

# "Don't you know that you're toxic?" The toxicology behind being a woman



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## Toxicology-womanhood intersection

The intersection between womanhood and toxicology includes topics from reproductive biology, to ecosystem health, and even sociology. It is important to consider how sex and gender play a role in how toxicants enter the environment and cause negative impacts.

Environmental pollution is one of the biggest threats to both the environment and human beings, since 9/10 breathe polluted air. These compounds can enter the body through multiple sources and cause potential impacts.

Persistent Organic Pollutants (POPs) are lipophilic compounds that accumulate in the fatty tissue of living animals and human beings. One of the most common tissues where they can be found is the mammary tissue. Since the maternal milk contains a lot of lipids, they can bind easily to it and be transferred to the offspring easily.

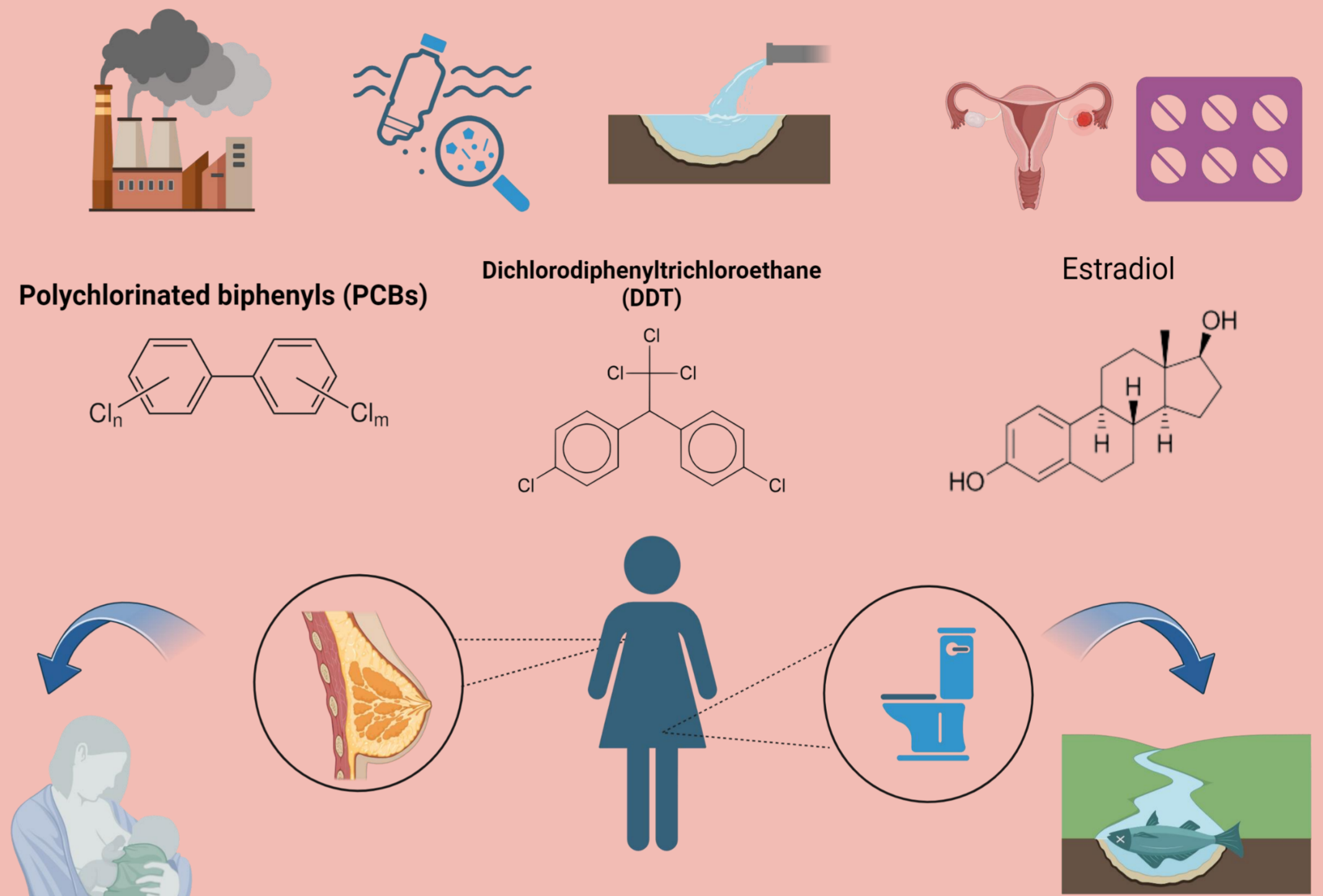
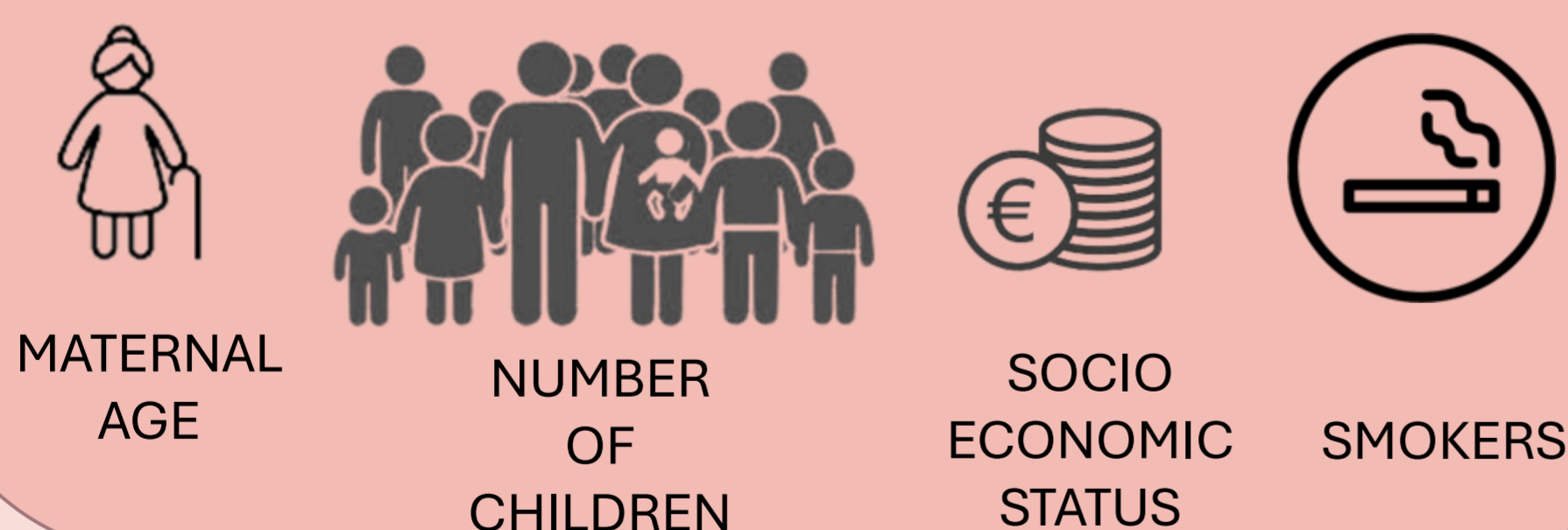


