Clean, Green & Healthy
Choosing Safer Children’s Products and Toys

Kate Winnebeck
Sr. Environmental Health & Safety Specialist
585-475-5390, kate.winnebeck@rit.edu
www.nyasp2i.rit.edu

YWCA | January 15, 2014

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

Copyright © 2014 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).
Agenda

• Why should pregnant women be concerned about environmental health?
• Product safety regulations
• Chemicals that have been found in products
  – Foam products
  – Crib mattresses
  – Toys
  – Personal care products
Why should pregnant women be concerned about environmental health?

We are exposed to hundreds of chemicals every day.

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

Chemicals pass to the unborn baby – research has linked prenatal exposure to some chemicals to birth defects.
Why should pregnant women be concerned about environmental health?

Chemicals pass from to baby through breast milk
(breast milk is still nutritionally best for baby!)

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

Children are more vulnerable & at higher risk of suffering effects than adults
Children are Vulnerable

Children are at higher risk of suffering effects than adults

1. Children have a heightened sensitivity as their bodies are growing and developing
2. Children have greater pound-for-pound intake of air, water, and food
3. Children’s skin is 30% thinner than adults’ & can absorb more from the skin’s surface
4. Children don’t have the same ability to excrete toxins
5. The blood brain barrier that helps block chemicals from penetrating the brain isn’t fully developed until 6 months of age
6. Children have more years of future life left
7. Children spend more time close to the ground
8. Children have a tendency to put things in their mouth
Product Safety Regulations

- For the most part, companies do not have to disclose to consumers what is in toys and other children’s 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
Flame Retardants

What is the concern?

- **Chemicals** 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
- We are typically exposed through (1) aging and wear of consumer products, (2) direct exposure from use, and (3) ingesting dust
- **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

Children’s Sleepwear
Car Seats & Brominated Flame Retardants

- Use of brominated flame retardants is declining, but many seats contain them
- Amount of bromine varies from manufacturer to manufacturer and model to model
- May be found in foam and plastic parts

Two versions of the same model car seat:
LEFT has 56x more bromine in the seat
(source: HealthyStuff test results)
## Actions You can take to Avoid Flame Retardants in Car Seats

<table>
<thead>
<tr>
<th>Use</th>
<th>Good</th>
<th>Better</th>
</tr>
</thead>
<tbody>
<tr>
<td>Car seats</td>
<td>✓ Do your homework and find a car seat that meets your needs &amp; avoids chemicals of concern</td>
<td>✓ Air out new car seats &amp; wash before using. Remove the seat from the packaging. Place the seat, uncovered, in your garage or other ventilated space for a couple weeks before using. Wash the cover per the manufacturer’s instructions and keep the cover off the seat until needed.</td>
</tr>
<tr>
<td></td>
<td>✓ Get information from the product packaging and/or manufacturer’s website</td>
<td>✓ Consider a used car seat from a person you trust. A used seat may contain less flame retardants in the foam than that of a new seat. Ensure the seat meets all current safety requirements and has not been recalled. If you are unsure if a seat has been in a car accident, do not use it.</td>
</tr>
<tr>
<td></td>
<td>✓ Are brominated or chlorinated flame retardants used? In foam? In plastic frame or buckles?</td>
<td>✓ Choose seats with low levels of flame retardants.</td>
</tr>
<tr>
<td></td>
<td>✓ What type of plastic is used for foam, frame, and buckles?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>✗ Avoid babies sleeping &amp; spending time in car seats for longer than necessary</td>
<td></td>
</tr>
</tbody>
</table>
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
Flame Retardant Labels
Flame Retardants

What household products typically contain them?

- foam furniture
- electronics
- curtains
Flame Retardants

Actions you can take to avoid them

- Infants and pregnant women should avoid spending significant time near products treated with chemical flame retardants
- Avoid children chewing on electronic products, including remote controls
- Vacuum your home regularly with a HEPA filter
- Dust your home regularly
- Inspect and replace foam items when they start to rip, tear, or degrade

choose soft pillows (above) instead of hard, foam pillows (below) as soft pillows are less likely to contain FRs
Crib Mattresses

What is the concern?

