

## Taking the Hill

After a 20-year struggle, EDF helps win bipartisan chemical reform

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# Fertile ground

Leading food companies today demand sustainably grown ingredients. This presents a challenge to farmers. For example, fertilizer runoff from fields contributes to climate change and creates dead zones in lakes and coastal areas. That's why EDF launched NutrientStar, a nationwide program to help farmers choose the best tools to improve fertilizer management. Says Ohio corn farmer Fred Yoder (pictured here with EDF sustainability manager Karen Chapman): "NutrientStar will move the ag industry toward climate-smart practices."



# Which chemicals are safe? At last we'll know



Who ensures the safety of chemicals in the products you buy for your home?

Until this summer, the shocking answer was, "No one." No one in America had the authority to require that chemicals be shown to be safe in order to be used in millions of products nationwide. Most of the 85,000 chemicals available for use were untested, simply assumed to be safe.

Now all this is going to change, thanks to the most significant environmental legislation enacted by Congress in more than 20 years: the Frank R. Lautenberg Chemical Safety for the 21st Century Act. Even in a time of political polarization, the bill passed the House by the overwhelming margin of 403-12 and passed on a voice vote without objection in the Senate.

EDF biochemist Dr. Richard Denison worked tirelessly with colleagues and partners for 15 years to help bring about this dramatic reform of the dysfunctional Toxic Substances Control Act of 1976 (TSCA). The heartening saga of his successful battle is our cover story on page 8.

TSCA had made it nearly impossible for EPA to identify unsafe chemicals and restrict their use. Even after the agency spent ten years amassing a 45,000-page documentary record of the risks of asbestos in the 1980s, the courts found it still had not met the burden of proof of harm under TSCA. EPA never tried again to restrict a chemical using TSCA.

The tragedies resulting from TSCA's failings included people sickened in their homes by imported plywood made with high levels of formaldehyde, a chemical known to cause cancer and respiratory ailments.

Change was a long time coming, but I am thankful for our wonderful staff, partners and allies such as the March of Dimes, National Wildlife Federation, The Humane Society and Moms Clean Air Force, who never gave up—and for our members who supported us over the long haul.

Businesses also played an important role in spurring Congress to act. In response to mounting consumer concerns, companies have been demonstrating that they can cost-effectively remove common hazardous chemicals from the marketplace. For example, EDF has been partnering with Walmart to take some of the chemicals of greatest concern out of thousands of consumer products on the shelves (*see story, p. 12*).

I am encouraged that the new law takes steps to protect particularly vulnerable groups, including children and pregnant women. As EDF Trustee Dr. Lynn Goldman, dean of the Milken Institute School of Public Health at The George Washington University, says, "It is far wiser to prevent exposure to unsafe chemicals than to have to treat the serious health problems that these chemicals can cause."

The Lautenberg Act takes a big step in that wise direction. Of course, now the real work begins—implementing the law. "After nearly 40 years without a cop on the chemical beat, it will take time to fix this problem," Denison says, "but the new law sets us firmly on that course."

*Fred Krupp*  
EDF President



Finding the ways that work

Environmental Defense Fund's mission is to preserve the natural systems on which all life depends. Guided by science and economics, we find practical and lasting solutions to the most serious environmental problems.

Our work is made possible by the support of our members.



## On the cover:

When President Obama signed major chemical safety legislation into law this June, a remarkable group of advocates applauded. EDF was

at the center of the action, making sure the parties kept talking. Solutions senior writer Rod Griffin explains why this is the most important environmental legislation in recent decades, and why there's still work to be done (*see page 8*).

Cover illustration: Kurt Huggins

## Solutions

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# FIELD NOTES



ANIMALS ANIMALS

The original teddy bear is hanging in there.

## Teddy Roosevelt's bear rebounds

The Louisiana black bear survived Teddy Roosevelt's hunting party, but development nearly did it in.

The Louisiana black bear gained fame after a 1902 hunting trip by President Teddy Roosevelt. The hunt was disappointing so a guide caught a bear cub, tied it to a tree, and offered it to the president as an easy trophy. The president refused, and the bear became celebrated as the "Teddy Bear"—beloved by young children everywhere.

Listed as threatened in 1992, the bear has made a comeback from fewer than 120 counted in 1959 to close to 750 bears today.

This spring, the Secretary of Interior announced its delisting.

Encroaching agriculture and development nearly caused the bear's demise in the state. Louisiana officials succeeded in connecting bear habitat by getting private landowners involved.

Managers will still monitor the bear to make sure its population remains stable, and EDF and allies are helping.

"Our two decades of work to protect and restore critical habitat such as cypress forests is essential to safeguard the bear population into the future," says EDF scientist Natalie Peyronnin.



PRESSIMAGE

## PIGEONS COO FOR CLEANER AIR

In London, a patrol of pigeons earned their peanuts by wearing tiny backpacks equipped with pollution sensors and GPS trackers. The birds monitored smog from local traffic. Residents who tweeted @PigeonAir received neighborhood pollution reports.

“Lake Mead’s record low water level and the ongoing drought in the Southwest are big wake-up calls. We can no longer ignore the reality that we’re overdrawing our water account.”

—Kevin Moran, Director, EDF Colorado River program

## CLEANER AIR IN NEW YORK CITY

With EDF’s guidance, all **5,300 buildings** in New York City that burned No. 6 fuel oil, the dirtiest and most unhealthy heating oil, have converted to a cleaner fuel. The results so far:



**210** fewer premature deaths each year  
**540** hospitalizations avoided each year  
**68%** reduction in sulfur dioxide pollution since 2008

SOURCE: CITY OF NEW YORK, OFFICE OF THE MAYOR



## Hope for the world's coral reefs

Warming oceans and a prolonged El Niño produced a severe bleaching event that threatens the future of coral reefs worldwide. On Australia’s Great Barrier Reef, a quarter of corals may be dead. Corals play a critical role in many ocean ecosystems and their decline is bad news not only for fish, but for all of us.

New research published in

*Nature*, however, found that some reefs remain in better condition than expected, including “bright spots” where communities are managing reef ecosystems with tools like secure fishing rights. This bodes well for the coral reefs of Belize, where EDF helped implement the world’s first nationwide fishing rights program for small-scale fisheries.



REUTERS

Climate change equation: Drought + famine = civil war.

## The climate-war connection

Under the familiar narrative, civil war broke out in Syria after the Assad regime reacted harshly to peaceful street protests. But there's more to the story. Some experts now believe that a major cause of the civil war was climate change. According to NASA, an ongoing drought in the eastern Mediterranean is the worst in 900 years—and scientists say global warming may be to blame. Before the unrest began, drought-induced famine and water scarcity forced as many as

1.5 million people from their rural homes into Syria's cities, destabilizing the region. Secretary of State John Kerry has said the connection between the drought and the civil war is “not a coincidence.” The U.S. military calls climate change a “threat multiplier,” and in a recent report the Pentagon said, “Climate change ... poses immediate risks to U.S. national security.”

Unless we curb climate change, Syria's civil war may foreshadow future conflicts.

## CLIMATE DEFENDERS

Sea otters take the prize for cuteness. They fight climate change, too. Otters dine on sea urchins, which are huge eaters of kelp. Kelp forests store CO<sub>2</sub>, so by controlling urchins, otters protect the climate. It's not an insignificant contribution: Otters help kelp forests store 12 times as much carbon as ecosystems without otters.



