Safer Household Products

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We are Exposed to Chemicals Every Day

**Food**
pesticides in produce, mercury in fish, chemicals stored in fat

**Indoor Environment**
cleaning products, toys, plastics, fabrics, personal care products, dust, wastes, paint, carpets, cookware, furniture, tobacco smoke, lighting, clothes

**School & Hobbies**
furniture, chemicals, cleaners, markers, art supplies

**Outdoor Environment**
air pollutants, pesticides, fertilizers contaminated soil, pharmaceuticals in water
Understanding Risk

• It’s difficult to conclude that a health effect is the result of exposure to one specific chemical
  – Two people may be exposed to the same substance and have different effects

• As we talk about chemicals today, it is important to consider
  – How is the chemical getting into my body?
  – How much am I exposed to?
  – How long or often am I exposed to it?
Paint

What is the concern?

• Household paints are generally either oil-based or water-based (latex)
  – Oil based paints emit more chemical vapors than latex paint
• Solvents in paints and paint thinners can be hazardous to the health of mom and baby
  – May cause headaches, nausea, dizziness, and fatigue
  – Studies have linked some paint solvents to increased risk of miscarriage
• Lead based paint was typically used before 1970
  – Avoid scraping/sanding any surfaces older than 1970
Lead paint can cause which of the following health effects?

A. Behavior problems
B. Affects the brain
C. Affects the nervous system
D. Hearing problems
Paint

What are the concerns with pregnant women?

• If a woman is pregnant and becomes exposed to lead, she may increase her risk of:
  – Premature Birth – Premature babies have a higher risk of illness and death
  – Miscarriage or Stillbirth – High levels of lead can cause babies to die before birth
  – Low Birth Weight – Babies do not grow inside the mother’s womb at a normal rate

• How is an Unborn Baby Exposed to Lead?
  – A pregnant woman can breathe in or swallow lead
  – If a pregnant woman was exposed to lead in the past, lead can be stored in her bones for many years and then be released during pregnancy
    • During pregnancy, calcium in the mother’s bones goes into the bloodstream. When calcium leaves the pregnant mother’s bones, so does lead. Calcium also comes from a new mother’s bones to make breast milk. Breast milk may also contain lead.
Infants and young children are exposed to more lead than older kids & adults. Why?
What are the concerns with young children & infants?

- Their growing bodies absorb more lead than adults do and their brains and nervous systems are more sensitive to the damaging effects of lead.
- Children are more exposed to lead:
  - Because they put their hands and other objects that can have lead from dust or soil on them into their mouths.
  - By eating and drinking food or water containing lead or from dishes or glasses that contain lead.
  - By inhaling lead dust from lead-based paint or soil with lead.
  - From playing with toys with lead paint.
- Even low levels of lead in the blood of children can result in:
  - Behavior and learning problems.
  - Lower IQ and Hyperactivity.
  - Slowed growth.
  - Hearing Problems.
  - Anemia.
  - In rare cases, ingestion of lead can cause seizures, coma and even death.
What are some easy things you can do at home to reduce the amount of lead you are exposed to?
Paint

How to reduce your exposure to lead

• Inspect and maintain all painted surfaces to prevent paint deterioration
• Keep your home clean and dust-free
• Clean around painted areas where friction can generate dust, such as doors, windows, and drawers. Wipe these areas with a wet sponge or rag to remove paint chips or dust
• Use only cold water to prepare food and drinks
• Wash children's hands, bottles, pacifiers and toys often
• Teach children to wipe and remove their shoes and wash hands after playing outdoors
• Ensure that your family members eat well-balanced meals as children with healthy diets absorb less lead
• Contact the Finger Lakes Children's Environmental Health Center if you’re concerned about your or a child’s exposure to lead. Their services are free. Call 275-3638 or email FLCEHC@urmc.rochester.edu
Wood Furniture

What is the concern?

Cribs and furniture made from composite wood typically contain VOCs, especially formaldehyde

- **Particleboard** (shelving, cabinets, some furniture)
- **Plywood paneling** (cabinets, some furniture)
- **Medium density fiberboard** (drawer fronts, cabinets, furniture tops)
- Formaldehyde is used to make plastics & as an embalming fluid

Other VOCs may be in coatings & glues
Wood Furniture

How can pregnant women & infants be exposed?

Formaldehyde is emitted into the air
- Can cause nose and eye irritation, neurological effects, asthma and/or allergy, eczema and changes in lung function

Effects of formaldehyde on babies & children
- Very likely that breathing formaldehyde will cause nose and eye irritation
- Asthma in children exposed to formaldehyde in homes
Wood Furniture

How can I safely use particleboard furniture?

Best to avoid particleboard & fiberboard furniture

Use it safely

✓ Pregnant women and children should not sleep or spend significant time in a room with new furniture

✓ Air it out in a garage for a week before bringing it into your house or if it can’t be aired outside
  – Place in a room that isn’t usually occupied
  – Place in the room it will be used & open the windows
  – Avoid spending a lot of time in the room with the furniture for at least a week
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
Flame Retardants

How can pregnant women & infants be exposed?

• They have been found in
  – Foam: couch cushions, carpet padding, nursing pillows, changing pads, mattresses
  – Fabrics: upholstered furniture, curtains
  – Electronics: the outer case of TVs, video game consoles, DVD players, computers, etc.

