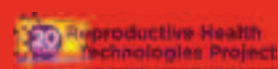
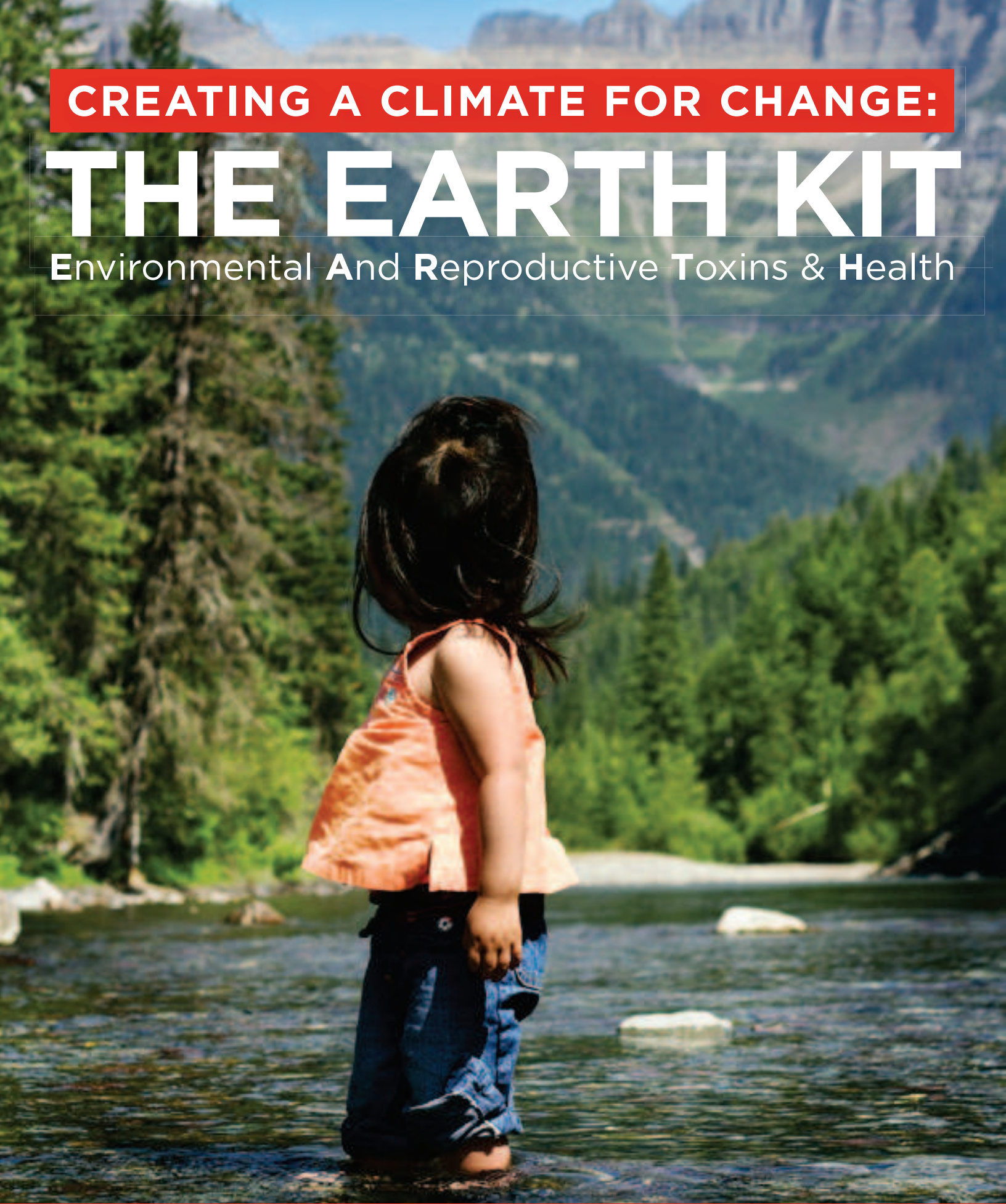


CREATING A CLIMATE FOR CHANGE:

# THE EARTH KIT

Environmental And Reproductive Toxins & Health



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# THE INTERSECTION: ENVIRONMENTAL AND REPRODUCTIVE HEALTH

What’s the connection between the health of our bodies and that of our planet? The truth is that our everyday environment—where we live, work and play—affects our reproductive health and that of future generations. On the flipside, access to voluntary family planning enables women and their communities to better manage adverse changes in the environment and helps ease pressure on scarce resources. Protecting reproductive and environmental health go hand in hand.

Reproductive and environmental health are also at the heart of building healthy communities. From green contraception to the impact of natural gas fracking on women and their families, making the connections between reproductive health and justice and environmental health and justice is critical to creating a healthy future for ourselves and the planet.

As consumers and citizens, we have an opportunity to invest in a more sustainable future and advocate for policies that live up to our vision for environmental and reproductive justice. We invite you to join us in educating and mobilizing your community or campus around this intersection. You can help create a climate for change.