SHUTTERSTOCK

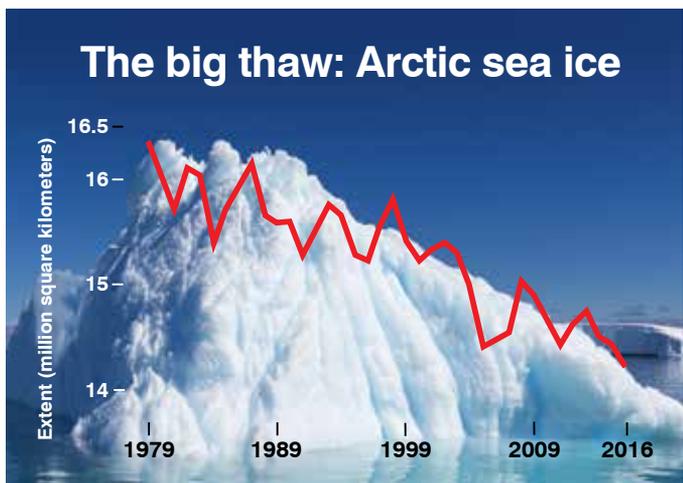
## When ‘Sue the bastards!’ was our battle cry



Fifty years ago, the scientists and attorney who would later found EDF filed a lawsuit in Suffolk County, Long Island, to end the spraying of DDT, a pesticide that was killing fish and birds in Long Island's marshes. Their battle cry was “Sue the bastards!”

On August 14, 1966, a judge issued a temporary injunction stopping the spraying. The next day—amazingly—a truck rolled down the streets and sprayed DDT on the front yard of our lawyer.

The judge was irate, and our opponents lost credibility. EDF was incorporated the next year and our founders continued a series of actions that led to the nationwide ban on DDT in 1972.



SHUTTERSTOCK

SOURCE: NATIONAL SNOW AND ICE DATA CENTER; AVERAGE FEBRUARY EXTENT OF ARCTIC SEA ICE, FEB. 1979 - FEB. 2016.

## A step forward on methane

Among greenhouse gases, CO<sub>2</sub> gets most of the attention. But over the short term, methane—the main ingredient of natural gas—has 84 times the warming power of CO<sub>2</sub>. In fact, roughly 25% of today's warming is driven by methane. So when EPA finalized rules in May to limit methane emissions from new oil and gas operations, environmentalists cheered. Some 180,000 EDF members contacted EPA to voice support for the rule. We thank you.



BONNOC IM

The next critical step is to extend similar standards to the thousands of still unregulated existing oil and gas facilities responsible for most emissions today.

# A sustainable future for oceans

**A** HIGHLY PUBLICIZED 2006 STUDY IN *SCIENCE* predicted widespread fisheries collapse by 2048, if prevailing trends were to continue. Ever since, it seems the predominant narrative for global fisheries has been one of doom and gloom. But there is good news.

New research by EDF and experts at the University of California at Santa Barbara and the University of Washington documents the immense potential of fisheries to recover—and much faster than previously thought. The groundbreaking study, published in the *Proceedings of the National Academy of Sciences*, shows that with proper management more than three-fourths of the world's fisheries can be healthy within a decade, compared to only one-third today.

“People thought fisheries were all about trade-offs,” says Amanda Leland, EDF’s SVP for Oceans and a co-author of the study. “But we have shown there can be an upside for both fish

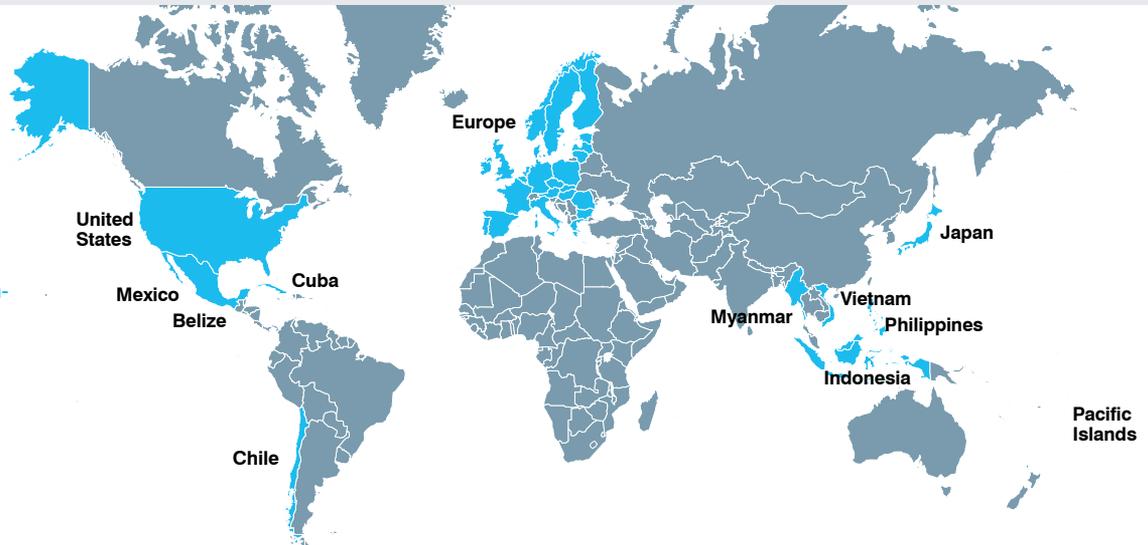
and fishermen if we get the management right.” The study examines 4,713 fisheries around the globe, the largest fisheries data set ever assembled in one place.

The research suggests that implementing reforms like secure fishing rights will increase fish populations, boost profits and enhance food security. How? By granting fishermen a right to a percentage share of the catch or access to a traditional fishing area in exchange for adhering to strict, science-based catch limits. Under this system, fishermen have an incentive to use best practices and police their own waters, says Leland, so everyone’s piece of the pie gets bigger.

This approach has proven successful in more than 200 fisheries around the world, from the United States to Belize to Namibia. In U.S. federal waters, overfishing has dropped 70% since 2000, as the number of species managed with fishing rights or “catch shares” has quadrupled.

## AREAS OF FOCUS

EDF is providing practical, science-based advice to governments, industry and other partners to help make sustainable fishing the norm.



## PHILIPPINES | Home-grown solutions

In the Philippines, EDF helped design three pilot projects to establish community fishing rights programs, known as TURFs, combined with marine reserves. EDF knew that community buy-in is essential, not only to create reforms that last, but also to ensure the support of municipal legislators, who must approve any reforms. So for 18 months, our site partners held dozens of meetings in each community.

Residents of the island of Ayoke came up with an ingenious solution to avoid potential fishing conflicts by establishing two ring-shaped TURFs around their island. Island fishermen are granted exclusive fishing access to the inner kilometer, while fishermen from other villages who agree to adhere to the rules are granted access to the outer kilometer.

“We want to empower communities to take responsibility for sustainably managing marine resources,” says EDF’s Emilie Litsinger, who grew up in the Philippines and is now based there as our project director. Other communities are now implementing TURFs on their own.



## EUROPE | An inclusive approach

Europe's fisheries are in the worst condition of any in the developed world, with 75% overfished. But the tide is turning. In 2013, EDF advised EU officials as they rewrote the Common Fisheries Policy, committing member nations to end overfishing. The new law includes a ban on discarding unwanted fish overboard.