• Children’s exposure may be greater than adult’s as they put things in their mouth & spend a lot of time with their face close to mattresses while sleeping
Flame Retardants

Many household products typically contain them:

- foam furniture
- electronics
- carpet
- 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

✗ 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
Compact fluorescent light bulbs (CFLs) contain a toxic chemical.

a. True

b. False
Compact Fluorescent Lights (CFLs)

What is the concern?

• CFLs use about 75% less energy than incandescent bulbs
• Contain mercury vapor
  – About 4mg per bulb (old thermometers contain about 500mg)
  – Mercury can affect the brain and nervous system
• No risk of mercury being released from a bulb that’s not broken
• CFLs release mercury into the air and ground when broken
  – Be careful when handling them
  – May break during trash pickup or in the trash can
• Recycle CFLs instead of trashing them
Compact Fluorescent Lights (CFLs)

Why is it important to clean up a broken CFL safely?

Pregnant women should not clean up broken CFLs
Pregnant women, babies, and children should leave the room or home immediately after a CFL breaks to avoid mercury

• When CFLs break, they release mercury vapor into the air
• Vapor can travel through ductwork at home, contaminating air throughout the house
• If you are concerned about exposure to mercury, contact your physician

EPA Cleanup Tips

• Turn off your heating/air conditioning system for several hours
• **DO NOT VACUUM**, as it could spread mercury powder or mercury vapor

See US EPA’s guide to Cleaning up a Broken CFL for the right way to clean up a broken CFL
All crib mattresses are required to have a chemical flame retardant.

A. True
B. False
C. I don’t know
Crib Mattresses

What are the components?

Crib mattresses are composed of a structural core, a middle layer of padding, flame retardant materials, and ticking (cover). Each may contain a variety of materials and include chemical additives to provide water resistance, flammability reduction, or antibacterial properties.

**COVER/“TICKING”**
- Cotton
- Wool
- Polyester, and/or
- Vinyl
- May be coated with other chemicals

**FLAME RETARDANT**
- Chemicals added to ticking or padding, or
- Layer of fire-resistant material

**PADDING**
- Cotton, or
- Polyester

**CORE**
- Foam/Latex
- Steel springs, and/or
- Natural batting

Image source: The Mattress Matters: Protecting Babies from Toxic Chemicals While They Sleep, Clean & Healthy New York, November 2011
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\(^1\) 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 (see next slide)
✓ **Choose** a mattress free of potentially harmful chemicals such as vinyl, phthalates, heavy metals, antimicrobial protection, bromine, PBDE
✓ **Choose** a mattress made of natural/less hazardous materials – cotton, rubber latex, plant based foam, polyester batting, wool
✓ **Choose** food grade polypropylene or polyethylene cover
✓ **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 put it in your garage or unoccupied room for a week or two so a large portion of the phthalates and/or other VOCs offgas before the baby sleeps on it
✓ **Choose** wool - it is naturally flame retardant; some mattresses are wrapped in a layer of wool & need a separate cover to be waterproof
✓ **Choose** baking soda & hydrated silica flame retardants
In Rochester, when medication is flushed down the toilet, the water treatment plants remove them from the water before it is returned to Lake Ontario.

A. True
B. False
C. I don’t know
Pharmaceuticals

What is the concern?

• Medication ends up in the environment
  – Flushed medication goes to the local water treatment plant
  – Medication in the trash ends up in a landfill and the water that’s collected goes to the local water treatment plant
  – The water treatment plant cannot remove these contaminants and they are discharged to Lake Ontario

• Adverse effects on fish have occurred, including\(^1\)\(^1\)
  – Decreased reproduction rates
  – Feminization of male fish
  – Slower development rates
  – Additional appendages

• Scientists feel they may be indicative of similar effects on humans\(^1\)\(^2\)

• There are many concerns, but the long term effect on people is still unknown
Pharmaceuticals

How can pregnant women & infants be exposed?

- Flushed medicines enter our waterways thru treatment facilities and septic systems
- In 2008, medicines were found in the drinking water of 24 major metropolitan areas serving 41 million people\textsuperscript{15}

Drugs found in Michigan drinking water\textsuperscript{16}
- Atenalol – heart medicine
- Estrogen
- Sulfamethoxazole, Trimethoprin – antibiotics
- Meprobamate – anxiety medicine
- Phenytoin – anti-epileptic drug
Disposal at Home

1. Add water and then salt, ashes, dirt, cat litter, coffee grounds, or another undesirable substance, to drugs to avoid accidental or intentional misuse. Do not conceal discarded drugs in food to prevent consumption by scavenging humans, pets or wildlife.

2. Place all medications in a container, such as bag, box or plastic tub. Seal the container with strong tape.

3. Dispose of drugs as close to your trash collection day as possible.

• **Note**: Be careful in handling medications. Some drugs can cause harm if handled by some people. Avoid crushing pills as some medications can be harmful in powder form.

• **Medications self-administered by injection with a needle or "sharp“**: Place in a puncture proof container, seal with tape and label “sharps.” NYS strongly recommends that sharps be disposed of at hospital-based household sharps collection programs.

**Note**: original plastic containers may be “blue box” recycled if acceptable

Summary

- Avoid using paint or use it safely while pregnant and with a newborn
- Air out composite wood furniture for at least a week before using
- Do your homework when shopping for a crib mattress – avoid flame retardants and choose natural materials when possible
- Opt for materials that may not contain flame retardants, like leather, wool, or cotton and vacuum & dust your home regularly to avoid exposure
- Prioritize purchasing safer versions of products that your baby or you will spend a significant amount of time on – like crib mattresses – or your baby will mouth often