### CREDITS:

#### **The Sierra Club Global Population and Environmental Program (GPEP)**

GPEP works to protect the global environment and preserve natural resources through advancing global reproductive health and sustainable development solutions, including women’s empowerment, voluntary family planning, and youth education.

#### **Reproductive Health Technologies Project (RHTP)**

RHTP is a national research-based advocacy organization working to advance every woman’s ability to achieve full reproductive freedom with access to the safest, most effective and preferred technologies for ensuring her own health and controlling her fertility.

Each chapter will provide an overview of the issue, ideas for action to raise awareness and spark change, and ways to learn more about each issue.

### **COME ONE, COME ALL!**

The toolkit is designed to be a resource for activists and advocates with varying levels of expertise and experience with reproductive health and justice, environmental health and justice, or all of the above! Newcomers and veteran advocates alike will learn something new, feel inspired to take action, and be challenged to look at the intersection of reproductive and environmental health and justice holistically.

#### **WE ACT for Environmental Justice, Inc. (WE ACT)**

West Harlem Environmental Action, Inc. (WE ACT for Environmental Justice) is a Northern Manhattan community-based organization whose mission is to build healthy communities by assuring that people of color and/or low-income participate meaningfully in the creation of sound and fair environmental health and protection policies and practices.





# UNEQUAL BURDEN: THE DISPROPORTIONATE IMPACT ON COMMUNITIES OF COLOR

## AT A GLANCE

Complex social structures often create an unequal impact on vulnerable communities when it comes to environmental contaminants and toxins. The many “-isms” in our society create unequal exposures and burdens that fall hardest on the most marginalized communities.

For example, communities of color, indigenous communities and low-income communities are more likely to live and/or work in closer geographic proximity to sources of environmental contamination than white or more affluent communities. Often these exposures are linked to adverse health outcomes. Where we live, work, play and pray can impact our health and wellbeing. Given the fact that geographic proximity to environmental hazards (ie. freeways, coal fired power plants and lead based paint) can significantly impact health, minimizing the burden of exposure for all communities is essential to achieving environmental justice.

### SPOTLIGHT

**What is Environment Health?** The World Health Organization (WHO) defines<sup>1</sup> environmental health as the external physical, chemical and biological factors

that can potentially affect human health. Environmental health advocacy is targeted toward preventing disease and creating health-supportive environments. What is missing from the WHO definition are the important social structures that often create disproportionate exposures to environmental toxins for low-income communities, indigenous communities and communities of color.

**What is Environmental Justice?** According the U.S. Environmental Protection Agency (EPA), the definition<sup>2</sup> of Environmental Justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.

In 1991 at The First National People of Color Environmental Leadership Summit, hundreds of

Environmental injustice and the health impacts that result from exposures to environmental contamination (see the table below for examples of environmental exposures and related poor health outcomes in Northern Manhattan):

| SOURCE   | POLLUTANTS   | PUBLIC HEALTH IMPACT  |
|--|--|---|
| <b>NORTH RIVER SEWAGE TREATMENT PLANT</b> <ul style="list-style-type: none"> <li>Emissions</li> <li>Water Effluent</li> <li>Combined Sewer Overflow</li> </ul> | <ul style="list-style-type: none"> <li>Hydrogen sulfide</li> <li>Diesel exhaust</li> <li>Heavy metals</li> <li>Pathogens (e.g. rotavirus, intestinal nematodes)</li> <li>PCBs</li> <li>Polyaromatic Hydrocarbons (PAHs)</li> <li>Pesticides</li> <li>Pesticide residues</li> </ul> | <ul style="list-style-type: none"> <li>Bronchitis, wheezing, cough, fatigue</li> <li>Asthma attacks</li> <li>Gastrointestinal problems</li> <li>Chronic infections</li> <li>Non-Hodgkin's lymphoma</li> <li>Decreased birth weight, length, head circumference</li> <li>Developmental problems in children</li> </ul> |
| <b>135<sup>TH</sup> STREET MARINE TRANSFER STATION</b>   | <ul style="list-style-type: none"> <li>Diesel exhaust</li> <li>Black carbon</li> </ul>   | <ul style="list-style-type: none"> <li>Asthma attacks</li> <li>Bronchitis, obstructive pulmonary disease</li> </ul>   |
| <b>100TH STREET BUS DEPOT</b>  | <ul style="list-style-type: none"> <li>Diesel exhaust</li> <li>PAHs</li> <li>Black Carbon</li> </ul>   | <ul style="list-style-type: none"> <li>Asthma attacks</li> <li>Bronchitis, obstructive pulmonary disease</li> <li>Decreased birth weight, length, head circumference</li> </ul>   |
| <b>HOUSES BUILT BEFORE THE 1950s</b>   | <ul style="list-style-type: none"> <li>Lead</li> </ul>   | <ul style="list-style-type: none"> <li>Learning difficulties</li> <li>Slowed growth</li> <li>Memory Loss</li> </ul>   |

people worked together to establish the 17 Principles of Environmental Justice.<sup>3</sup> This document outlined actions needed to protect people of color, indigenous people, and low-income people from environmental degradation.