In Sweden, EDF and allies developed recommendations for new quota management systems in four fisheries that would—for the first time—enable fishermen to transfer their quotas, providing flexibility that is key to fisheries' economic success. The approach would enable the government to account for all the fish that are caught, improving its ability to assess the health of fisheries. "This will result in less waste, more revenue and healthier fish stocks," says Swedish fisherman Peter Olsson.

Part of EDF's strategy was to encourage all segments of the fishing fleet, from the largest to the smallest, to advocate reforms. Prior to the EU reforms, many fisheries were caught in a downward spiral that undermined not only their health, but also their economic viability.

**77%** of fisheries can be healthy within ten years.

### By 2050 sustainable fishing can:



Provide a significant source of protein for an additional half-billion people.



Generate 204% more profits for fishermen per year



Double global ocean fish populations.

(Compared to business as usual)



## MEXICO | Scaling up

In Mexico, 80% of fisheries are either at maximum fishing levels or are overfished—a troubling sign for a top fishing nation where more than two million households depend on fishing as a source of income.

In the Gulf of California, EDF teamed up with regional organizations to create a catch share program for curvina, a popular whitefish. By bringing together fishermen, government officials and buyers, the community advanced an agreement in which fishermen are adhering to catch limits. As a result, revenue has increased, even as fishermen catch fewer fish, allowing the population to recover.

Inspired by the success, the country's fishing leaders have asked EDF to help implement secure fishing rights nationwide.

With our partners, EDF also recruited thousands of fishermen and provided training on fishing rights, public policy and stewardship. "Catch shares notably improve efficiency and profitability in a fishery," says Mario Aguilar, head of Mexico's fisheries commission.

# Delivering on the promise of chemical safety

By Rod Griffin



In a rare show of bipartisanship, Congress passed—and President Obama signed—a sweeping overhaul of the nation’s broken chemical safety law. This is the biggest improvement to a major environmental law since the Clean Air Act was amended in 1990, and EDF biochemist Dr. Richard Denison was at the center of it.

**R**EFORM NEVER COMES EASY. BUT ONE WOULD be hard pressed to come up with a more Sisyphean task than revamping the Toxic Substances Control Act (TSCA), the nation’s principal chemical safety law, passed in 1976 when Gerald Ford was president and disco was the rage.

“TSCA was a terrible law from the start,” says EDF’s Dr. Richard Denison, who has been pressing for reform for 15 years. “It is so riddled with obstacles that EPA could not even ban asbestos, a known carcinogen that has been outlawed in more than 50 countries.”

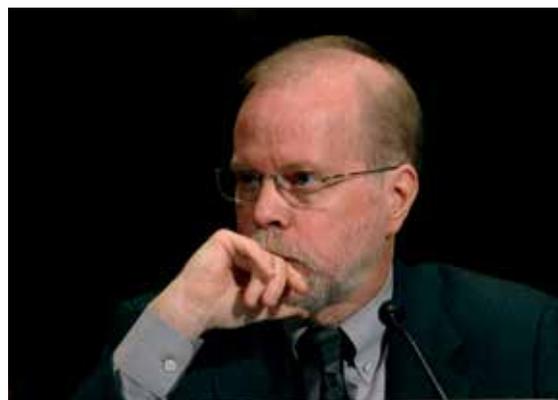
Over the years, as evidence of a link between chronic diseases and toxic chemicals has grown, pressure mounted to make the flawed legislation stronger. Yet all attempts failed. Almost everyone wanted reform—even many in the chemical industry—but on their own terms. Meanwhile, the ongoing stalemate put the health of all Americans at risk.

So, in 2013 EDF faced a tough decision: Seize upon a political opening and work to improve a bipartisan compromise reform bill that was less than perfect—or dig in our heels and hold out for something better to come along?

EDF opted to act, not wait. Denison agreed to work to “move and improve” the bill that Sen. Frank Lautenberg (D-NJ), a public health champion known for his success banning smoking on airplanes, wrote with Sen. David Vitter (R-LA), a senator more often associated with efforts to block EPA, to overhaul the notoriously ineffective law. It was a high-risk strategy. That approach put EDF at odds with some activists in the environmental community.

“Our view was that if we were to simply oppose, oppose, oppose, there would be no reason for anyone to try to get invested in moving this forward,” says Denison. After all, attempts to reform the law had failed miserably for more than two decades, with little to show for it.

When Lautenberg died just weeks after introducing the bill with Vitter, Sen. Tom Udall (D-NM), a stalwart environmentalist, took up the cause for reform. Denison hunkered down, providing expert advice to the senator that helped lead to hundreds of improvements to fix flaws and broaden support for



Safe chemical crusader Dr. Richard Denison.

the compromise bill. His perseverance paid off.

In June, President Obama signed the Frank R. Lautenberg Chemical Safety for the 21st Century Act, the most significant environmental legislation in more than two decades. The new law gives EPA stronger power to require companies to provide health and safety data for previously untested chemicals and to prevent suspect substances from reaching the market until they are found likely to be safe. “It’s an important moment for all American families who have been waiting for better protection from the potentially toxic chemicals that surround us,” says EDF president Fred Krupp.

The historic, bipartisan legislation is the product of three years of intense—and at times acrimonious—negotiations. “Frankly, if EDF had not been at the table, we would still have a broken law, and we might still be decades away from reform,” says Sen. Udall.

### The long haul to reform

Congress passed TSCA in 1976 with great fanfare, but the law was an abject failure from the start. In 40 years, it has required testing of only about 3% of the 85,000 chemicals available for use, and EPA has restricted the use of only five.

Among the chemicals never fully tested for safety is perfluorooctanoic acid (PFOA), used in making Teflon coating and other household products. PFOA, which has been linked to kidney cancer, thyroid disease and other health issues, has been turning up in drinking water in communities around the country.

One such community is Hoosick Falls, NY, which made national news recently when a local insurance underwriter named Michael Hickey requested that the town’s water supply be tested. Hickey suspected his father’s death in 2013 may have been caused by exposure to PFOA from a local factory that produced Teflon.

“My father died of kidney cancer. My grandmother had kidney cancer too,” he says. “My concern is not really about me. It’s about my 5-year-old son.”

Subsequent environmental testing by New York State revealed that the city’s public water supply contained PFOA at levels significantly higher than EPA considers safe. The plastics plant was de-

clared a state Superfund site in 2015.

Communities like Hoosick Falls may seize the spotlight now and again, but thousands of chemicals could be silently affecting Americans every day. In 1997 the EDF report *Toxic Ignorance* revealed that even many of the most common chemicals lacked basic health data.

Chemicals that we know too little about are in cleaning products, paint, toys, carpets, couches—and our bodies. Ninety-nine percent of pregnant women in the United States, for instance, have flame retardant chemicals in their blood, substances that have been linked to decreased IQ, memory deficits and hyperactivity in children.

“It’s clear that even the most careful shoppers can’t totally avoid exposure to hazardous chemicals,” says Dr. Sarah

“The public health and environmental leaders who are here today—from the March of Dimes to the Environmental Defense Fund—know that this law will help protect Americans.”

—President Barack Obama

Vogel, EDF’s VP for Health.

