

Connecting Environmental & Human Health



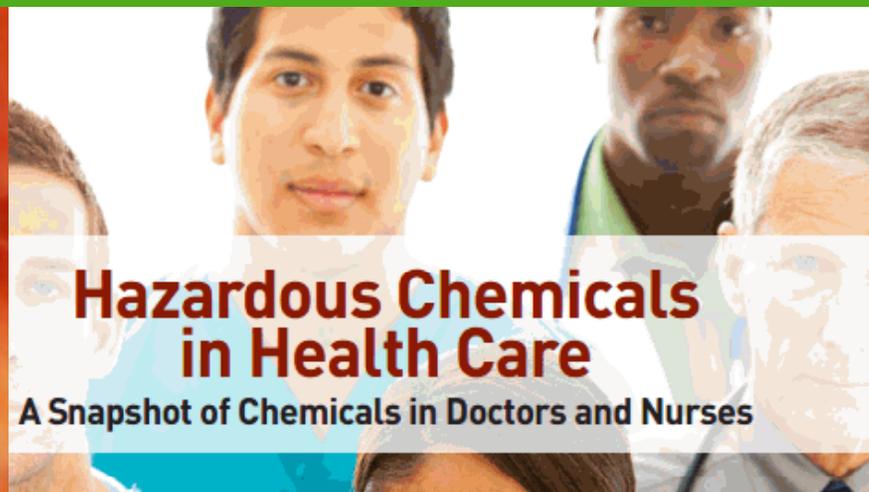
The Body Burden Studies

BodyBurden The Pollution in Newborns

A benchmark investigation of industrial chemicals, pollutants, and pesticides in human umbilical cord blood

Umbilical cord blood analysis of 10 newborns from across country finds average of 200 chemicals in each baby:

- 180 cause **cancer** in animals or humans
- 217 are **toxic** to the brain and/or nervous system
- 208 cause **birth defects** or **abnormal development** in animals



Hazardous Chemicals in Health Care

A Snapshot of Chemicals in Doctors and Nurses

•Doctors and nurses across the US tested for 62 chemicals found in healthcare setting

•At least 24 found in each participant; including those connected to:

- Miscarriage
- Infertility
- Cancer
- Obesity
- Heart Disease
- Thyroid dysfunction
- Diabetes
- Learning, memory & behavior disorders
- Hormone & immune disruption



Recommends that pediatricians “familiarize themselves with the potential adverse health effects of chemicals in the environment.”

2008-2009 Annual Report President's Cancer Panel

REDUCING ENVIRONMENTAL CANCER RISK

What We Can Do Now

“The true burden of environmentally-induced cancer has been grossly underestimated.”



Waste Disposal

US hospitals generate
5.9 million tons
of waste annually.

Inova generates
15,840,000 lbs of waste
per year – that's around
**1,000 lbs of waste per
employee!**

Americans make up only
5% of the world's
population, but produce
almost 25% of its trash.

Landfills. Even the best-run landfills generate **harmful air emissions** that reduce air quality and lead to the formation of harmful smog. They also have the potential to **leach liquids and toxins** into the ground and water supplies.

Incineration. The burning of waste releases pollutants into the environment. Some of these are **highly toxic** and can cause health problems **including cancer, immune system damage, reproductive and developmental problems, and motor, sensory and cognitive function impairment.** Many incinerators use pollution control equipment to remove pollutants from the air, but this only moves these toxins from one medium to another.

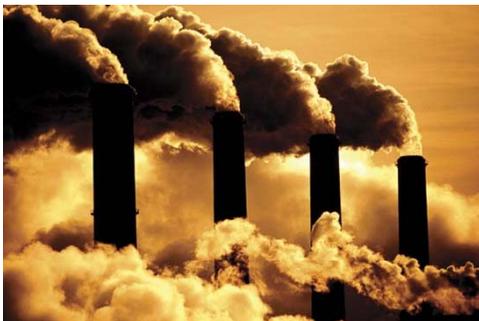
Environmental pollution. Waste often enters the environment as litter. A disproportionate amount of this litter makes its way to the world's poorest regions, who are least-equipped to manage it responsibly. As a result, the chemicals contained in waste **can contaminate the environment and the humans living in it.** Litter also harms the health of the delicate marine ecosystems that form the base of our food chain.

Transport and treatment of waste also have large environmental impacts because they rely on **energy produced by fossil fuels.** The **millions of miles** logged by waste transport trucks annually contribute to **air pollution** problems across the country.