There are potential environmental health threats all around us whether we notice them or not. An environmental threat is something that you are exposed to where you live, work, play or pray that can cause an adverse impact on the environment and our bodies. An environmental threat in an urban community could include exposure to high concentrations of air pollution

because one's school or home is close to a busy street or truck route. Many communities face environmental threats, however some communities are exposed to a variety of these threats at the same time. Many of these threats cannot be minimized solely through changing one's personal behaviors and oftentimes communities cannot afford to move to a more environmentally safe neighborhood and should not have to in the first place. Environmental justice focuses on addressing the systems that create these disproportionate impacts on vulnerable communities.



In order to address the systems that create disproportionate impacts and burdens, we need to use our stories to advocate for change and the creation of healthy communities for all people. It is these stories from which we can draw power when speaking to others in our neighborhood or urging elected officials to take action.

As we consider our personal environments, it is important to acknowledge the differences and similarities between our experiences. Members of low-income communities of color often share similar experiences and circumstances when it comes to environmental health. This is because decisions are often made on their behalf, but without their involvement.

For instance, from 1934, the practice of redlining<sup>4</sup> (where certain areas were systemically closed off to people of color and low-income families) created neighborhoods where only certain people were allowed to live. As a result, communities of color and low-income communities were pushed into neighborhoods that often contained higher concentrations of industrial facilities that release environmental contaminants.

This is just one example in a long legacy of environmental racism and injustice.

### KEY ENVIRONMENTAL JUSTICE MILESTONES

Below are a few key wins from Environmental Justice communities across the nation. Many of the wins below and additional EJ milestones can be found in the report *Toxic Wastes and Race at Twenty*.<sup>5</sup>

- **1988** - Latino grassroots group Mothers of East L.A.<sup>6</sup> defeats the construction of a huge toxic waste incinerator in their community.
- **1989** - The community of Morrisonville, Louisiana<sup>7</sup> is bought out and relocated by the Dow Chemical Company.
- **1991** - First National People of Color Environmental Leadership Summit convenes and develops the 17 Principles of Environmental Justice.
- **1993** - EPA establishes the 25-member National Environmental Justice Advisory Council (NEJAC).
- **1994** - President William J. Clinton signs Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations, mandating federal agencies to incorporate environmental justice into all their work and programs.
- **2006** - The members of the Concerned Citizens of Agriculture Landfill, after thirteen years of litigation, win their class action lawsuit to be relocated and bought out from their contaminated community. New Orleans Civil District Judge Nadine Ramsey notes<sup>8</sup> that the plaintiffs, overwhelmingly poor people of





color, “were promised the American dream of first-time home ownership [but] the dream turned out to be a nightmare.”

Plans for the “Justice Park” on the site of the Warren County’s PBC Landfill in North Carolina begin.

- **2012-2014** - Grassroots organizations, like the Little Village Environmental Justice Organization (LVEJO), Pilsen Environmental Rights and Reform Organization (PERRO) and the Pilsen Alliance; national environmental organizations; local legislators and city officials; and state and federal regulators convince Midwest Generation to close two coal fired power plants in Chicago — the Fisk plant in the Pilsen neighborhood and the Crawford plant in Little Village.

### TAKE ACTION!

WE ACT has a number of campaigns that relate to our 8 Healthy Community indicators which are: Clean Air/Climate Justice; Healthy Food in Schools; Affordable, Equitable Transit; Waste, Pests and Pesticides Reduction; Toxic Free Products; Sustainable Land Use; Open and Green Space; and Healthy Indoor Environments.

To become a member and participate in our working groups on Sustainable Development; Healthy Indoor Environments; Toxic Free Products; and our Transportation Riders Action Committee (TRAC): [https://weact.nationbuilder.com/become\\_a\\_weact\\_member](https://weact.nationbuilder.com/become_a_weact_member)

You can learn more about our work at the national level around Clean Air and Climate Change by visiting the website for our Washington, D.C. office:

<http://www.ejleadershipforum.org/>

Learn more about WE ACT’s campaigns to address environmental injustice: <http://www.weact.org/Home/tabid/162/Default.aspx>

### LEARN MORE:

17 Principles of Environmental Justice

<http://www.weact.org/Home/PrinciplesofEnvironmentalJustice/tabid/226/Default.aspx>

Toxic Waste and Race

<http://www.ucc.org/about-us/archives/pdfs/toxwrace87.pdf>

Toxic Waste and Race at 20

<http://www.ucc.org/assets/pdfs/toxic20.pdf>

Unnatural Causes

[http://www.unnaturalcauses.org/media\\_and\\_documents\\_video.php](http://www.unnaturalcauses.org/media_and_documents_video.php)

The Gardener’s Tale – Camara Jones

<http://vimeo.com/11939747>



### KEY TERMS

**Cumulative Impact:** The impact on human health that results from multiple exposures to environmental toxicants in the past, present and reasonably foreseeable future. Cumulative impacts can occur from individually minor but collectively significant actions taking place over a period of time. Residents of vulnerable communities often experience cumulative impacts as they are exposed to a wide variety of pollution and toxins simultaneously and over long periods.