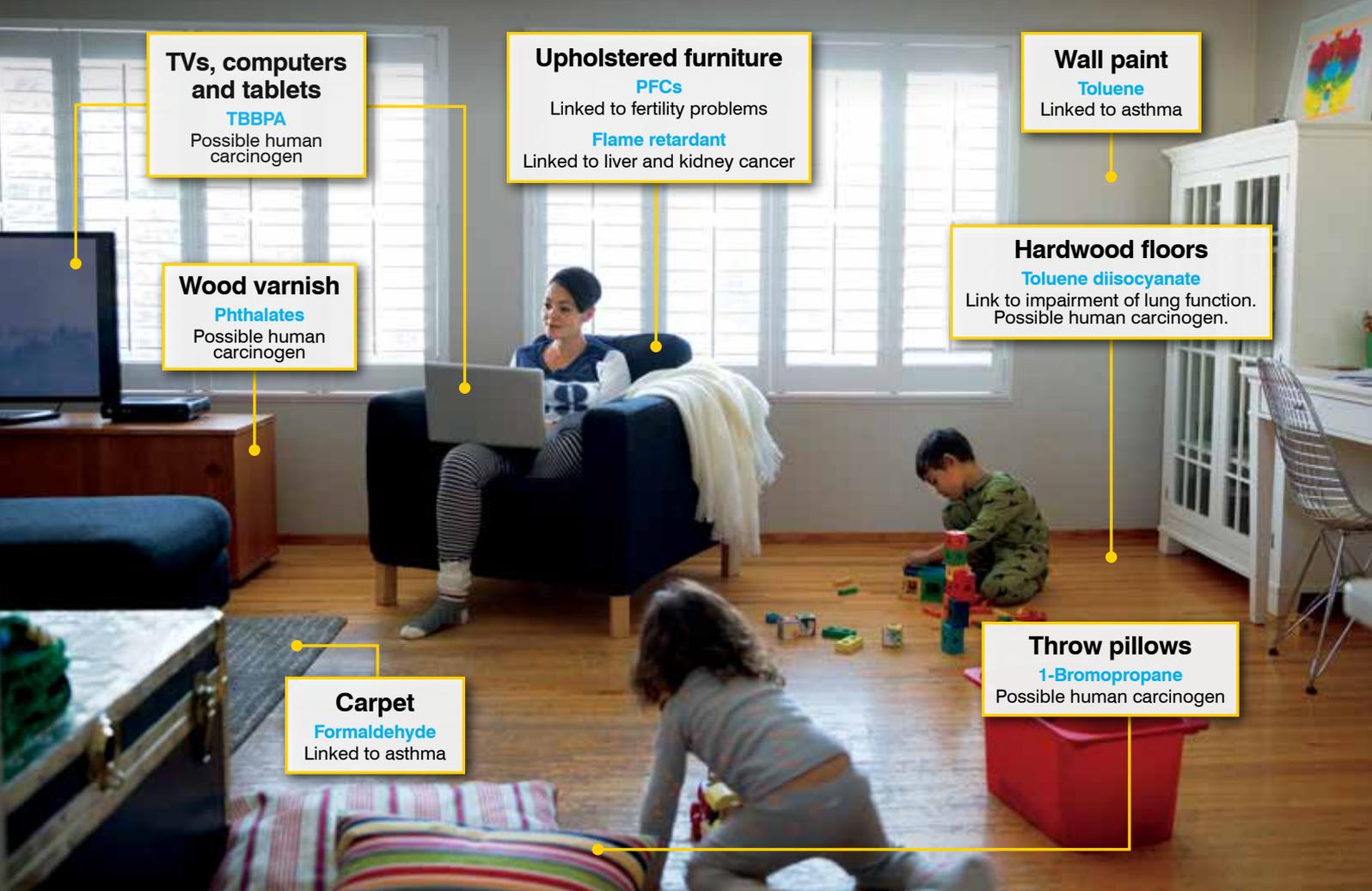
Testifying before Congress in 2010, Lisa Ann Huguenin, a toxicologist, told a story about her then two-year-old son, Harrison, who has autism. “I will always wonder if something in the environment contributed to Harrison’s various health and developmental disorders,” she said. “It is time to stop field testing chemicals on one of our most vulnerable populations—children.”

Troubled by the low priority EPA had given to chemical safety, Denison began

posting detailed critiques of EPA’s program on a blog started in 2008, explaining the scientific and political implications of the chemical safety debate. His blog became a must-read for congressional staffers, industry insiders and advocates. And when a chemical spill in 2014 near Charleston, WV, left 300,000 people without drinking water, Denison served as a key resource for beleaguered residents looking for answers. He linked the problem to outdated regulations and questioned the government’s

## Sweeping toxic chemicals out of the home

Every ordinary home has them—potentially dangerous chemicals hidden in furniture, clothing, cleaners and other products. But almost no commonly used chemicals in households have been adequately tested for safety. The new law empowers EPA to regulate hundreds of suspect chemicals such as in:



### TVs, computers and tablets

#### TBBPA

Possible human carcinogen

### Wood varnish

#### Phthalates

Possible human carcinogen

### Upholstered furniture

#### PFCs

Linked to fertility problems

#### Flame retardant

Linked to liver and kidney cancer

### Wall paint

#### Toluene

Linked to asthma

### Hardwood floors

#### Toluene diisocyanate

Link to impairment of lung function.  
Possible human carcinogen.

### Carpet

#### Formaldehyde

Linked to asthma

### Throw pillows

#### 1-Bromopropane

Possible human carcinogen

assurances of safety given to Charleston residents.

### Fixing a broken law

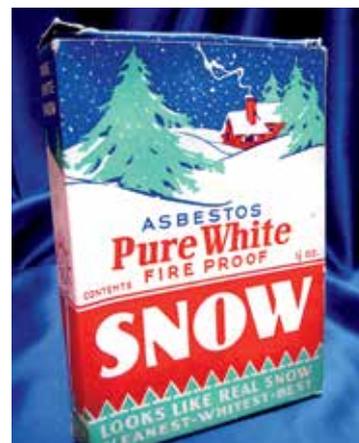
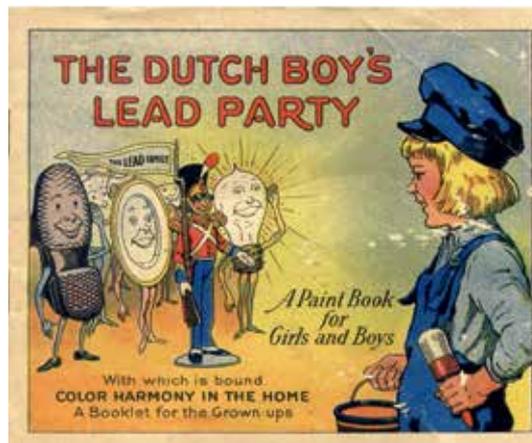
The biggest problem under TSCA was that the burden of proof was on the government to demonstrate a chemical was risky rather than on industry to provide evidence a chemical was safe. In addition, EPA had to show a chemical likely posed an “unreasonable risk” before requiring more testing. This catch-22 left the agency hamstrung. EPA hasn’t banned a chemical using TSCA since a federal appeals court struck down asbestos restrictions in 1991 because the agency couldn’t meet the law’s onerous standards.

The Lautenberg Act addresses that problem by eliminating the high burden of proof that killed off its asbestos ban. It requires safety reviews for all existing chemicals, giving priority to the riskiest chemicals first. Under the law, EPA will finally have the power to ban known carcinogens like asbestos and formaldehyde. The law also requires EPA to review the safety of the 700 or so new chemicals introduced each year before they come on the market. During the review process, the new law instructs EPA to pay special attention to the harm the chemicals could cause to vulnerable groups like children, workers, pregnant women and poor communities.

