Institute for Environmental Solutions

Non-Toxic Cleaning and Living

CONTAMINANTS of EMERGING CONCERN

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Presenters

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Agenda:

- IES overview
- Where does our water come from?
- Contaminants of Emerging Concern (CEC)
- CECs in household cleaning products
- Additional resources
- Questions

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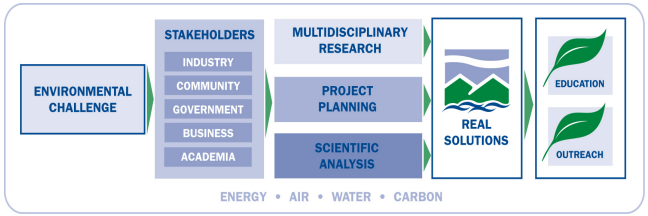

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CECs: Contaminants of Emerging Concern

Synthetic chemicals in everyday products:

- Personal care products
- Cleaning products
- Food preservatives, packaging

Can cause harm to:

- Environment
- Human health

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Contaminants of Emerging Concern

- Increasingly being found in water systems.
- Known and suspected toxins and endocrine disruptors
- Cause mutations and other biological abnormalities in aquatic life
- Originate from industrial and household cleaning products, personal care products, food packaging, and pharmaceuticals.
- Pose human health risks.

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Why do we care?

- Not regulated
- Conventional wastewater treatment does not effectively remove
- Individual actions of people can make a difference
- Problem is unique: "Intentional pollution"
- Marketing plays a large role

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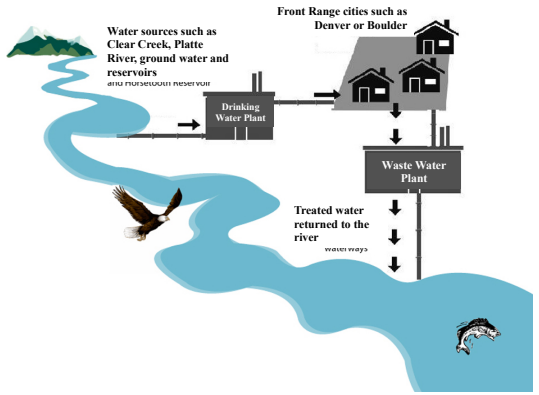
Water Cycle



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CECs and Household Cleaning Products

Sources and destinations:

- Sources: household and personal care products, food products, pharmaceuticals, flame retardants, pesticides
- Treatment: incompletely removed by conventional water treatment
- Persistent: contaminants build up in the environment (including our homes)

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Potential Health Risks

CECs…

- Can interfere with endocrine (hormonal) systems and disturb development.
- Suspected of causing cancer or can contribute to increased risk from other carcinogens.
- Known to bioaccumulate in fatty tissues in humans and in wildlife (accumulate in increasing concentrations as they move up the food chain).
- Cause deformities: exposure linked to mutant fish.

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Health risks of CECs uncertain

- Chemicals tested on animals at high doses; results extrapolated to predict response at low doses
- Many risk assessments used by the government based on these older tests
- More recently discovered that some chemicals (BPA) can have a larger effect at a lower dose
- National Toxicology Program: concern for effects on brain, behavior, and prostate gland in fetuses, infants, and children at current exposures to BPA

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What do we do about CECs?

- Educate yourself, your family, and your friends
- Reduce your chemical footprint
- Encourage stores and industries to use safer alternatives
- Make inexpensive and safe non-toxic alternative products

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CECs in Household Products

Triclosan

What is it?
- Triclosan is a chlorinated aromatic compound added to many products to reduce or prevent contamination by bacteria, fungi, and mildew.

What products have it?
- Antibacterial hand soaps, dishwashing detergents, laundry soaps, and toothpaste.

What's the harm?
- Poses health risks to wildlife: hormones, thyroid disorders
- Poses health risks to humans: bacterial resistance, human breast milk

Safe alternatives:
- Avoid all products that contain triclosan
- Proper hand washing for 30 seconds with any soap
- ➢ Triclosan is listed as an ingredient on the label

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CECs in Household Products

Triclocarban

What is it?
- Triclocarban is a compound added to many products to reduce or prevent contamination by bacteria and fungi.

What cleaning products have it?
- Disinfectants and soaps

What's the harm?
- Poses health risks to wildlife: endocrine disruptor, toxic to aquatic species
- May pose health risks to humans

Safe alternatives:
- Avoid all products with triclocarban

- ➢ Triclocarban is listed as an ingredient on the label

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CECs in Household Products

Synthetic Fragrance

(Perfume, Parfum)

What is it?
- Synthetic fragrances are organic compounds used in almost all commercial fragrances.

What products have it?
- Air fresheners, cosmetics, soaps, cleaning products, and personal care products

What's the harm?
- Poses health risks to humans and wildlife: persistence in the environment, accumulation in tissues, breast milk

Safe alternatives:
- Use unscented products or products scented from organically grown natural plants, and essential oils.

Regulation and label requirements:
- FDA regulates fragrance in cosmetics, but there is no regulation for cleaning products and other household products

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CECs in Household Products

Surfactants

What are they?
- Surfactants are organic compounds commonly called wetting agents, because they reduce surface tension in water and other liquids.

What products have it?
- Soaps, dishwashing liquids, laundry detergents, fabric softeners, shampoos

What's the harm?
- Poses health risks to humans and wildlife.

Safe alternatives:
- Avoid products with surfactants listed on the label.
- Choose products with plant-based surfactants.

Regulation and label requirements:
- None

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CECs in Household Products

Oxybenzone

What is it?
- Organic compound, also known as benzophenone-3, used to protect skin from ultraviolet solar radiation (UV) exposure.

What products have it?
- Common UV filters, used in approximately 60% of sunscreen products

What's the harm?
- Potential for endocrine disruption (estrogenic effects).
- High incidence of photodermatitis

Safe alternatives:
- Titanium oxide (TiO_2) and zinc oxide (ZnO).

Regulation and label requirements:
- Maximum FDA-approved concentration in sunscreens is 6%

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CECs in Household Products

Parabens

What are they?
- Used in the commercial manufacturing industry as preservatives due to their usefulness as an antimicrobial agent.

What products have it?
- Deodorants, eye makeup, shampoos/conditioners, face wash, beer, frozen foods, contraceptives, cough syrups and ingestible pills

What's the harm?
- Disrupt hormonal function and reproductive organ development in rats and mice. Mimic estrogenic activities in living systems

Safe alternatives:
- Phenoxyethanol, grapefruit seed extract, grape seed extract or tocopherol (vitamin E).

Regulation and label requirements:
- Butylparaben allowed as a preservative. Parabens permitted by the FDA as a food additive at levels of 0.1%.

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CECs in Household Products

DEET

What is it?
- *N*,*N*-Diethyl-*meta*-toluamide, common active ingredient in insect repellent

What products have it?
- insect repellent sprays, wipes and lotions

What's the harm?
- Suspected to cause seizures in children and individuals prone to seizures; dermatitis and scarring; unknown impacts to pregnant and nursing women.

Safe alternatives:
- Picaridin and oil of lemon eucalyptus approved by the US Centers for Disease Control & Prevention (CDC).

Regulation and label requirements:
- Approved for commercial use as an insecticide by EPA at 4-100%. Canada permits as an active ingredient in bug repellents up to 30%.

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Make Your Own Non-Toxic Cleaning Products

Spray Bottle Recipes
- All-purpose cleaner
- Shower cleaner
- Glass cleaner

Other Recipes
- Wood Cleaner
- Soft Scrubber

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Questions and Answers

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