Hygieia

Greek goddess of good health, cleanliness and sanitation

Early EH efforts focused on hygiene

Building the Northern Outfall Sewer, London, 1862 (Otto Herschan/Getty Images)
School of Hygiene and Public Health at Johns Hopkins

Founded in 1916

Image source: Rockefeller Foundation
The Environmental Health Paradigm

How exposures cause disease

1. Exposure
2. Internal dose
3. Biologically effective dose
4. Early biological effects
5. Altered structure and function
6. Clinical disease
The Environmental Health Paradigm

How exposures cause disease

Where we can intervene to reduce exposure or response in order to prevent disease & improve the health of the public

Exposure

Internal dose

Biologically effective dose

Early biological effects

Altered structure and function

Clinical disease
Welcome to Baltimore
Welcome to Baltimore

Image source: MD Historical Society
A divided city:
Place and race in Baltimore

Source: Racial Dot Map (demographics.virginia.edu/DotMap/index.html)
Zooming in

Hopkins East Baltimore Campus

Hopkins Homewood Campus

Patterson Park
Red line legacy

Residential Security Map issued by the Federal Home Owners’ Loan Corporation (HOLC) in 1937

Map courtesy of the Sheridan Library
Lack of investment in infrastructure

Image source: NPR
Rat hot spots

Image source: Baltimore Sun (2014)
Asthma in Baltimore

Source: Capital News Service, data from the Maryland Health Services Cost Review Commission
COVID-19 in Baltimore

Source: Maryland Department of Health (coronavirus.maryland.gov)
Accessed June 20, 2020
Population Perspective \[\leftrightarrow\] Molecular Perspective

- Exposure
  - Internal dose
  - Biologically effective dose
  - Early biological effects
  - Altered structure and function
  - Clinical disease
An industrial city

Image source: WYPR
Blue – Toxic Release Inventory (TRI) site
Red – Superfund site

Source: EPA TOXMAP
toxmap.nlm.nih.gov
Bethlehem Steel: Occupational and Environmental Hazards

Images: Baltimore Sun
The Baltimore region’s manufacturing sector employed roughly 160,000 fewer people last year than in 1957. The Sparrows Point closure was one of many, a nationwide trend.

1971: Demand for domestic steel softens. Bethlehem Steel lays off 2,500 employees nationally, including 725 at Sparrows Point in July. Layoffs at the Point climb to 3,000 in October.

2001: Bethlehem files for bankruptcy after years of declining profits, employment.

1957: Sparrows Point churns out more than 8 million tons of steel, making it the most productive plant in the world. Two years later, the plant reaches peak employment of more than 30,000 people.

1978: Bethlehem Steel rebounds, reports profits of $225 million; steel imports hit record high of 21.1 million tons. New blast furnace is installed.

SOURCE: U.S. Department of Labor

Baltimore Sun graphic
Steel worker and community health

Asbestos
Health effects:
Lung cancer (mesothelioma)
Asbestosis (lung disease)
Lowered immune function

Image source: Smithsonian

Chromium
Health effects:
Lung cancer
Respiratory irritation
Allergic skin reaction

Exposure occurs through

Environmental Media

- Air
- Water
- Food
- Soil / Dust

and is mediated via

Infrastructure
A watershed city

Image source: Baltimore Metropolitan Council
Abel & Reds Wolman

Image source: JHU [Reds – left; Abel – right]
Aging water infrastructure
Local

Baltimore schools to test lead filters on water fountains

By Associated Press
July 9, 2017 at 4:16 PM

BALTIMORE — The Baltimore school system is testing the use of filters that could allow the system to reopen water fountains that have been shut down for a decade because of fear of lead contamination.

Image source: Baltimore Sun