In addition, the law mandates that more information about chemicals be made available to the public. Until now, much has been kept confidential by companies claiming trade secrets. “An earlier House bill would have let companies hide the identity of chemicals in health studies,” says Denison. “Eliminating this allowance was a make or break issue for us.” The Lautenberg Act gives EPA new tools to collect data from companies and sets aggressive deadlines for action. “On every major metric, it is a significant improvement over the status quo,” says Denison.

Efforts to reform the law had stalled for years, in part because of opposition from the chemical industry. What changed? First, states began passing their own laws to ban individual chemicals, resulting in headaches for companies trying to comply with differing requirements. And second, companies and retailers began responding to mounting consumer demands for safer chemicals and products.

“Chemical companies were finding



Products once celebrated as “the next big thing” are now considered dangerous.

that their inability to reassure their customers was starting to hurt their bottom line,” Denison explains. “It was becoming the Wild West out there, and they needed a sheriff.”

### Impassioned testimony

To keep the issue front and center, Denison delivered impassioned testimony on Capitol Hill. In one congressional hearing, for instance, he pointed out that the United States was importing formaldehyde-laden plywood from China, some of which sickened people forced to live in FEMA trailers after Hurricane Katrina. That same plywood could not be sold in Japan or the European Union—or even for domestic use in China.

EDF also works directly with companies to accelerate efforts to phase out the use of toxic chemicals and drive demand for safer alternatives. For example, we helped Walmart draft a comprehensive policy to phase out hazardous chemicals in everyday products on its shelves (*see story, p. 12*). Other companies, including Procter & Gamble and SC Johnson, began to take similar steps.

During the TSCA reform negotiations, state pre-emption was a key point of contention. Industry lobbied for the federal law in part to avoid a patchwork of different state rules, while states like California, Washington and Maryland wanted flexibility to implement stronger rules themselves.

The final legislation grandfathers in prior state actions as well as some existing state safety laws such as California’s Proposition 65, but limits states’ authority to create their own restrictions on chemicals EPA is acting on. Those states can, however, continue to require monitoring and disclosure and labeling of

chemicals in products.

Our lobbying affiliate, EDF Action, worked Capitol Hill aggressively to build strong, broad support for the bill—work that eventually led to 61 senators cosponsoring the Lautenberg Act. The bipartisan majorities in favor of the bill were overwhelming: 403-12 in the House and a voice vote without objection in the Senate.

“This is one of those rare moments where you have a full court press, both sides of the aisle, as well as individuals

**“If EDF had not been at the table, we would still have a broken law and we might still be decades away from reform.”**

—Senator Tom Udall

who are representing multiple sectors all coming together,” said Sen. Cory Booker (D-NJ) on the Senate floor. “We would never have gotten this strong of a TSCA reform bill if it wasn’t for the work of groups that I’ve come to respect a tremendous amount, like Environmental Defense Fund, whose early engagement and constant pressure played such an important role.”

Of course, the new law’s enactment is only part of the solution. And the reformed chemical safety law will only succeed if it is properly implemented and enforced. A lot depends on whether Congress provides sufficient resources to EPA, a favorite target of anti-regulatory legislators. “Even with the Lautenberg Act on the books, we need to keep pressure on Congress and EPA,” says Denison. “Our real work has only just begun.”

# The Walmart effect

ALBERTA



EDF's road-tested strategy: Engage the market leader and others will follow.

TEN YEARS AGO, EDF'S CORPORATE partnerships team decided to go all-in on a risky alliance. Walmart, the nation's largest retailer, had publicly laid out environment goals for the company. EDF saw an opportunity. We already had challenged market leaders from McDonald's to FedEx to improve environmental performance, and Walmart could take the concept to unprecedented scale.

EDF President Fred Krupp joined Lee Scott, the Walmart CEO at the time, on an excursion to New Hampshire's White Mountains, where the two men, joined by leading scientists, spent the night in a bunkhouse and talked, mostly about climate change. Far from their home turf, they established a relationship that later became a formal partnership. EDF's role would be to supply scientific expertise and set verifiable performance measures to help Walmart reach strong environ-

mental goals.

"We thought the risk was worth the potential reward," recalls Krupp.

There were some surprises along the way. EDF discovered that for such a huge company, Walmart made rapid-fire decisions. "To get things done, we needed to be in the room," explains Krupp. So in 2007, EDF became the first environmental group to open an office in Bentonville, AR, near Walmart's headquarters.

At first, EDF and Walmart focused on the basics like reducing energy waste and highlighting better products. Walmart improved the performance of its truck fleets and stores, and we worked together to promote greener products such as energy-efficient bulbs.

"We knew that improving Walmart's own efficiency wasn't enough to truly confront climate change," says our managing director Elizabeth Sturcken. "The greatest opportunity lay in Walmart's network of 100,000 suppliers." In 2010 we persuaded Walmart to cut 20 million metric tons of greenhouse gas emissions from its supply chain and product life cycles by the end of 2015. Walmart far exceeded its goal, reducing almost 36 million metric tons.

One of Walmart's biggest contributors to climate change turned out to be improperly applied fertilizer on corn. Excess fertilizer, emitted as nitrous oxide—a greenhouse gas 300 times more potent

than CO<sub>2</sub>—is a significant source of Walmart's total climate footprint.

With the help of EDF Ecosystems team, which was already working on the fertilizer problem, 16 top Walmart suppliers and two ag companies—including Campbell's Soup, Cargill, Coca-Cola, General Mills, Murphy Brown, Pepsi and Smithfield Foods—submitted plans to optimize fertilizer use on 23 million acres of U.S. cropland. By 2020, they will have reduced greenhouse gas emissions by nine million metric tons.

EDF also tackled potentially hazardous chemicals on Walmart's shelves. Together, we focused on household cleaners and personal-care products. EDF helped Walmart draft a policy to phase out "chemicals of concern."

Again, a powerful demand signal rippled across the supply chain. As a result, Walmart this year reported a 95% weight reduction of the most common chemicals of concern in household cleaners and personal-care products. With manufacturing processes changed to accommodate Walmart, these practices are being replicated across the industry. (EDF accepts no funding from Walmart or any other corporate partner.)

Now, EDF is engaging retailers to rid food of harmful chemicals. "Science and transparency will help us take potentially dangerous food additives off America's store shelves," says Sturcken.



JOHN PAE

EDF's Elizabeth Sturcken pushed Walmart hard to cut its greenhouse gas emissions.



123RF

## Meet the new hired hand: A drone



**Maggie Monast**  
Based in Raleigh, NC, Maggie is a senior policy analyst for EDF's Ecosystems program.

Drones seem to be everywhere these days. But down on the farm? Yes, if approved by federal authorities, 80% of drones sold commercially may soon be headed straight to the fields, where they can be a real boon to the environment. Here's why:

### Massive data collection boosts crop health

The more data a farmer gathers about his field, the better for the environment. Using infrared wavelengths, the farmer can better measure crop health, allowing precise targeting of chemicals.

### Drones spot problems in record time

Drones move faster than people and can fly to remote, hard-to-get-to places. If a farmer's crops have pests or disease, a drone can provide that information in minutes.