- **Core** may be made from **polyurethane foam** (chemicals used to make foam are carcinogens, contains VOCs) or **synthetic latex** (contains VOCs)
- **Cover** may be made from **PVC** (may leach phthalates & contain metals)
- May be coated in **antimicrobial protection** (linked to endocrine disruption)
- **Flame retardant** may contain **bromine** (linked to neurobehavioral effects in children and other health effects), **antimony** (breathing or ingesting high amounts can cause severe health effects) or **boric acid** (eye & respiratory irritation)
Crib Mattress Shopping Tips

- **Choose** third party certified mattresses
- **Choose** a mattress free of potentially harmful chemicals
- **Choose** a mattress made of natural/less hazardous materials
- **Choose** food grade polypropylene or polyethylene cover
- **Choose** wool - it is naturally flame retardant – or baking soda & hydrated silica flame retardants
- **If vinyl covers can’t be avoided**, wrap the mattress with a separate polypropylene or polyethylene cover
- **When using vinyl covered mattresses**, take the new mattress out of the packaging and air it out for a week or more so a large portion of the chemicals are released
Chemicals that May be in Toys

**Wood**
- **Lead** and other metals may be used in paints
- Plywood and particleboard may contain **formaldehyde**
  - Offgasses from the wood
  - Irritate eyes, skin, and throat; cause nausea and lethargy
  - Over the long term it can cause cancer
- Adhesives and glues may contain **VOCs**

**Plastic**
- **Metals** can be used as colorants
  - Lead causes neurological effects & heart disease
  - Cadmium causes cancer
- Many **phthalates** in PVC plastic are endocrine disruptors
  - Can offgas from plastics and be breathed in and they can leach out of the plastic when children chew on toys
  - Children ingest phthalates in dust

**Plush**
- May contain **flame retardants**
- May be **stain or moth proof** – Teflon and Scotchguard flake off
  - Toxic & persistent, potential developmental effects
  - Children ingest them when chewing/sucking on fabric
  - Children ingest dust when playing on the floor
**Actions you can Take**

### All Toys
- Prioritize replacing toys that your child puts in their mouth
- Clean toys frequently
- Wash your children’s hands after playing with toys and before eating with their hands
- **X** Avoid paints & coatings
- **X** Throw away toys if/when the paint or color begins to come off
- **X** Avoid old painted toys, such as those from when you were a child, as the paint may contain lead
- **X** Avoid toys not made in the US, Canada, or Europe
- **X** Don’t allow children to chew on painted toys

### Wood
- **✓** Choose solid wood toys free of formaldehyde and VOCs with nontoxic finishes – linseed oil, walnut oil, and beeswax are best
- **✓** Choose unfinished wood toys or water based paint

### Plastic
- **✓** Choose toys and products made of wood or fabric
- **✓** Choose safer plastics: cornstarch, silicone, polyethylene (♯2 & 4) and polypropylene (♯5)
- **✓** Choose “PVC free” and “phthalate free”
- **✓** Choose toys made from recycled plastic
- **X** Avoid unidentifiable plastic and “vinyl”

### Plush
- **✓** Choose organic, untreated cotton and wool
- **✓** Choose wool for its natural fire resistance
- **✓** Look for fleece dolls and stuffed animals made out of recycled materials
- **X** Avoid moth, stain, and fire proof fabrics
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 of Concern