Figure 1. The interactions of synthetic compounds with women, their offspring, and their environment

## Reproductive Health

- Environmental pollutants can have **endocrine disruptive effects** on the child and a **neurotoxicity capacity**.
- Factors that can influence concentrations of **maternal milk**:



## Ecosystem Health

- EE2**, estrogen found in **birth control pills**, is excreted and found in low, but potent concentrations in the **aquatic environment** (< 5ng/L).
- An experimental lake design studied effects of EE2 in fathead minnows (*Pimephales promelas*)
- They found **feminization of males** through increased vitellogenin production (mRNA and protein) leading to intersex qualities and a severe **decline in reproduction**.

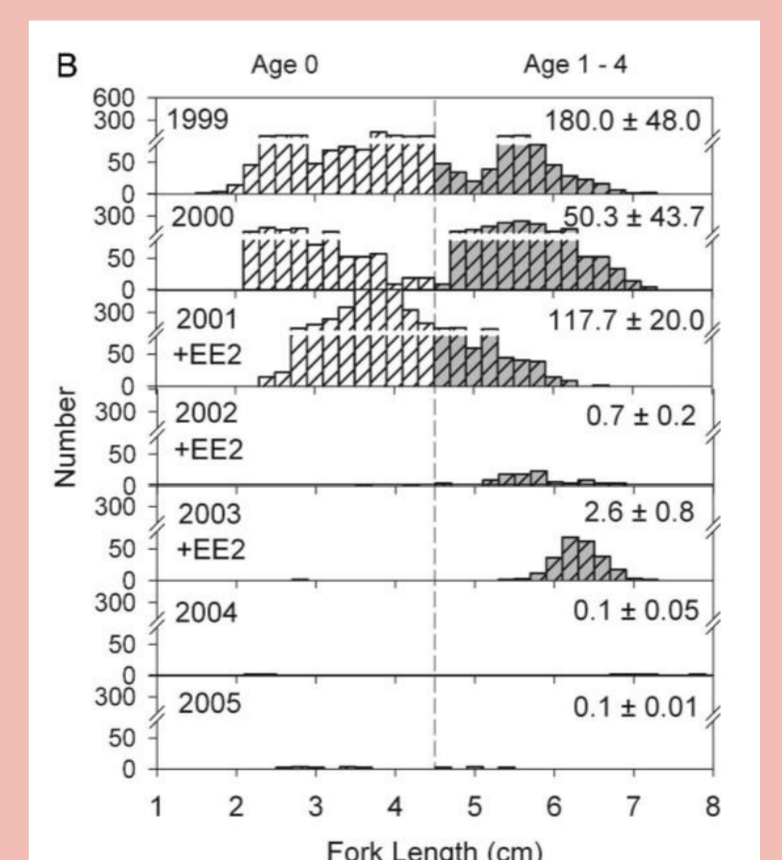


Figure 2. Length frequency distributions of fathead minnow captured in trap nets in experimental Lake 260 (amended with 5–6 ng/L of EE2 in 2001–2003) during the fall of 1999–2005 (Kidd et al., 2007)

## Sociology

- Soo-Jeong Lee et al. (2021) reported that female cleaning staff in a hospital system were **more likely to experience acute symptoms** from chemical exposure, but were **less likely to report them**
- Increased **supervisor support** was correlated with less symptoms and could be a solution.

## Future Perspectives

- Breastfeeding parents and people taking hormonal supplements should have **easy access to education** about pollutants and their environmental impacts.
- Sex and gender should be considered in toxicological studies where applicable, as **biological and social differences** can alter exposure levels and impacts of toxicants.