### They can reduce fertilizer runoff

Typically, less than 40% of the nutrients applied to fields in the Corn Belt are absorbed by crops. This leads to climate and water pollution. And it's expensive. Drone sensors can show which fields need nitrogen, and which are doing just fine.

### Drones can save water

Drones with thermal cameras can detect which crops need water. In the future, irrigation could be aimed at thirsty plants instead of an entire field. The water savings in places like California could be massive.

**>>> READ MORE >>>** [edf.org/farmdrones](http://edf.org/farmdrones)

### Green energy in red states

Clean energy jobs are mostly in Republican districts, where sunshine and wind are abundant. Will this fact change the conversation?  
[edf.org/redgreen](http://edf.org/redgreen)



### Rural energy efficiency

Electric cooperatives serve 42 million rural people. EDF is helping co-op members in disadvantaged counties save energy and dollars.  
[edf.org/ruralenergy](http://edf.org/ruralenergy)



## Winning fishermen's hearts and minds

By Frank Convery, EDF Chief Economist

A few decades ago, as a young professor in Ireland, I tried to convince a group of Atlantic fishermen I had met in a pub (where else?) of the merits of rights-based fisheries. I had read how this approach helped New Zealand avoid the typical pattern of overfishing, followed by a decline in fish stocks. Instead, stocks there were recovering and fishermen's incomes were rising. People were calling it a miracle.

I explained that this system of management—called "catch shares"—gives fishermen a share of the catch or access to a fishing area, in exchange for adhering to science-based catch limits, thereby creating an incentive to protect the resource.

I expected my insights to be greeted with enthusiasm; instead, the mood went from neutral, to hostile, to derisive. And this was for three reasons: First, I didn't listen. Secondly, I was not in command of the evidence. Finally, the messenger was hopeless: I was a professor who had never spent a day on a trawler. I gave up.

But EDF did not. EDF listened to fishermen and helped them become champions of catch shares. Together, we developed ways to give fishermen an economic incentive to protect the resource. Seven countries have largely adopted these practices of sustainable fishing. To spread the word further, EDF and its partners documented the evidence and codified best practice (see story p. 6). Today it's clear that with secure fishing rights, the world can maintain ecologically diverse oceans.

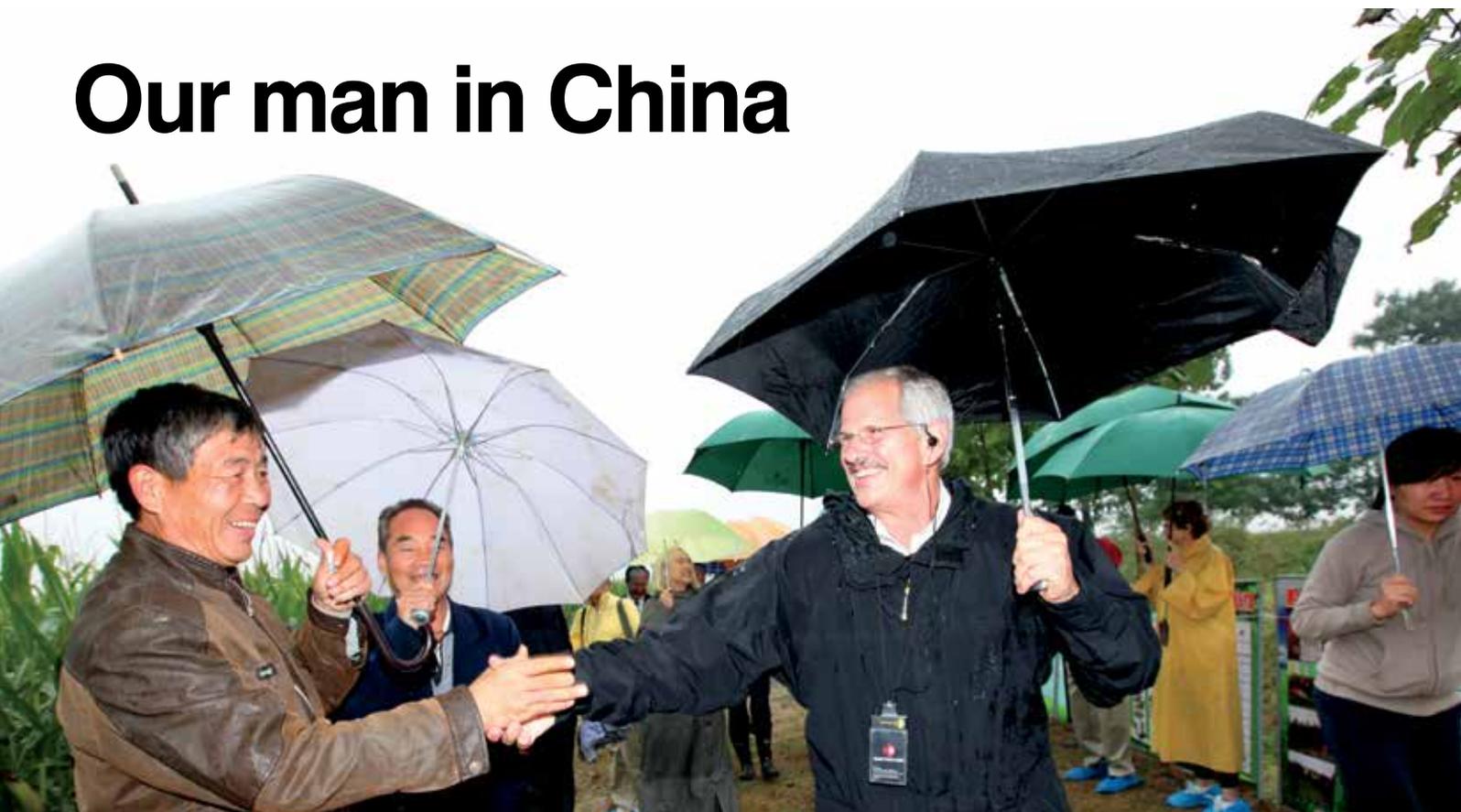
**>>> READ MORE >>>** [edf.org/wilson](http://edf.org/wilson)



ALAMY

*This regular column honors the memory of Robert W. Wilson, a longtime EDF supporter and champion of harnessing market forces to drive environmental progress.*

# Our man in China



Veteran China hand Dr. Dan Dudek has become a trusted advisor in Beijing, providing Chinese officials at every level with technical support and advice as they tackle climate pollution and strengthen environmental laws.

**A**S THE WORLD'S BIGGEST CARBON emitter—burning as much coal annually as all other countries combined—China is critical to stabilizing global climate. Beijing's commitment to peak its emissions by 2030 and establish a national carbon market in 2017, together with the United States' commitment to the Clean Power Plan, signaled a new era of climate ambition. With other nations having followed by making deep commitments to slash their emissions, we can finally see the day when global emissions will begin to fall.

Few foreigners have been more involved in getting China to this point than Dr. Dan Dudek, EDF's VP for Asia.

Twenty-five years ago, Beijing called on Dudek to participate in the country's first pilot projects with economic incentives for pollution control. Most recently, EDF provided technical assistance as China launched its first carbon-trading programs in five cities and two provinces.

In an interview, Dudek discusses China's carbon commitment and why he's so hopeful for the future.