<table>
<thead>
<tr>
<th>Product Type</th>
<th>Ingredients of Concern</th>
<th>Concern</th>
</tr>
</thead>
<tbody>
<tr>
<td>water based products</td>
<td>methyl, ethyl, propyl, butyl parabens&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Linked to cancer and may be toxic to the endocrine, reproductive, immune, and nervous systems</td>
</tr>
<tr>
<td>scented products</td>
<td>fragrance, phthalates, musk&lt;sup&gt;b&lt;/sup&gt;</td>
<td>Linked to diabetes and asthma, potential risks to reproductive system &amp; thyroid</td>
</tr>
<tr>
<td>antibacterial products</td>
<td>triclosan&lt;sup&gt;c&lt;/sup&gt;</td>
<td>Linked to thyroid function may be toxic to the endocrine system</td>
</tr>
<tr>
<td>pH balanced products</td>
<td>triethanolamine&lt;sup&gt;d&lt;/sup&gt;</td>
<td>Linked to allergic skin reactions; may be toxic to the immune and respiratory systems and the skin, may be toxic to fish</td>
</tr>
<tr>
<td>products that lather/foam</td>
<td>sodium lauryl sulfate (SLS), sodium laureth sulfate&lt;sup&gt;e&lt;/sup&gt;</td>
<td>Linked to skin &amp; eye irritation</td>
</tr>
<tr>
<td>nail polish</td>
<td>toluene, formaldehyde, dibutyl phthalate&lt;sup&gt;f&lt;/sup&gt;</td>
<td>Linked to reproductive &amp; developmental effects; headaches; dizziness; fatigue; irritates the eyes, nose, throat, &amp; skin; formaldehyde is a known carcinogen</td>
</tr>
<tr>
<td>antiperspirant deodorant</td>
<td>Aluminum Zirconium Tetrachlorohydrex GLY&lt;sup&gt;g&lt;/sup&gt;</td>
<td>Research suggests that aluminum-based compounds may be absorbed by the skin and may contribute to breast cancer</td>
</tr>
</tbody>
</table>
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 2010: 40+ organizations urge J&J to remove the chemicals
  - October 2011: J&J to phase out the carcinogenic preservatives from baby products
    - Already make Johnson’s Natural that does not contain these chemicals
Fragrance ... The Smell of Clean??

What is the concern?

• We are exposed to a lot of scented products – personal care, cleaners, air fresheners, laundry soap, etc.
• Add scent to cleaning products
  – Recognize the smell of Pine-Sol and other ‘lemon’ scents
• Usually made up of a blend of chemicals
• May be from natural or synthetic sources
• Typically contain phthalates and musks that are both endocrine disruptors and may build up in the body
How are pregnant women & infants 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

New York State Pollution Prevention Institute
Fragrance ... The Smell of Clean??

Actions you can take to avoid fragrance

✗ Avoid products with “-phthalate”, “musk”, “parfum”, or “fragrance” as an ingredient
✗ Avoid air fresheners and scented candles
✓ Buy unscented or fragrance free products
  ✓ Specifically labeled “unscented,” “free of perfumes and dyes,” or “fragrance free”
✓ Use homemade, unscented cleaner recipes
Resources for more Information

www.recalls.gov

www.cosmeticsdatabase.org
Shopping 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
✓ Use products in a safe way to reduce or eliminate exposure to chemicals of concern
✓ Replace toys and products when they start to show signs of wear
✓ Read product labels before purchasing to understand what materials the product is made of and how to clean it
✓ Eliminate unnecessary baby care products
✓ 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
## 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


Braun, et. al., Impact of Early Life Bisphenol A Exposure on Behavior and Executive Function in Children, Pediatrics, 2011;128;873, accessible at [http://pediatrics.aappublications.org/content/128/5/873.full.html](http://pediatrics.aappublications.org/content/128/5/873.full.html)

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/


### Slide Reference(s)

#### 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.attdr.cdc.gov/tfacts111.pdf](http://www.attdr.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
<table>
<thead>
<tr>
<th>Ingredients of Concern</th>
<th>Reference(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>aFDA Parabens,</td>
<td><a href="http://www.fda.gov/Cosmetics/ProductandIngredientSafety/SelectedCosmeticIngredients/ucm128042.htm">http://www.fda.gov/Cosmetics/ProductandIngredientSafety/SelectedCosmeticIngredients/ucm128042.htm</a></td>
</tr>
<tr>
<td>bAgency for Toxic Substances and Disease Registry, Public Health Statements</td>
<td><a href="http://www.fda.gov/forconsumers/consumerupdates/ucm205999.htm">http://www.fda.gov/forconsumers/consumerupdates/ucm205999.htm</a></td>
</tr>
<tr>
<td>eNational Library of Medicine, Hazardous Substances Database</td>
<td><a href="http://safecosmetics.org/article.php?id=224">http://safecosmetics.org/article.php?id=224</a></td>
</tr>
<tr>
<td>gNational Cancer Institute, NIH, Antiperspirants/Deodorants and Cancer,</td>
<td><a href="http://www.cancer.gov/cancertopics/factsheet/Risk/AP-Deo">www.cancer.gov/cancertopics/factsheet/Risk/AP-Deo</a></td>
</tr>
</tbody>
</table>

**Ingredients in Children’s Personal Care Products**


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