**Environmental Racism:** “Racial discrimination<sup>9</sup> in environmental policy-making, enforcement of regulations and laws, and targeting of communities of color for toxic waste disposal and siting of polluting industries.” Racial discrimination can be intentional or unintentional and is often a manifestation of “institutional racism”—the societal systems and structures that perpetuate racism even in the absence of individual malicious intent.

**Exposure:** Contact with a chemical by swallowing, breathing or by direct contact (such as through the skin or eyes). Exposure may be either short term (acute) or long term (chronic).

# TOXIC REALITY: CHEMICALS, THE ENVIRONMENT AND REPRODUCTIVE HEALTH

## AT A GLANCE

From the air we breathe to the shampoo we use, our everyday environment can have an impact on our reproductive health. Due to our nation's outdated and ineffective chemical regulation policies, our environments are riddled with toxic chemicals with the potential to harm reproductive health.

## SPOTLIGHT

When we think about threats to our reproductive and sexual health, we don't tend to think of our sofas, food containers or lotion. The unfortunate truth is that mounting scientific evidence reveals the products with which we interact each day could be harming our health.

They can be especially harmful to our reproductive health. Exposure to toxic chemicals has been linked to the following reproductive health issues:

- Male and Female Infertility
- Reduced Sperm Count and Quality
- Alterations in Ovarian Function and Menstruation
- Endometriosis
- Altered Fetal Development
- Miscarriage and Pre-Term Birth
- Altered Prostate Development, Breast Development and Puberty Onset

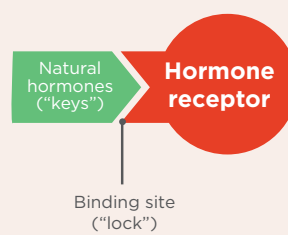
There are a few different windows of exposure during human life that are of most concern. The first are in utero and during infancy because of the critical physical and mental developmental programming that occur during those periods. In a study performed by the Environmental Working Group, a total of 287 different chemicals were found in the umbilical cords of newborns. So we know that exposure begins early—too early.

What's more, damage from exposures to some chemicals can be passed on to subsequent generations. For instance, one study revealed that exposure to the chemical DES during pregnancy was associated with genital malformation in the *grandsons* of the women first exposed. Similarly, lead and some pesticides have transgenerational impacts.

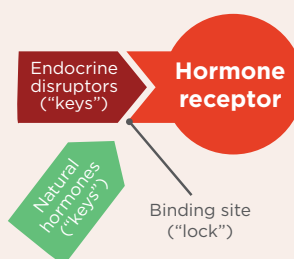
Why do toxic chemicals have such a great impact on reproductive health specifically? Many of these chemicals are endocrine disruptors, which affect the body's natural hormone functioning and can have a wide range of health impacts, even at low levels of exposure. Our body's endocrine system serves as the communication system for glands, hormones and cellular receptors that control the body's internal functions. The endocrine system also plays an important role during

## ENDOCRINE DISRUPTORS: HOW THEY WORK

### Normal Hormone Function



### Altered Hormone Function





critical windows of development, like pregnancy, infancy and puberty. Endocrine disrupting chemicals can disrupt normal hormone function and have been linked to the reproductive health issues previously mentioned.

## **REPRODUCTIVE HEALTH IMPACTS AND THE LAW**

Endocrine disrupting chemicals are all around us,<sup>10</sup> in pesticides, wood preservatives, paints, plastics, personal care products, and chemicals used for natural gas extraction and coal mining.

However, the harm caused by these toxins is not shared equally. Low-income communities and communities of color are much more likely than other groups to be directly exposed to toxic chemicals at work, at home, and through consumer products. Increased exposure to these chemicals puts these communities at greater risk for reproductive health problems. Compounding the problem, communities of color and low-income communities are less likely to have access to health insurance or quality, affordable care to prevent and address health issues. This unfortunate reality underscores the need for comprehensive chemical policy reform.

Most of us assume that the products we buy are safe for human consumption and use. After all, how could it be legal to put toxic and untested chemicals into maternity clothes or baby bottles? The fact of the matter is that the law that regulates today's chemicals is more than 30 years old and does not protect our families or communities from the dangers of chemical exposure.

The Toxic Substances Control Act of 1976 was inadequate when first signed into law and continues to be today. In fact, our current system for regulating chemicals is so broken that only 200 of the 80,000 chemicals in production today have been tested for safety, and only five of those have been regulated. This is the case because the chemical industry is not required to perform safety testing before producing and using a new chemical in product manufacturing.

Chemical policy reform is needed to ensure that chemicals are proven to be safe before they end up in our homes, schools, workplaces and stores.

## **TAKE ACTION!**

Follow the legislative updates<sup>11</sup> from Safer Chemicals Healthy Families<sup>12</sup> and use their online actions to ask Congress for strong chemical policy reform.

In the meantime, you can do these five easy things to reduce your exposure<sup>13</sup> to toxic chemicals.

### **1. Leave Your Shoes at the Door**

Shoes can track toxic chemicals into your home, like lawn pesticides, coal tar from driveways and roads, and dusts containing harmful chemicals.

