

Evidence

Chemicals and Kids

Prevalence of toxins takes a toll.
BY SEAN DOOLITTLE '24

Earlier this year, BC Law Professor David Wirth co-penned a monumental paper entitled “Manufactured Chemicals and Children’s Health—The Need for New Law,” published in the *New England Journal of Medicine (NEJM)* (see page 8). Wirth, a trained chemist and environmental law expert, worked with an international, multidisciplinary team of scholars (among them Boston College’s Philip Landrigan, Thomas Chiles, and Kurt Straif) to blaze a new path toward a safer, healthier future for the children of the world.

Wirth and company have sought to harmonize the vast—and vastly differing—web of environmental laws and regulatory schema governing the use of toxic chemicals worldwide. The Toxic Substances Control Act, the US’s principal law regulating these substances, places the onus for implementation on the strained Environmental Protection Agency (EPA) and federal courts. The EU takes what is in principle a more rigorous approach, but their regulations are ungainly and slow to react as new chemicals come to market. Wirth’s paper highlights the shortcomings of both systems and, perhaps more significantly, the lack of coordination between the two.

Some of the following data highlight the specter of toxic chemicals, an international environmental issue which knows no border. Global problems require global solutions and thoughtful people like Professor Wirth and his co-authors to help solve them.

Sources: Consortium for Children’s Environmental Health, “Manufactured Chemicals and Children’s Health—The Need for New Law,” the *New England Journal of Medicine*, (1/8/25). The Minderoo-Monaco Commission on Plastics and Human Health, *Annals of Global Health* (Vol. 89). EPA, Search for Superfund Sites Where You Live. Mass. gov: Toxics Use Reduction Act (TURA) Program. Library of Congress, Environmental Law: A Beginner’s Guide.



ENVIRONMENTAL SAFETY LAWS

1970
Clean Air Act: EPA adopted. A thorough overhaul of prior legislation, it is aimed at improving overall quality of ambient (outdoor) air by setting emissions standards for hazardous pollutants and coordinating state air pollution controls.

1970
National Environmental Policy Act: Established environmental standards for federal executive agencies; federal agencies are required to prepare prior assessments of proposed agency actions, outlining potential environmental ramifications.

1972
Clean Water Act: Regulates industrial and agricultural facilities, sewage treatment plants, and other pollutant sources that make their way into the “waters of the United States.”

1976
Toxic Substances Control Act: Authorizes EPA to require reporting, record keeping, and testing, and set restrictions relating to chemical substances and/or mixtures.

1980
Comprehensive Environmental Response, Compensation, and Liability Act: Empowers EPA to designate particular locations as Superfund sites requiring long-term clean-up and decontamination of toxic chemicals and other hazardous materials.

1989
Toxics Use Reduction Act: Massachusetts law requires toxic chemicals-use facilities to report on their chemical use, conduct toxics use reduction planning every 2 years, and pay fees.

CHEMICALS OVERVIEW

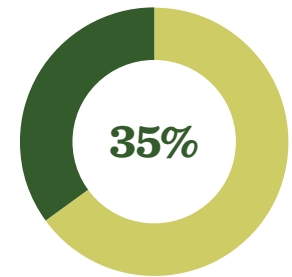
350,000
Manufactured chemicals, chemical mixtures, and plastics estimated to be currently listed in global inventories

50x Increase in chemical manufacturing since 1950
<20% Percentage of synthetic chemicals tested for toxicity

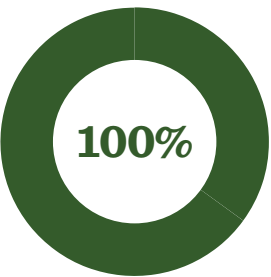
530,000
Americans living within 3 miles of a chemical plant

IMPACT ON CHILDREN

Empirical data in recent decades with respect to children’s negative health outcomes have heightened concern as to the myriad possible reasons behind them, toxins included.



Increase in incidence of childhood cancers since 1975



Increase in male reproductive birth defects



1 in 6 / Children diagnosed with neurodevelopmental disorders

200%

Increase in pediatric asthma

300%

Increase in pediatric obesity

Lead

100,000

Tons of tetraethyl lead added yearly to gasoline between the 1950s-1970s

16-17µg/dl

Average blood lead level of population during this period

2-5 IQ Points

Lost among US children due to lead

>50%

Increase in children with IQ below 70 (considered intellectually disabled)

1.8-2.4%

Increase in lifelong earnings potential per additional IQ point

SUPERFUND SITES

1,340

Sites currently on National Priorities List

457

Sites cleaned up, removed from list to date

31

Sites in Massachusetts contaminated with a mix of chemicals

PLASTICS

More than half of all plastic ever made has been produced since 2002.

8,300

Megatons of plastic manufactured since WWII

230x

Increase in annual plastic manufacture between 1950-2019

18%

US share of global plastic consumption

6,000,000,000

Tons of plastic waste accumulated in the environment since 1950

\$250 billion

Estimated health-related cost of plastic production per year

20,000,000

Estimated number of waste pickers worldwide (mostly women from marginalized communities)



18% / Share of plastic production in form of synthetic fibers

Up to 465,000

Microfibers released per square meter of synthetic fabric by the 5th washing cycle

Recycling

<10%

Recycling rate of plastics

75%

Recycling rate of glass

70%

Recycling rate of paper

Single-Use

35-40

Percentage of plastic production that is single-use/disposable

30%

Increase in single-use plastic production 2021-2025

2,500

Average years of degradation for single-use water bottle