## ***Why is China's signing of the Paris climate agreement so important?***

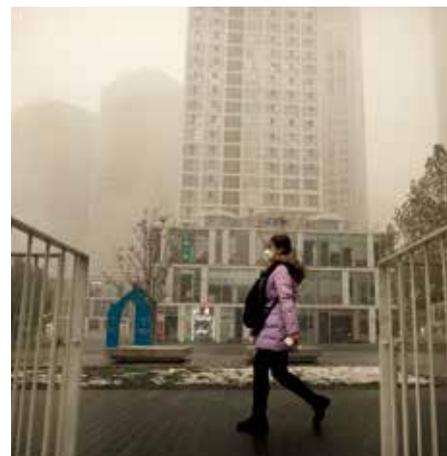
Nearly one in five people on the planet is Chinese. As the world's biggest carbon emitter—dumping about 50% more climate-altering pollution into the atmosphere than the U.S.—China is critical to stabilizing global climate. The U.S. is number two, so when the two countries do things together, people pay attention.

## ***Why is Beijing doing this now?***

Fundamentally, it's self-interest. There is a growing demand from the Chinese public for clean air and a better balance between economic growth and pollution control. We've all seen the photos of horrendous urban pollution. With its rise on the world stage, China also wants to be recognized as a responsible actor. Climate is one area it can show good global citizenship, bolster its reputation and deliver for its own citizens.

## ***Is climate a moral issue?***

In China, the most precious people are the children, because of the former one-child policy, which has only just been lifted. For years, you had six adults raising one child: two sets of grandparents and two parents. So there is concern about air pollution impacts on children. There's also concern about the elderly, who are revered in China. The very old and very young are the most vulnerable to bad air quality, which is closely linked to climate pollution.



**The spectacle of cities choking on air pollution induced China to act.**

### **Does China have climate deniers like we do?**

If there are, I've never met them. There are questions about how much China should do—and who should do it. But many Chinese experience climate change firsthand. A persistent drought in the northern part of the country and disappearing glaciers in the Tibetan Plateau mean there's less water. This is also having a worrying impact on agricultural productivity.

### **Some critics say talk is cheap. Is there evidence of real policy change in China?**

There've been sweeping policy changes. The basic environment law was reformed for the first time in 25 years, and the air law followed a year later. In 2014, China promised to peak its carbon emissions by 2030—and to expand its use of non-fossil fuels to 20% of the nation's energy mix. Then this past September, Beijing and ten other big Chinese cities and provinces promised to peak even sooner, some as early as 2020. So we're seeing concrete signs that China is serious.

### **Can China really launch a national carbon market in just two years?**

As they say in NASCAR, start your engines. This is an enormous commitment that has many dimensions. But China has already shown a glimpse of its potential to act quickly. In 2015, China installed

more than twice as much solar capacity as the United States. There's a lot of work to be done in the next two years, but the carbon trading pilots have laid a great foundation. A lot has been learned.

### **What's changed in China that makes this possible?**

The government recognizes that it's no longer enough to just issue regulations. It needs to create real financial incentives for enterprises to make the right things easy and wrong things hard. That's the way to achieve leverage and accelerate change.

### **Can you explain EDF's role in helping China reduce pollution?**

EDF's goal is to partner with China to develop infrastructure, policies and regulations needed to meet China's national priorities, including shifting the country's economy toward a low-carbon future. We provide technical assistance, training, analysis and links to international expertise. We advise on the difficult challenges ahead. I also sit on two high-level Chinese government advisory panels that provide advice directly to the State Council.

### **Looking into your crystal ball, what are the biggest challenges China faces today?**

At the moment, the big challenge is the slowdown of economic growth. This raises concerns that environmental protection

will come at the expense of growth. At the same time, there is widespread recognition that the nation has a serious air quality problem as well as international commitments on carbon control.

### **What role will coal play in the future in China?**

Coal is a fixture in China's energy landscape. However, renewable energy is growing rapidly in competition with coal and is likely to continue to do so. There are many smaller localized uses of coal, in both homes and small businesses throughout the country, which will also need to be addressed.

### **What do you like most about working in China?**

What I love about China is the juxtaposition of an ancient culture with the dynamism of the future. The Chinese are forward-looking. There's an upbeat energy in the streets, airports and public places that's unlike any other place I've been.

### **Are you optimistic that China will succeed?**

One thing I've learned over the years is not to underestimate China. When I first visited in 1991, I would have said there was a 1% chance we'd see a carbon market emerging in China. But, over and over again, when the circumstances are right and when people are able, they make the right call—the right decision.



EDF has trained 29,000 officers to enforce compliance with environmental laws nationwide.



A dynamic population grounded in an ancient culture proved receptive to change.



# An urgent campaign to get lead out of drinking water

Is the water that comes out of your tap clean and safe? For many Americans, the answer is 'no.' EDF takes action.

**W**HILE THE WATER CRISIS IN Flint, MI, has garnered national attention, lead is quietly leaching into the drinking water of millions of homes across the country. The Centers for Disease Control and Prevention estimates that 500,000 children in the United States have elevated blood lead levels, putting them at risk for behavioral and learning problems and reduced IQs.

Much of that lead comes from old paint, which still poses a hazard in 24 million homes, but drinking water is the second-largest source of lead exposure. That's because an estimated six to ten million American homes are connected to the water mains by lead pipes. As water sits in these service lines, lead can leach out and even minor disturbances to the pipes, such as road repair, may cause protective coatings to flake off and deposit lead in the water.

"I've heard it described as a game of Russian roulette," says Tom Neltner, chemicals policy director at EDF. "Only

you can't see, smell or taste lead in water, so you don't know when you've lost. And because there's no full inventory of where these pipes are, you might not even realize you're playing."

EDF was on the front lines of the fight to remove lead from gasoline in the 1970s. That action led to a 98% reduction in the concentration of lead in the air and contributed to a dramatic reduction in blood lead levels in U.S. children. Now, we're committed to making full lead service line replacement a top priority.

"Given the risk of unpredictable failures in more than six million lead pipes across the country, removing these pipes is the most appropriate way to protect people," says Neltner.

To that end, EDF is pushing for a complete overhaul of EPA's lead in drinking water rule, first issued in 1991. The revised rule should require a full inventory of existing lead service lines and steady progress toward removing them, as well as increased testing and a new household action level to inform

families when lead levels pose a significant hazard.

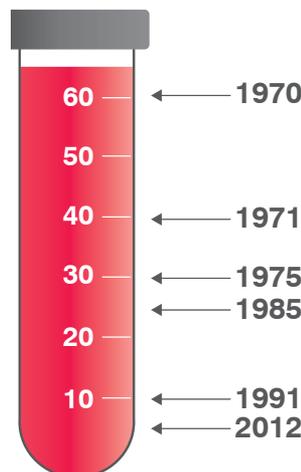
While the details of this rule are being finalized, EDF is taking action on the ground in vulnerable communities that need help today. Working with utility groups, public health organizations like Children's Environmental Health Network, and community-based groups, EDF will help identify the location of lead service lines and advocate their replacement.

To support these efforts, EDF is democratizing water testing by loaning communities portable meters and free test kits. These meters, about the size of a lunchbox, can determine within minutes if a household is likely to have a lead service line, empowering people to make informed decisions.

"As a country, we've taken enormous strides to reduce our exposure to lead," says Dr. Sarah Vogel, VP for Health at EDF. "But at the same time, evidence continues to mount that the only safe level of lead for humans is no lead at all."