### **2. Be Careful With Your Plastics!**

Try to limit your plastic products to those with the recycling symbols #4 and #5. These are PVC-free. Never microwave plastic, as this releases harmful chemicals into your food. When you can, use glass and ceramic containers for heating and storing food.

### **3. That Stinks — Ditch the Fragrance**

Products with a scent or “fragrance” on the ingredients list contain endocrine disrupting chemicals. Look for personal care products, laundry detergents and other home products that say “fragrance-free” on the label.

### **4. Receipts? Thanks, But No Thanks!**

Unless you need a receipt, don't take one when you make a purchase. Thermal paper receipts (those that appear to be slightly shiny) are coated with BPA, which you can then absorb through your skin or by touching food that you consume.

### **5. Be Careful in a Non-Sticky Situation**

If you use non-stick or Teflon pots and pans while cooking, make sure your heat doesn't exceed medium temperature. This will prevent the release of a harmful chemical called perfluorooctanoic acid. If possible, use cast iron or stainless steel cookware!

## **LEARN MORE:**

The American Congress of Obstetricians and Gynecologists

<http://www.acog.org/ToxicChemicals>

Campaign for Safe Cosmetics

<http://www.safecosmetics.org/>

Environmental Working Group

<http://www.ewg.org/>

University of California San Francisco, Program on Reproductive Health and the Environment

<http://prhe.ucsf.edu/prhe/>

Women's Voices for the Earth

<http://www.womensvoices.org/>



# FOSSIL FUEL FOLLY: HOW COAL AND NATURAL GAS ARE AFFECTING YOUR HEALTH

## FRACKING AT A GLANCE

Over the past 10 years, the oil and natural gas industry has experienced a boom—largely in part to the development of hydraulic fracturing, or “fracking.”

Fracking involves pumping water, sand, and chemicals deep underground to create cracks in shale formations and release the natural gas trapped inside. Fracking for oil and gas has spurred the development of new energy resources but at the cost of severe environmental and health impacts in communities across the country.

### SPOTLIGHT: WHAT DOES FRACKING DO TO OUR AIR, WATER, AND LAND?

Fracking for oil and natural gas damages<sup>14</sup> landscapes and pollutes water and air.

Water contamination can occur both above and below ground. The chemicals used in fracking—of which there are hundreds—are largely considered “trade secrets,” so in many states the gas companies are not required to disclose to the public which chemicals they are using. The chemicals that have been revealed—including oil, diesel, other petrochemicals, lead, sulfuric acid, formaldehyde, and volatile organic compounds (VOCs)—are known toxins and carcinogens.

As a result, when contamination occurs because of substandard drill castings, vehicle accidents, leaks, and spills, the people in the surrounding areas are at risk from unknown chemicals.

Another concern is the inability of water treatment facilities to process dirty water from drilling operations. High levels of methane—a common byproduct of fracking—in drinking water and the air can create a risk of explosions is known to make drinking water flammable.

Methane is also a dangerous greenhouse gas and contributes greatly to climate disruption. In fact, according to the Intergovernmental Panel on Climate

Change (IPCC), it’s 86 times more potent than carbon pollution in trapping greenhouse gases in our atmosphere over a 20 year time period.

Additionally, the air surrounding these fracking sites have confirmed the presence of nitrogen oxides, benzene, formaldehyde, hydrogen sulfide, and other VOCs. VOCs—such as toluene, ethylbenzene, and xylene—can damage nervous and respiratory systems and are considered hazardous air pollutants under the Clean Air Act.

Equally important is the impact that fracking has on our land, wildlife and wildlife habitats, including our national and state parks and other public lands. The development of natural gas fracking sites increases traffic from construction, transportation, and maintenance. The presence of new roads and increased traffic on smaller roads disturbs plant and animal species, and chemical runoff impacts flora and fauna.

### WHAT DOES FRACKING DO TO OUR REPRODUCTIVE HEALTH?

The “trade secret” chemicals the industry is desperate to hide from the public have a price on our reproductive health. The types and amounts of toxic chemicals used are not entirely known, leaving doctors unable to treat exposed patients effectively.

A study<sup>15</sup> conducted by TEDx compiled a list of 944 products containing 632 chemicals used during the oil and natural gas extraction process. Of the 353 chemicals with adequate data to examine for health impacts, approximately 40-50 percent of those chemicals could affect the brain/nervous system, immune and cardiovascular systems and the kidneys. Thirty-seven percent were identified as endocrine disrupting, and 25 percent were associated with cancer and mutations. Endocrine disruptors in particular have been linked to reproductive health problems because they interfere with the body's normal hormone functions.

Fracking can affect the reproductive health of both men and women,<sup>16</sup> as exposure to fracking chemicals and byproducts can lead to infertility, miscarriage, birth defects, impaired learning and brain development, and reproductive cancers.