Energy Consumption

- Buildings use almost half of energy in US
- Inpatient healthcare is the 2nd largest commercial energy user after food service
- Nearly 90% of US energy comes from fossil fuels → burning releases:
 - Toxins
 - Greenhouse gases
 - Particulate matter



Facts About Air Pollution

More than 4 of 10 people in the US already live where pollution levels are often *too dangerous to breathe*.

The US healthcare sector's high level of electricity consumption contributes to more than **\$600 million per year** in healthcare costs due to *increased asthma and other respiratory illnesses*.

Urban outdoor air pollution is estimated to cause **1.3 million deaths** worldwide per year. Those living in middle-income countries disproportionately experience this burden.

The average adult breathes over 3,000 gallons of air every day. **Children** breathe even more air per pound of body weight and are *more susceptible to air pollution*.



Chemicals in Medical Products

Medical products designed to heal contain harmful and sometimes toxic chemicals that patients, visitors & healthcare workers are then exposed to.

The Worst Offenders

Mercury



A potent neurotoxin that can harm the brain, spinal cord, kidneys, and liver

Used In

Thermometers
Sphygmomanometers
Dental Amalgam
Lab Chemicals
Preservatives
Fluorescent Lamps
Computer Equipment

DEHP/ Phthalates



Can leach into patients, leading to adverse effects on the liver, reproductive tract, kidneys, lungs and heart

Used In

Medical products made from soft PVC plastic, including:
IV Bags and Tubing
Catheter tubing
Feeding sets
Respiration Equipment

Flame Retardants



Build up in the body over time, toxic to humans, linked to reproductive and developmental health impacts

Used In

IV pumps
Televisions
Computers
Hospital Beds
Waiting Room Chairs
Hospital Privacy Curtains

BPA



A hormone-disrupting chemical that can have health effects at extremely low exposure levels.

