

# From Womb to World: The Effects of EDCs on Females and Offspring

Nancy Jackson, DBH Candidate 2024

College of Health Solutions, Arizona State University

## INTRODUCTION

Endocrinology is the study of hormones in the body. Hormones are chemicals that are important for reproductive health, but also for our brain function and mood.

Exposure to harmful chemicals called endocrine disrupting chemicals (EDCs) are correlated with adverse conditions in:

- Reproductive Health
- Cognitive Health
- Emotional Health

Humans are most sensitive to EDCs that we come in contact with early in life, such as during pregnancy and breastfeeding.

EDCs are commonly found in many:

### NUTRITION SOURCES

- Drinking Water
- Food--as a result of Pesticides

### CONSUMER PRODUCTS

- Body Soaps
- Hair Care Products
- Lotions, Moisturizers, and Sunscreens
- Deodorants and Antiperspirants
- Cosmetics
- Nail Care Products
- Dental Care Products
- Fragrances (Body and Air)
- Pharmaceutical Agents
- Cleaning Products
- Disposable Food Packaging
- Cookware
- Stain-Resistant Fabrics
- Carpet
- Flame Retardants
- Plastics

And, consequently, in breast milk.

## AIM

Raise awareness about the correlation between EDCs and various specific physical and mental health conditions among pregnant mothers and their developing children:

### BEFORE PREGNANCY

#### Reproductive-age Females

- Infertility
- Polycystic Ovary Syndrome (PCOS)
- Endometriosis

### DURING PREGNANCY

#### Pregnant Females (and Conceptus)

- Preeclampsia
- Gestational Hypertension
- Preterm Birth

#### Conceptus (Embryos & Fetuses)

- Prenatal neurodevelopment disorders:
  - Abnormal Brain Gene Expression
  - Autism & ADHD-related Behaviors

### AFTER PREGNANCY

#### Women & Children

- Early Puberty (in Adolescents)
- Progressive Neurodegeneration
- Poor Sleep Health
- Depression
- Obesity
- Diabetes
- Thyroid Disease
- Cancer
- Cardiovascular Disease
- Mortality

EDCs are most harmful to conceptus and children because their bodies are still developing and very sensitive to even small amounts of these chemicals.

## METHODS

### RESEARCH TYPE

Secondary; Literature Review

### SEARCH STRATEGY

**Databases:** ASU Library, All Resource Databases

**Keywords:** "endocrine disruptors", "female"

### INCLUSION CRITERIA

**Publication Date Range:** 2023

**Resource Type:** Articles

**Language:** English

**Study Designs:** Meta-Analyses, Systematic Reviews, Randomized Controlled Trials

### DATA EXTRACTION

**Data Extracted:** Authors and year of publication, study design, sample size, population characteristics, exposure assessment methods, health outcomes measured, key findings

**Extraction Conducted By:** One author

**Data Quality Assessed By:** One author

### DATA SYNTHESIS

**Synthesis Method:** Narrative synthesis

**Key Findings:** Identified studies that reported a correlation between exposure to EDCs and adverse effects on reproductive, cognitive, or emotional health outcomes in females, fetuses, or children.

### QUALITY ASSESSMENT

**Quality Assessment Tool:** Cochrane Risk of Bias tool for randomized controlled trials, and AMSTAR 2 tool for systematic reviews and meta-analyses.

**Quality Assessed By:** One author

## RESULTS

Research on EDCs has increased significantly over the past couple of years. In the **first quarter of 2023** alone, **over 100 journal articles** have already been published examining the relationship between EDCs and their effects on **the female reproductive system, prenatal, neonatal, child, or adolescent development.** Research also indicates increased negative effects of EDCs in the Neonatal Intensive Care Units (NICU) population, and in the general population **since the COVID-19 pandemic due to increased exposure to cleaning products and personal protective equipment.**

## CONCLUSIONS

Given the clear and mounting evidence, we have a responsibility to **raise awareness** about how EDCs affect mothers and children so they can **limit their exposure** to them and prevent adverse health conditions

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