Connecticut Departments of Energy and Environmental Protection and Public Health
Toxics on the Workbench

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Did You Know?

Home improvement products can be quite harmful to your health!
Typical Products Found On the Workbench

- Antifreeze
- Glue
- Varnish
- Stripper
- Degreasers
- Stain remover
- Pesticides
- Paint thinner
- Paint
- Thinner
- Wood preservative
- Pesticide
- Preservative
Typical Products Found On the Workbench

- Oil-based paints
- Varnishes and waxes
- Paint thinners (turpentine, mineral spirits)
- Paint, floor, & varnish strippers
- Stains & wood preservatives
- Adhesives, glues, epoxies, caulk
- Metal polish

- Mothballs
- Pesticides- insect sprays, rat/mouse poisons, weed killers
- Car waxes and polishes
- Antifreeze, windshield washer fluid
- Lubricants/degreasers
Home Improvement Products

• Many contain hazardous chemicals
  – Corrosive
  – Reactive
  – Flammable
  – Toxic
• Pollute air, water, land
Home Improvement Products

• Contribute to asthma, allergies

Possibly:
• Cancer-causing (Carcinogen)
• Genetic mutations (Mutagen)
• Birth Defects (Teratogen)
Do you know which products may contain harmful chemicals?
10 Kids Drink Windshield Wiper Fluid At Daycare

NYC School Kids Drank Antifreeze-Laced Water Because It Tasted Sweet

Pet owners lock up cats indoors as anti-freeze killer claims 48th victim

I didn't like it... but I drank it out of bravado': Couple nearly die after drinking antifreeze they thought was vermouth

Candy, or Mothballs? E.P.A. Cautions Public

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A little chemistry....

Organic Solvents: a broad category of chemicals

- e.g., Methylene chloride
- e.g., Acetone
- e.g., Napthalene
- e.g., Carbon tetrachloride
Products:
• Oil-based paints
• Varnishes
• Lacquers
• Glues & adhesives
• Degreasing/cleaning agents
• Spot removers
• Paint thinners and strippers
• Pesticides (insecticides, fungicides)

Chemical: Organic Solvents

Health Hazards
• Eye and skin irritant
• Headaches, nausea, dizziness
• Coughing, shortness of breath, asthma
• Repeated exposure may result in kidney, liver, lung, or nervous system damage
• Known carcinogen, mutagen, and teratogen
Products:
• Paint and varnish strippers
• Pesticides

Chemical: Methylene Chloride

Health Hazards
• Classified as a potential cause of cancer by EPA and Consumer Product Safety Commission.
• Decreases blood cells ability to carry oxygen
Products:
- Epoxies and glues
- Mothballs
- Pesticides

Health Hazards
- Breakdown of red blood cells, leading to hemolytic anemia
- Liver damage

Chemical: Naphthalene
Mothballs: a continuing danger

- Napthalene used to be primary ingredient, now paradichlorobenzene is used instead

- Paradichlorobenzene can cause headaches, nausea, irritation to the eyes, nose and throat, and liver and kidney damage
**Chemical**: Ethylene Glycol

**Products:**
- Antifreeze
- Window washing fluid
- Some furniture strippers

**Health Hazards:**
- Absorbs through skin easily
- Ingestion may cause damage to nervous system, liver, kidneys, heart, and brain. Could lead to death.
  - Keep out of reach of children, bright color and sweet smell of antifreeze can be mistaken as juice.
Volatile Organic Chemicals (VOCs)

- Most of the chemicals that have been mentioned are also VOCs
  - Gasses that evaporate easily

- Often found in aerosol sprays as propellants

- VOCs that enter the atmosphere contribute to the creation of ground-level ozone
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**Products:**
- Paints
- Varnishes
- Some glues and adhesives

**Chemicals:** VOCs such as formaldehyde

**Health Hazards:**
- Respiratory irritant and allergic reactions
- Fatigue, dizziness, nausea
- Liver, kidney, and nervous system damage
Products:
• Car batteries
• Boat batteries
• Lawn-mower batteries
• Toilet bowl cleaners

Chemical: Sulfuric Acid

Health Hazards
• Highly corrosive, dangerous to skin and eye contact
• Inhalation can irritate respiratory track and mucus membranes
• Ingestion causes serious burns to throat and stomach
**Products:**
- Pesticides
- Used motor oil
- Paints
- Wood preservatives

**Chemicals:** Heavy Metals such as copper, zinc, lead, and cadmium

**Health Hazards**
- Acute exposures: nausea, vomiting, abdominal pain, headaches, hypertension, and difficulty breathing.
- Chronic exposures: damage to central nervous system, birth defects, learning disabilities, arthritis, memory loss
So, what can you do?

