



Volatile Organic Compounds (VOCs) in Your Home

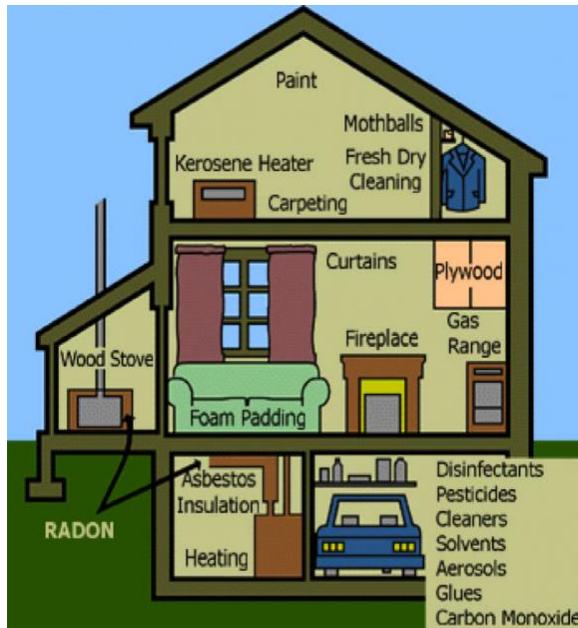
What are VOCs?

Volatile organic compounds (VOCs) are a large group of carbon-based chemicals that easily evaporate at room temperature. Many are naturally occurring and others are man-made. They are released from solvents, paints, glues and other products that are found in the home. VOCs are released from burning wood, coal, gasoline, and natural gas. Many VOCs can be hazardous to your health.

Where are VOCs found in the home?

VOCs are found in a variety of building materials as well as household and personal care products. Other sources of VOCs come from contaminated ground water or contaminated sites.

Some source of VOCs in the Home



Source: Google Images

Building Materials	Home Products that contain VOCs
<ul style="list-style-type: none"> ▪ Carpets and adhesives ▪ Composite wood products ▪ Paints ▪ Sealing caulks ▪ Solvents ▪ Upholstery fabrics ▪ Varnishes ▪ Vinyl Floors 	<ul style="list-style-type: none"> ▪ Air fresheners ▪ Air cleaners that produce ozone ▪ Cleaning and disinfecting products ▪ Cosmetics ▪ Fuel oil, gasoline ▪ Moth balls ▪ Vehicle idling or parked in an attached garage ▪ Cigarette smoke ▪ Pesticides

What are the health effects of VOC exposure?

Specific, health effects depend on the VOC, how much a person is exposed to, and how long a person is exposed. In general:

- Short-term (acute) exposure to elevated levels of VOCs causes headaches, dizziness, light-headedness, drowsiness, nausea, and eye and respiratory irritation.
- Long-term (chronic) exposure to VOCs can cause liver, kidney and nervous system damage.
- Exposure to certain VOCs for a lifetime (e.g. benzene, trichloroethylene (TCE), perchloroethylene (PCE)) may increase your chance of developing cancer.

Why are VOCs sometimes a problem inside homes or other buildings?

When a house or building does not have enough ventilation to circulate indoor air to the outdoor environment, VOCs can become trapped inside the building resulting in higher levels than outside.

Possible VOCs present in Household Products

Products	Possible VOC
Fuel containers or devices using gasoline, kerosene, fuel oil and products with petroleum distillates: paint thinner, oil-based stains and paint, aerosol or liquid insect pest products, mineral spirits, furniture polishes	BTEX (benzene, toluene, ethylbenzene, xylene), hexane, cyclohexane, 1,2,4-trimethylbenzene
Personal care products: nail polish, nail polish remover, colognes, perfumes, rubbing alcohol, hair spray	Acetone, ethyl alcohol, isopropyl alcohol, methacrylates (methyl or ethyl), ethyl acetate
Dry cleaned clothes, spot removers, fabric/ leather cleaners	Trichloroethylene, tetrachloroethylene
Citrus (orange) oil or pine oil cleaners, solvents and some odor masking products	d-limonene (citrus odor), a-pinene (pine odor), isoprene
PVC cement and primer, various adhesives, contact cement, model cement	Tetrahydrofuran, cyclohexane, methyl ethyl ketone (MEK), toluene, acetone, hexane, 1,1,1-trichloroethane, methyl-iso-butyl ketone (MIBK)
Paint stripper, adhesive (glue) removers	Methylene chloride, toluene, older products may contain carbon tetrachloride
Degreasers, aerosol penetrating oils, brake cleaner, carburetor cleaner, commercial solvents, electronics cleaners, spray lubricants	Methylene chloride, PERC, TCE, toluene, xylenes, methyl ethyl ketone, 1,1,1-trichloroethane
Moth balls, moth flakes, deodorizers, air fresheners	1,4-dichlorobenzene, naphthalene
Refrigerant from air conditioners, freezers, refrigerators, dehumidifiers	Freons (trichlorofluoromethane, dichlorodifluoromethane)
Aerosol spray products for some paints, cosmetics, automotive products, leather treatments, pesticides	Heptane, butane, pentane
Upholstered furniture, carpets, plywood, pressed wood products	Formaldehyde

How do I reduce the levels of VOCs in my home?

- **Reduce your use of household chemicals.** Consider using cleaning products that do not contain VOCs such as baking soda, vinegar or borax. Remove or reduce the number of products in your home that give off VOCs. Remove unused chemicals from the home because chemicals can leak and release VOCs into indoor air.
- **Buy only the amount you need.** Consider purchasing products in smaller quantities or sharing with a friend or neighbor.
- **Storage chemicals in a proper manner.** Containers need to be sealed tightly, store containers in a secure and well ventilated area. If possible, store products in places where people do not spend much time, such as a garage or outdoor shed.
- **Increase ventilation.** Open windows and doors to increase air circulation, to provide fresh air from outside. Use exhaust fans in bathrooms and kitchens to increase ventilation. Keep both the temperature and relative humidity as low as possible or comfortable. Chemicals will off-gas more under warmer conditions with high humidity.
- **Carefully read labels and follow directions for use.** The maker of the product can supply you with a Material Safety Data Sheet (MSDS) which contains more information about the product's safety. Keep products in original containers so that safety information is not lost. Do not mix household products, even for disposal, unless specified in directions.

Where can I find more information on VOCs?

If you need further information regarding the health effects of VOCs, please contact the Virginia Department of Health, Division of Environmental Epidemiology, 109 Governor Street, 4th Floor, Richmond, VA 23219, (804) 864-8182.

Additional toxicological information on specific VOCs is available at <http://www.atsdr.cdc.gov/>

Prepared by: Virginia Department of Health
July 24, 2013

