

Water Pollution

Contaminants in the Great Lakes St. Lawrence Watershed

Information Card: Household Products

Household products, including cleaning supplies, personal care items, and medications, are common sources of pollution in the Great Lakes. These products can contain harmful chemicals that enter the water system through drains, improper disposal, or runoff.



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Pills in Blister Pack, CC0, via Wikimedia Commons



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Key Pollutants:

- **Cleaning Products:**
 - » Many household cleaning products contain chemicals such as phosphates, chlorine, ammonia, and various surfactants.
 - » These chemicals can enter waterways through drains and affect aquatic life by disrupting their reproductive and growth processes.
- **Personal Care Products:**
 - » Products like shampoos, conditioners, lotions, toothpaste, deodorants and cosmetics often contain parabens, and other harmful chemicals.
 - » Microbeads, tiny plastic particles, do not biodegrade and accumulate in water bodies, causing harm to aquatic organisms.
- **Medications:**
 - » Improper disposal of medications (flushing them down the toilet or sink) contaminates waterways.
 - » Pharmaceuticals can disrupt the endocrine systems of aquatic species, leading to reproductive and developmental issues.
- **Pesticides and Herbicides:**
 - » Products used for gardening and lawn care often contain chemicals that can leach into groundwater or flow into nearby streams and lakes via storm drains.
 - » These substances can be toxic to aquatic life and contaminate drinking water sources.

Possible Solutions:

- **Encourage** using eco-friendly products and proper disposal of chemicals and medications.
- **Promote** local community clean-up efforts to reduce litter and plastic waste.

On the Map:

- **Identify an urban area** on the Giant Floor Map and trace how household waste might travel from this area through local waterways to the Great Lakes.
- **Discuss the impacts:** How might these pollutants impact communities and ecosystems downstream?
- **Evaluate the solutions:** Consider how practical the suggested solutions are for your community. Are they easy to implement? Can you think of any other solutions that could help reduce pollution from household products?

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Information Card: Industrial Processes

Industrial activities, including manufacturing, mining, and transportation, release various pollutants into the environment. These pollutants can enter waterbodies through direct discharges, runoff, or accidents.



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Key Pollutants:

- **Industrial Discharges:**
 - » Industry may release pollutants such as heavy metals (mercury, lead), chemicals, and organic waste into rivers and lakes.
 - » These pollutants can poison aquatic life, disrupt ecosystems, and pose health risks to humans. Heavy metals do not disappear over time. They linger in the environment and can work their way through the food chain.
- **Thermal Pollution:**
 - » Industrial facilities that use water for cooling purposes often discharge heated water back into water bodies.
 - » Increased water temperatures can reduce oxygen levels, harming fish and other aquatic organisms.
- **Oil Spills and Runoff:**
 - » Industrial activities, including transportation and storage of oil, can lead to accidental spills and runoff.
 - » Oil contaminates water, harms wildlife, and can be difficult to clean up, causing long-term environmental damage.
- **Mining Activities:**
 - » Mining operations can lead to the release of harmful substances such as arsenic, sulfuric acid, and heavy metals into water bodies.
 - » Acid mine drainage and metal contamination can devastate aquatic ecosystems and affect water quality.

Possible Solutions:

- **Advocate** for stricter regulations on industrial waste disposal.
- **Encourage** industries to adopt cleaner technologies and reduce emissions.

On the Map:

- **Identify an industrial area** on the Giant Floor Map and trace a path of pollutants from this area through local waterways to the Great Lakes.
- **Discuss the impacts:** How might these industrial pollutants affect the health of local ecosystems, wildlife, and communities downstream?
- **Evaluate the solutions:** Consider the practicality of the suggested solutions for reducing industrial pollution. Are there challenges to implementing these solutions? Can you suggest other actions or policies that could help limit industrial pollution?

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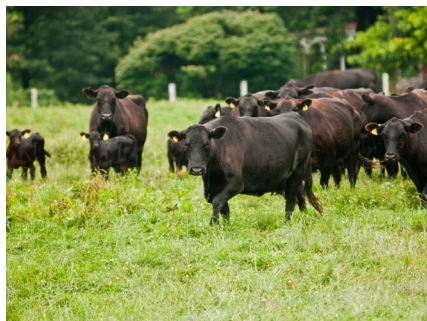
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Information Card: Agriculture

Agricultural activities, such as industrial farming and livestock operations, are significant sources of water pollution. Fertilizers, pesticides, animal waste, and sediment runoff can enter waterbodies and cause various environmental problems.



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Key Pollutants:

- **Fertilizers:**
 - » Runoff from agricultural fields often carries excess nutrients, particularly nitrogen and phosphorus, into water bodies.
 - » These nutrients can cause algal blooms, which deplete oxygen in the water and create dead zones where aquatic life cannot survive.
- **Pesticides:**
 - » Pesticides used in agriculture can be carried by runoff into rivers, lakes, and groundwater.
 - » These chemicals can be toxic to aquatic organisms and contaminate drinking water supplies.
- **Animal Waste:**
 - » Manure from livestock operations can run into nearby water bodies, introducing pathogens, nutrients, and organic matter.
 - » High levels of organic matter and nutrients can lead to algal blooms and dead zones, affecting water quality and aquatic life.
- **Sediment Runoff:**
 - » Agricultural practices that disturb the soil, such as ploughing, can increase erosion and sediment runoff.
 - » Sediments can carry pollutants and reduce water clarity, impacting aquatic plants and animals.

Possible Solutions:

- **Promote** sustainable, regenerative farming practices, such as buffer strips, cover crops, and reduced pesticide use.
- **Encourage** better management of animal waste and runoff control measures.

On the Map:

- **Identify an agricultural region** on the Giant Floor Map and trace how pollutants from this area might enter local waterways and ultimately the Great Lakes.
- **Discuss the impacts:** What effects might these agricultural pollutants have on water quality, aquatic life, and human health downstream?
- **Evaluate the solutions:** Reflect on the feasibility of the proposed solutions for reducing agricultural pollution. Are these actions realistic for farmers or communities to adopt? Can you think of any alternative methods or technologies that might be more effective?