

Hidden Hazards in Fragranced Consumer Products

Many common products contain chemicals that can harm both human and aquatic health. Products with fragrances can be especially hazardous, yet are widely used. Recent research, using gas chromatography/mass spectrometry analysis, has discovered numerous toxic and undisclosed chemicals in fragranced products. These chemicals affect not only humans, but also stormwater, wastewater, water bodies, and aquatic life.

What products contain fragrance?

Fragranced products are everywhere. Examples include:

- **laundry detergents**, fabric softeners, and dryer sheets
- **cleaners** and disinfectants
- **air fresheners** and deodorizers
- **shampoos**, hair sprays, and gels
- **lotions**, moisturizers, after-shave, and sunscreens
- **soaps** and hand sanitizers
- **perfumes**, powders, and oils
- **scented candles**

Why are fragranced products hazardous?

- A “fragrance” in a product can contain up to several hundred chemicals, many of them toxic even at low levels.
- Fragrance chemicals include human carcinogens, endocrine disrupters, and reproductive toxicants such as 1,4-dioxane, formaldehyde, chloromethane, acetaldehyde, musks, and phthalates.
- When consumers use fragranced products, hazardous chemicals enter and persist in the human body and the environment.

Are all toxic chemicals listed on labels?

- No. Manufacturers are not required to disclose toxic chemicals in fragranced products, and generally do not. Even carcinogenic Hazardous Air Pollutants (HAPs) do not need to be listed, even though no level of exposure to these chemicals is considered safe, according to the U.S. Environmental Protection Agency.
- An analysis of best-selling fragranced products found that each product emitted dozens of volatile organic compounds (VOCs), none of which were disclosed on any product label or material safety data sheet (MSDS), even though some are classified as toxic or hazardous under federal laws.

Actual Chemicals Versus Listed Ingredients in a Popular Fabric Softener

Ingredients listed on label	biodegradable fabric softening agents (cationic)
Ingredients listed on MSDS	nonionic and cationic fabric softening agents, perfume, colorant, quality control agents
Actual chemicals (identified in analysis)	*ethanol, d-limonene, methoxy ethane, *a-pinene, *benzyl acetate, isocineole, b-pinene, 2-methoxy propane, linalool, (Z)-3,4-dimethyl-3-hexen-2-one-, *chloromethane, gamma-terpinene coeluted with 2,7 dimethyl-2,7-octanediol, *acetaldehyde, 2,4-dimethyl-1,3-cyclopentanedione, 3-methyl-2-buten-1-ol acetate, a-terpinolene, diethoxy methane, 1,5-dimethyl-1,4-cyclohexadiene, 1-methyltricyclo [2.2.1.0(2,6)]-heptane, a-terpinene *classified as toxic or hazardous under federal laws

How do chemicals from consumer products enter water systems?

- In many ways. Personal care and cleaning products go down the drain in bathrooms and kitchens.
- Laundry products from the washing machine flow down the drain and into sewers. Chemicals from the clothes dryer are vented to outside air, and then wash out to surface waters.
- Chemicals from products used indoors (such as air fresheners and deodorizers) migrate outdoors, then redeposit to soil and surface waters.

What are the implications for water systems?

- Fragrance compounds are commonly found in water sources and drinking water
- Fragrance compounds are also found before and after wastewater treatment, affecting reuse of water and biosolids.
- Once fragrance chemicals enter water systems and the environment, they are difficult and costly to remove.
- Fragrance chemicals are known to be persistent, bioaccumulative, and highly toxic to aquatic life.

Are fragranced products harmful to health?

- Yes, potentially very harmful. Common fragrance chemicals are toxic to the neurological, respiratory, immune, and endocrine systems. Children are especially vulnerable.
- More than 30% of the U.S. population reports headaches, breathing difficulties, and other health problems from exposure to fragranced products, according to national epidemiological studies.
- Even low-level exposures to fragranced products can cause asthma attacks, anaphylaxis, rashes, seizures, migraines, breathing difficulties, loss of consciousness, and other adverse effects.

Are “organic” or “natural” fragranced products any safer?

- No, generally not. In tests, all fragranced products emitted hazardous chemicals, even those products certified as “100% organic” or “green.”
- Products with “organic fragrance,” “natural fragrance,” or with “essential oils” were sometimes more hazardous than those with regular fragrances.
- “Unscented” products can still contain toxic fragrance chemicals, along with a masking fragrance.

What can consumers do?

- Choose products without any fragrance, scent, or perfume.
- Avoid air fresheners and deodorizers.
- Use products such as baking soda and white vinegar for cleaning.

For more information:

Articles available on Professor Steinemann’s website at

http://www.ce.washington.edu/people/faculty/bios/steinemann_a.html

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