
2. Take action to make sure cosmetics are safe before they're...
Summary

- PCP ingredients are not tested by the FDA prior to sale
- Many PCP ingredients are endocrine disruptors
- Avoid common ingredients of concern in products
- Choose ecofriendly products, preferably those that are third party certified, like USDA Organic
- Read product labels & use SkinDeep and GoodGuide to identify EHS impacts of your products

<table>
<thead>
<tr>
<th>Ingredient of concern</th>
<th>Products found in</th>
</tr>
</thead>
<tbody>
<tr>
<td>“fragrance”, phthalates, musk</td>
<td>scented products</td>
</tr>
<tr>
<td>Parabens</td>
<td>water based products</td>
</tr>
<tr>
<td>Triclosan</td>
<td>antimicrobial products</td>
</tr>
<tr>
<td>Triethanolamine</td>
<td>pH balanced products</td>
</tr>
<tr>
<td>Sodium lauryl &amp; laureth sulfates</td>
<td>products that lather</td>
</tr>
<tr>
<td>Aluminum</td>
<td>deodorant/antiperspirant</td>
</tr>
<tr>
<td>Dibutyl phthalate, toluene, formaldehyde</td>
<td>nail polish</td>
</tr>
</tbody>
</table>

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Questions & Discussion

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New York State Pollution Prevention Institute
http://www.nysp2i.rit.edu