Many of the known chemicals used during the fracking process are particularly dangerous to children and pregnant women who are especially vulnerable<sup>17</sup> to potential health threats from chemical exposures. Since a child's ability to metabolize toxic chemicals is different from an adult's, children take in disproportionately larger doses of chemical toxicants than adults do. Exposure to toxic chemicals during infancy and childhood, a key window<sup>18</sup> for organ and tissue development, is a particular concern. And because so many of the chemicals and health effects are not yet known, health impacts to fetal and childhood exposures may not be evident for years to come.

### **THE IMPACT AND THE STATE OF THE LAW**

Currently, fracking is taking place in 32 states with more than half a million active wells. Many of the communities located near these fracking sites are poor and disenfranchised. As in the case of the Eagle Ford Shale in Texas, one of the most popular oil and gas drilling sites in the country, about 1.1 million residents live in small towns or on farms and have little influence on their elected officials.

“About 23 percent have incomes below the federal poverty line, compared to 17 percent statewide and 15

percent nationally,” a story<sup>19</sup> by the Weather Channel reveals. The number of families living near fracking sites, including expectant mothers and those with young children, is expected<sup>20</sup> to increase significantly over the next ten years, with many at or below poverty income levels.

Despite the widespread risks of fracking for health and the environment, the gas industry is largely exempt from the major federal environmental laws, and there are few safeguards to protect communities from accidents and leaks near fracking sites.

The oil and gas industry is the only industry in the U.S. that is permitted to “inject hazardous materials—unchecked”<sup>21</sup> directly into or adjacent to underground drinking water supplies as per a previous EPA decision.

### **TAKE ACTION!**

The Center for Environmental Health (CEH) and the Sierra Club are among a number of organizations working hard to change the laws to regulate the fracking industry to better protect individuals and our public lands and parks.

Connect with the Center for Environmental Health<sup>22</sup> and the Sierra Club's Beyond Natural Gas<sup>23</sup> in their efforts to:

- Tell the President to stop exports of liquid natural gas;
- Urge the EPA protect families near fracking sites;
- Require public disclosure of chemicals used in fracking in order to monitor and report on chemicals that are byproducts of the fracking process;
- Impose moratoriums that delay fracking unless thorough studies, including comprehensive health impact assessments, demonstrate it can be done safely and rules are in place to ensure safe practices;
- Demand better research and scientific oversight of fracking; and
- Mandate the use of air quality control technology in fracking communities.
- **LEARN EVEN MORE** and see how you can help the Beyond Natural Gas campaign by visiting <http://content.sierraclub.org/naturalgas/>





## COAL MINING AT A GLANCE

The practice of coal mining began in the 1880s with the purpose of extracting coal from the ground to use in electricity generation. The steel and cement industries in particular use coal as fuel in the extraction of iron from iron ore and for cement production. The two primary methods used to extract coal are surface mining and deep underground mining.

Today over 6,185 million tonnes of hard coal is produced globally. Coal production is not confined to one region, however, the largest producers include China, the U.S., India, Australia and South Africa. In many cases, much of the coal produced is used in those source countries.

### **SPOTLIGHT: WHAT DOES DESTRUCTIVE COAL MINING DO TO OUR AIR, WATER, AND LAND?**

All methods of coal extraction have devastating consequences on our natural resources and the environment. In one common coal extraction method, called mountaintop removal, mining companies literally blow the top off of a mountain to reach thin seams of coal underneath. The coal companies then dump millions

of tons of rubble and toxic waste into the streams and valleys below the mining sites.

Through this process, nearly 2,000 miles of streams have been damaged or destroyed, and 1.4 million acres of mountaintops and forests risk being destroyed by 2020.<sup>24</sup> In addition to being irreversibly damaging to natural habitats and wildlife, the mining process poisons drinking water, increases the risk of flooding, and can force the evacuation of entire communities.

The environmental damage does not end with the coal mining process. Coal slurry—or sludge—is a waste fluid produced by washing coal with water and chemicals

prior to shipping the coal to market. This waste fluid is often put back into the earth without being treated and contributes to groundwater contamination as well as other problems, including human health issues.

Coal burning, which is responsible for one third of U.S. carbon emissions,<sup>25</sup> is the main contributor to climate disruption and leads to a host of other problems, including contributing to smog.<sup>26</sup> Mercury, which is found in coal ash, also pollutes the air, rivers and streams and contaminates the fish we eat.

### **WHAT DOES COAL HAVE TO DO TO OUR REPRODUCTIVE HEALTH?**

Coal ash is the waste product left over after coal is burned. While the toxic contents of coal ash vary depending on where the coal is mined, coal ash commonly contains some of the world's deadliest toxic metals: arsenic, lead, mercury, cadmium, chromium and selenium.

In the U.S., one out of 10 children<sup>27</sup> suffers from asthma due to exposure from coal ash—the number one illness that causes kids to miss school. Coal ash toxics can also impact all major organ systems, damage physical health and development, and can contribute to mortality.<sup>28</sup> Specifically in cases where exposure to coal ash is prolonged, some metals—including boron and lead—have been linked to birth defects and several types of cancers affecting the reproductive system and reproductive problems in both men and women.

Metals including arsenic, mercury and lead, are especially dangerous to pregnant women and young children as they can damage the developing brain and nervous system, and can lead to developmental delays and abnormalities and increasing the prevalence of behavioral problems.