- Minimize your exposure
- Dispose of used products properly
- Look for signal words on labels
- Buy safer alternatives
- **Make** safer alternatives
How to Minimize Your Exposure

• Ventilate area
• Use a drip tray to eliminate spills
• Use Personal Protective Equipment (PPE) – gloves, eye wear
• Read and follow label directions
Proper Disposal

• *Do not* just throw it out!
• Ask your retailer if they recycle or take back materials like used oil or paint.
• Some items can be brought to a municipal transfer station--check to see what your town accepts.
• Bring unwanted products to a Hazardous Household Waste Collection Day.
• Connecticut residents check out: ct.gov/deep/hhw
What to Look for on Labels

• Signal Words
## What to Look for on Labels

<table>
<thead>
<tr>
<th>Danger Level</th>
<th>Signal Word</th>
<th>What the product label means</th>
<th>Products on which you may find the signal word</th>
</tr>
</thead>
<tbody>
<tr>
<td>MOST DANGEROUS</td>
<td>POISON</td>
<td>Highly Toxic</td>
<td>Antifreeze, pesticides</td>
</tr>
<tr>
<td></td>
<td>DANGER</td>
<td>Extremely flammable, corrosive or highly toxic</td>
<td>Varnish/paint strippers, Windshield wiper fluid,</td>
</tr>
<tr>
<td></td>
<td>WARNING</td>
<td>Moderate Hazard</td>
<td>Engine Degreaser, Paint, Thinners, Mothballs</td>
</tr>
<tr>
<td>LEAST DANGEROUS</td>
<td>CAUTION</td>
<td>Mild or Moderate Hazard</td>
<td></td>
</tr>
</tbody>
</table>
Safer Alternatives

- Antifreeze made with propylene glycol
- No or low-VOC (volatile organic chemicals) products
  - Check the label for this information
  - Avoid aerosols
- Cedar blocks/chips instead of mothballs
- Integrated Pest Management (IPM)
- Vegetable or mineral oils for metal polish
- Sandpaper, a scraper or heat gun for stripping paint from small items
Safer Alternative: “Water-based”

- Oil-based and solvent-based products contain many of the organic solvents that are hazardous to human health; these are the chemicals that produce the strong “fresh paint” odor
- Choose water-based paints, stains, sealants, strippers, adhesives and glues instead of oil-based or solvent-based ones
  - Water-based products contain significantly fewer organic solvents
Buying Safer Alternatives

• Look for products with green certification labels, e.g., Green Seal

• Some commercial brands have separate lines of eco-friendly products

• Buy only enough product for the job
While in the Store

• You may not be able to get environmental information about products while you are in the store

• Salespeople might describe the environmental implications of products in unique or unexpected ways
  • e.g., “This paint has less of an odor” probably means that the paint has fewer VOC’s

• Be persistent and try to get as much information as possible; ask direct questions

• If you are not satisfied with what information you’ve received about a product while in the store, call the company or check their website
Home-made BBQ cleaner

¼ cup washing soda, 1 gallon warm water. Dissolve washing soda in warm water. Saturate a sponge with the mixture and wipe down BBQ areas that need de-greasing. Rinse homemade cleaner off thoroughly. Excess should not be stored -- discard all leftovers.
Make Your Own Recipes

Home-made Organic Pesticide

4 cloves garlic, 5 ½ quarts of water, 2 teaspoons natural powdered soap. Crush cloves of garlic into a fine dust, and then boil them in half a quart of water for 15 to 20 minutes. Let cool. Filter out the water into a glass container. Add soap. This will help the mixture to stick, without harming the plants. Dilute in 5 quarts of water, or use 1 part garlic mixture for 10 parts water. Add to a spray bottle and apply to plants 2 or times a week. This mixture does not kill insects but repels them from plants.

Home-made Tarnish Remover

6 tablespoons salt, 6 tablespoons flour, white vinegar. Mix all ingredients together to make a paste of equal parts salt and flour with a few tablespoons of white vinegar. Apply to your favorite brass candlesticks or copper bowl with a soft cloth and rub. Rinse with water and dry.
Home-made Milk Paint with Lime

- 1 gallon nonfat milk
- 2 1/2 ounces “Type S” lime (dry powder available at hardware stores)
- 2 1/2 cups water
- Natural pigment (more or less depending on desired color; available in powdered form at artist supplies stores)
- 6 cups whiting (powdered chalk)

Leave milk in a warm place for a few days to curdle. Then pour through a colander lined with cheesecloth. You should have about 2 cups of curds. Mix curds and lime powder in a blender; this substance is the “binder.” Add a little water if the mixture isn’t blending well. Strain to remove any lumps. Add water to the binder immediately after it is prepared. Dampen and crush pigments. Add them to the mixture a little at a time until desired color intensity is achieved. Stir in filler.

Useful Resources

- The National Institute of Health’s Household Products Database
  http://householdproducts.nlm.nih.gov/

- The Environmental Protection Agency’s Design for the Environment website
  http://www.epa.gov/dfe/product_label_consumer.html#consumers

- Washington Department of Ecology’s Toxic Free Tips
  http://www.ecy.wa.gov/toxicfreetips/hazSubA-Z.html

- The Pollution Control Agency of Minnesota’s page on reducing Toxics in your home
  http://www.reduce.org/toxics/index.html
1. Many home improvement products contain chemicals harmful to your health
2. Know what harmful ingredients are in your products
   – Read labels or MSDS sheets
   – Take proper precautions during use
3. Purchase or make your own safer alternatives
4. Store products safely away from children, heat, & moist surfaces