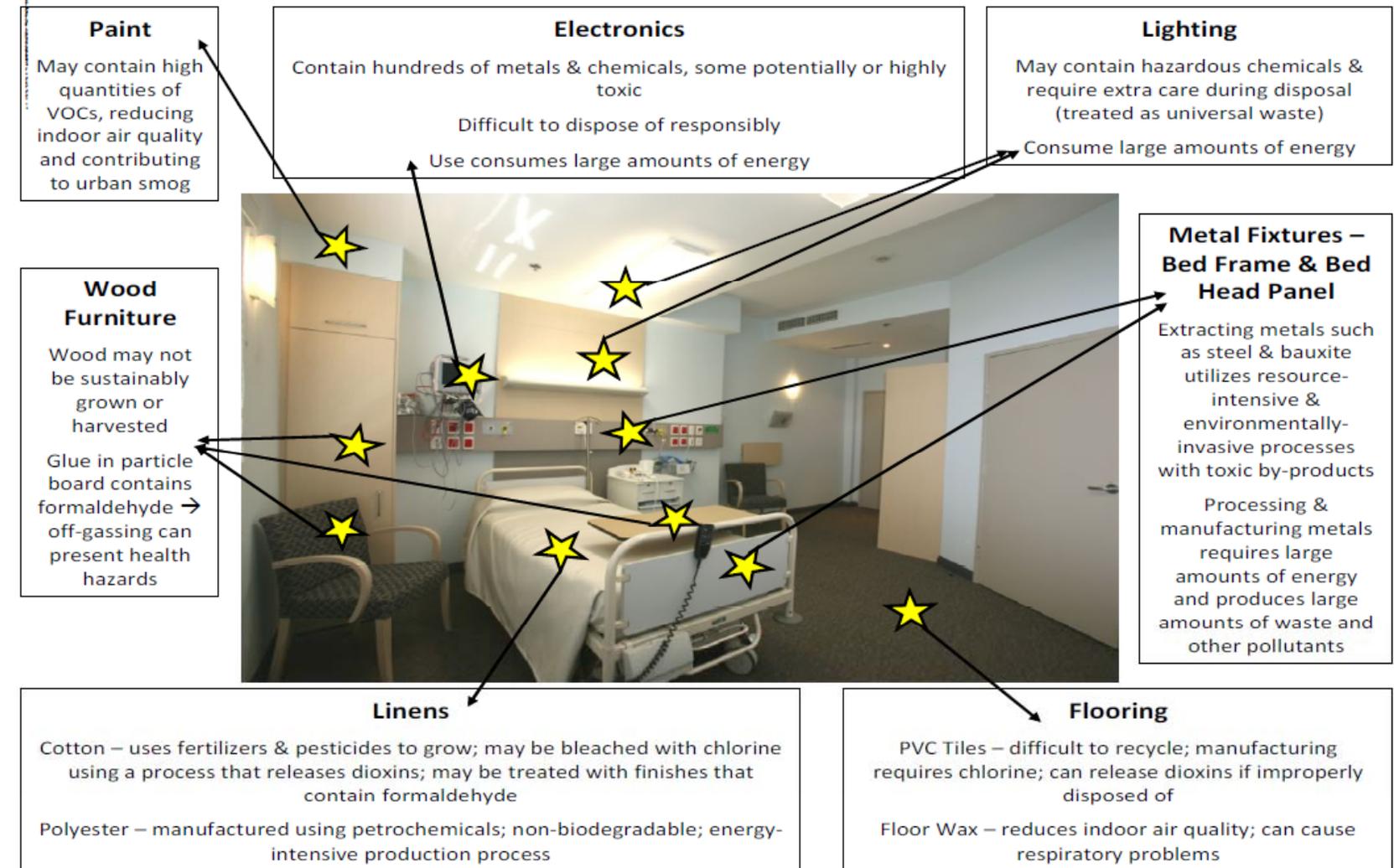
Used In

Hard plastics, including:
Food and Drink Packaging
Compact Discs
Infant Bottles
Impact-Resistant Safety Equipment
Medical Devices



Chemicals in the Built Environment

Impacts in the Healthcare Setting





Our Food System

- **Availability of nutritious foods**
 - Lots of calories, fat, salt, sweeteners
 - Few fresh, healthy fruits, veggies & whole grains
 - Nutrient loss during transport
- **Antibiotic resistance**
 - Antibiotics used to promote growth in livestock linked to antibiotic resistance in humans
- **Chemical exposure through packaging and pesticides**
 - The more it is processed & the farther it travels, the higher the likelihood of contamination
 - Pesticide use exposes farm workers, local communities & consumers
- **Air pollution**
 - Pesticide drift, field dust, waste burning, toxic gases from degrading manure, exhaust from production decrease air quality
- **Water availability and pollution**
 - High water consumption even during times of drought
 - Farming is leading source of water pollution in nation's rivers & streams
 - Pollution in fish biomagnifies up the food chain
- **Livestock production impacts**
 - Typical diet is meat-heavy and produce-light
 - Meat has largest carbon footprint, requires most resources to produce





Transportation & Commuting

- Traffic exhaust becoming a **major health concern**, especially in **urban areas**
- Exhaust from vehicles contains a variety of pollutants that have been associated with **pulmonary, cardiac, vascular and neurological impairments**
- Smog from vehicles contains ground-level ozone that can **irritate the respiratory system, reduce lung function, aggravate asthma, and inflame and damage the lining of the lung**
- The annual miles commuted by Inova employees releases **emissions equivalent to 1,000 single-family homes**





Additional Resources: Environment & Health

- **Body Burden Study - The Pollution in Newborns:**
<http://www.ewg.org/research/body-burden-pollution-newborns>
- **Hazardous Chemicals in Health Care Study:**
<http://www.psr.org/assets/pdfs/hazardous-chemicals-in-health-care.pdf>
- **President's Cancer Panel's *Reducing Environmental Cancer Risk* Report:**
http://deainfo.nci.nih.gov/advisory/pcp/annualReports/pcp08-09rpt/PCP_Report_08-09_508.pdf
- **American Academy of Pediatrics statement:**
<http://pediatrics.aappublications.org/content/127/5/983.full>
- **State of the Air 2013 Report (American Lung Association):**
<http://www.stateoftheair.org/>
- **International Agency for Research on Cancer 2013 Findings:**
http://www.iarc.fr/en/media-centre/iarcnews/pdf/pr221_E.pdf
- **World Health Organization air pollution resources:**
<http://www.who.int/ceh/risks/cehair/en/>
- **Health Care Without Harm resources on Toxic Chemicals in Healthcare**
<http://noharm-uscanada.org/issues/us-canada/toxic-materials>

Contact Us

We welcome your questions, ideas, thoughts, comments, or concerns.

Feedback on environmental sustainability at Inova may be directed to the Office of Sustainability at gogreen@inova.org.