The overall cost of coal burning is connected to 13,000 annual premature deaths<sup>29</sup> and more than \$100 billion in yearly health costs.

### **THE IMPACT**

Particularly concerning is the unequal burden that low income communities and communities of color bear.<sup>30</sup> The nearly six million Americans who live within three miles of a coal power plant have an average per capita

income of \$18,400, more than \$3,000 lower than the U.S. average of \$21,587. Additionally, 39 percent are people of color, which is higher than the U.S. average of 36 percent.

As the price of coal continues to be less and less competitive with clean energy, the negative environmental impacts, infant mortality and an increased number of emergency room visits due to asthma attacks demand that the U.S. and the world move beyond coal and into a clean energy future.

### **TAKE ACTION!**

Initiatives—like the Sierra Club's Beyond Coal<sup>31</sup> Campaign—are working to replace dirty coal with clean energy and prevent new coal plants from being built. The campaign specifically aims to retire a third of the nation's more than 500 coal plants by 2020, replace the majority of retired coal plants with clean energy solutions—such as wind and solar—and keep coal in the ground so that it isn't exported and burned overseas. Getting the most out of the energy we already use is also the cleanest way to meet our electricity needs. To this end, improved building planning and upgrading existing buildings to increase energy efficiency can reduce energy demand by as much as 30 percent.

The Sierra Club and other environmental groups are also advocating for stronger federal laws to protect people from health problems caused by coal plants.

Check out [beyondcoal.org](http://beyondcoal.org) to get involved with the Sierra Club's initiatives to stop new power plants from being built, join campus groups to move universities to 100 percent clean energy solutions, and learn how to save money and protect the planet at the same time!

### **LEARN MORE**

Clean Water Action

<http://cleanwateraction.org/publication/closing-floodgates>

NAACP, Coal Blooded

<http://www.naacp.org/pages/coal-blooded1>

Physicians For Social Responsibility, Code Black

<http://www.psr.org/environment-and-health/code-black/>

Sludge Safety Project

<http://sludgesafety.org>



## GREEN CONTRACEPTION: ECO-FRIENDLINESS IN THE SHEETS, ACTIVISM IN THE STREETS

### AT A GLANCE

We've all heard it before: there's estrogen from birth control in our water, and it's a threat to human health and aquatic life. But what does science say? Research tells us that birth control's contribution to the total estrogenicity of our waterways is minimal when other sources are considered. So if you're looking to show your green stripes, ditching birth control is not the answer!

### SPOTLIGHT

Using an eco-filter when deciding on a contraceptive method is a smart idea, but it's important to keep myths and facts straight in doing so.

### HERE'S WHAT YOU NEED TO KNOW:

Very low levels of EE2, the estrogen in hormonal contraceptives, have been detected in some drinking water samples and some rivers and streams. There is no evidence that by itself, EE2 in drinking water is harming human health. However, the total presence of all estrogenic compounds in our waterways and environment may cause negative health outcomes.

More substantial sources of estrogenic compounds in our drinking water and waterways are industrial waste, pesticides and fertilizer used in agriculture, natural estrogenic compounds excreted by humans, and the waste and runoff produced by each of these sources.

It is difficult to compare the relative impacts of different estrogenic compounds because each compound has unique characteristics. Some estrogenic compounds have lower potency than EE2, but are present in much higher volume.

For example, veterinary estrogens consumed by livestock are less potent than EE2, but the total yearly volume of veterinary estrogens consumed is more than five times that of oral contraceptives.

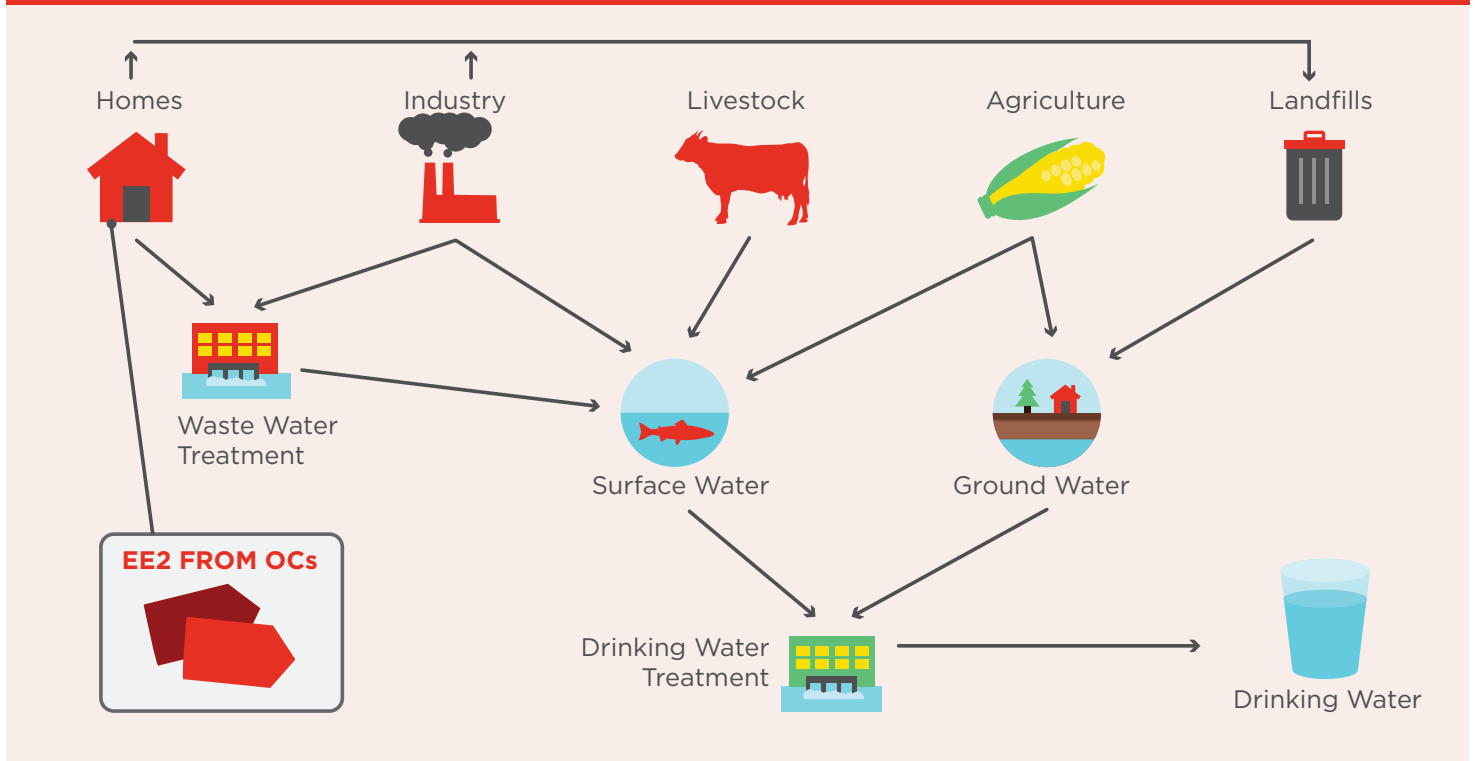
### KEY TERMS

**Estrogenic Compounds:** includes naturally produced hormones and synthetic chemicals that mimic estrogens in the body of a human or animal exposed to the chemicals.

**Estrogenicity:** the extent to which a medium (for example, a water source) contains estrogenic compounds.



# ESTROGENIC COMPOUNDS IN OUR WATER



However, since overall exposure to estrogenic compounds has been linked to reproductive and other health problems in human and aquatic life, there is an imperative to invest in safe and effective birth control methods that have an even smaller impact on the environment and our reproductive health.

It is also critical to correct unproven claims about contraceptives, which distract from the actual primary sources of estrogenic compounds and serve to stigmatize birth control—which we know is good for women, their health, their communities, and the environment.

## GREEN OPTIONS

Those seeking the greenest contraception may want to consider the copper IUD,<sup>32</sup> Paragard. It's hormone-free; long lasting (for up to a decade, epitomizing the reduce, reuse, recycle mantra); made from small amounts of cheap, plentiful metal; and 99% effective.

Condoms are also considered a sustainable form of contraception because latex is gathered from rubber trees without harming them in the process and provides an incentive to preserve and protect rainforests. Buying

fair trade condoms is another way to ensure your contraception is socially ethical.

There are also eco-friendly sex toys, free of endocrine-disrupting chemicals. Just look for phthalate and paraben-free sex toys and lube!

## SPREAD THE WORD!

Now that you have the facts, you can take action and bust the myth that oral contraception is the sole contributor to the estrogenic compounds we are now finding in our environment.

Share what you've learned with your community and campus!

## LEARN MORE

Is there estrogen from birth control in my water?!

[http://www.rhnp.org/contraception/documents/RHTPFactSheet\\_Estrogenfrombirthcontrolinwater\\_FINAL.pdf](http://www.rhnp.org/contraception/documents/RHTPFactSheet_Estrogenfrombirthcontrolinwater_FINAL.pdf)

Are Oral Contraceptives a Significant Contributor to the Estrogenicity of Drinking Water?

<http://www.rhnp.org/contraception/documents/UCSFPaper.pdf>

Birth Control Hormones in Water: Separating Myth from Fact

<http://www.arhp.org/publications-and-resources/contraception-journal/august-2011>

Earth Day Reminder: Birth Control is Green!

<http://bedsider.org/features/199>

## ENDNOTES

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- 1 [http://www.who.int/topics/environmental\\_health/en/](http://www.who.int/topics/environmental_health/en/)
- 2 <http://www.epa.gov/compliance/environmentaljustice/>
- 3 <http://www.ejnet.org/ej/principles.html>
- 4 <http://www.bostonfairhousing.org/timeline/1934-1968-FHA-Redlining.html>
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- 26** <http://www.sctimes.com/story/news/2014/01/26/puc-to-update-external-cost-for-minnesota-power-sources/4900111/>
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