## Amount of lead considered toxic

(micrograms of lead/deciliter of blood)



# Cities on the front lines of climate change

**E**VERY TIME A MAJOR STORM HITS Miami Beach, locals brace for flooding. But now, because of sea level rise, even on sunny days ocean water sometimes courses through the streets at high tide. Says Mayor Philip Levine: “We’re on the front lines of climate change here.”

Climate disruption is the new normal in communities across America. That’s why 60 cities and counties in 28 states— together with a host of additional supporters—have gone strongly on the offensive to support the historic Clean Power Plan.

The plan, finalized in 2015, sets the first-ever national limits on carbon pollution from existing power plants—the nation’s single largest source of these emissions.

Hardly had the ink dried on the final measure when a lawsuit to block the plan was filed by opponents including more than two dozen states, led by West Virginia, along with coal interests.

In February, the U.S. Supreme Court took the unprecedented step of putting the Clean Power Plan on pause while the full DC Circuit Court of Appeals reviews the case on the merits.

Calling themselves “America’s first responders to climate change,” cities as



REUTERS

Mayors of coastal cities are among the most vocal backers of Obama’s Clean Power Plan.

diverse as Boise, ID, and Minneapolis, MN, filed a friend-of-the-court brief in support of the Clean Power Plan. Ironically, 30 of the cities in the coalition supporting the plan are in states where attorneys general are trying to stop it. These include Dallas, Houston, Tucson and eight Florida cities.

EDF is a party to the case, together with a broad coalition of allies that will defend the plan before the appeals court in oral arguments this September. “We look forward to presenting the strong legal basis for the Clean Power Plan to the court,” said Tomás Carbonell, EDF’s lead attorney on the case.

Our argument will emphasize the plan’s bedrock foundation in U.S. law, since the Supreme Court repeatedly has upheld EPA’s responsibility to limit

climate pollution under the Clean Air Act. We also will show that the plan reflects cost-effective approaches that power companies are already using to reduce climate pollution.

The Clean Power Plan also has the backing of 18 states, major power companies, corporations such as Amazon, Apple, Google and Microsoft, 208 current and former members of Congress, leading health organizations and many others.

Despite the legal challenges, more than 20 states are moving forward with efforts to reduce carbon emissions from the power sector.

Keeping the pressure on are mayors like Cindy Lerner of Pinecrest, FL. “Turning the Miami region into a real-world Atlantis is a fate that we cannot accept,” says Lerner.

## Will your legacy include the long-term recovery of the monarch butterfly?

Recovery is possible if we can create and protect enough habitat for monarchs to flourish.

Our Planned Giving team is happy to discuss options for creating your environmental legacy. Please contact:

Katherine Nolan Brown • kbrown@edf.org  
212-616-1390 or toll-free 877-677-7397  
or visit [www.edfgift.org](http://www.edfgift.org)



# How to fight pests without hurting the environment

**Y**OU'RE SIPPING A NICE COLD drink and enjoying the sunset from your front porch rocking chair. Suddenly you hear that familiar eerie whine. "Oh no! Mosquitoes!"

Blood-sucking mosquitoes can not only ruin our pleasure; they can also spread serious diseases like dengue, malaria and encephalitis. Many other insects—along with some plant diseases and fungi—can be similarly dangerous to humans, other animals and a wide array of plants, including many we love to eat.

In addition to the lotions and sprays we use to protect our bodies, an estimated one billion pounds of chemical pesticides are applied across the United States by homeowners and farmers every year. In use since World War II, many of these are toxic.

The state of Maryland just banned neonicotinoids, a potent class of pesticides, for homeowners after scientists found a strong connection to the decline of bees.

Synthetic chemicals are already in our air, food and water. In addition to cancer, some have been linked to asthma, blood disease and reproductive and nerve damage in humans.

These links are alarming. Many people want to stop using pesticides. But most of us don't want to surrender to insects or weed infestations. Are there safer alternatives?

Here are a few:

## ■ Home truths

Remedies are often handed down through generations. Natural insecticidal sprays, for instance, can be purchased or made from one cup of vegetable oil and one tablespoon of mild liquid dish soap. Researchers say this recipe is one of the safest pesticides to use in gardens, virtually nontoxic to animals and birds and usable on vegetables up to harvest. Other homegrown remedies include ground cinnamon sprinkled on orchids to kill fungi, a spray made from fresh habanero or jalapeno peppers to repel deer and a shallow saucer of beer left out for slugs



Try some habanero on your hostas.

and snails (they slither in and drown).

## ■ Smart planting

To keep pests off favorite fruits or vegetables, try "trap cropping"—placing other plants nearby that attract pests even more. To promote higher yields and healthier soil while cutting down on specialized insect predators, plant different crops in alternate years on the same land. Another technique is "intercropping"—growing two or more mutually beneficial crops in close proximity (for instance, basil next to tomatoes).

## ■ Bug vs. bug

Biological pest control uses natural enemies. Ladybugs, for instance, are great at controlling the insects that go after citrus fruits. Likewise, aptly named assassin bugs devour caterpillars, leafhoppers and aphids. These species can be bought online. You can also try attracting beneficial

insects with a mix of five ounces of sugar in a quart of water.

## ■ Pest-proof people

DEET (short for a long chemical name) has established its effectiveness against mosquitoes and other pests. But is it safe? A 2014 EPA review concluded that DEET does not present "any risks of concern to human health or the environment." After a review, Environmental Working Group added that DEET "is generally safer than many people assume," but warned against 100% concentrations. Still nervous? Insect repellents known as picaridin, developed in Europe as a less-toxic chemical alternative to DEET, are less irritating and won't damage your clothes. Another option is "botanicals," synthesized plant oils such as the popular oil of lemon eucalyptus.

By Jim Motavalli

## THE NITTY GRITTY

**Pesticide issues:** Pesticide Action Network [pana.org](http://pana.org) and Toxics Action Center [toxicsaction.org](http://toxicsaction.org)

**Crop planning:** University of TN Institute of Agriculture [bit.ly/1XjXBhG](http://bit.ly/1XjXBhG)

**Biological pest control:** University of California's Natural Enemies Gallery [bit.ly/1V7TkNZ](http://bit.ly/1V7TkNZ)

**Beneficial bugs:** ARBICO Organics [arbico-organics.com](http://arbico-organics.com)

**Pesticide alternatives:** Southern States Cooperative [bit.ly/1W0MRFO](http://bit.ly/1W0MRFO)

**Insect repellents:** Environmental Working Group [bit.ly/1S4ahFj](http://bit.ly/1S4ahFj)

*Jim Motavalli writes regularly about environmental issues for leading publications. The opinions are the author's.*

# Get out the vote!



This November, candidates are on the ballot and so is climate change. It's a critical moment—we have just one chance to get it right. How can we ensure the climate is a winner in November?

## Engaging youth

Getting millennials to the polls is critical. This cohort recently surpassed Baby Boomers as the nation's largest living generation. But there's a problem: While an overwhelming majority of young people in both parties support climate action, they're also the least likely to vote in November. Their apathy is due in part to disenchantment with the political process. Many have never known a time when Washington wasn't gridlocked and jobs were plentiful.

Defend Our Future, an EDF initiative to mobilize young people on climate change, is running a get-out-the-vote campaign on campuses in three battleground states—Colorado, Ohio and Pennsylvania—and plans to expand to more states before the November election.

In 2014, Defend Our Future launched a pilot program in Colorado to increase turnout among young voters. Using a "pledge-to-vote" program, Defend Our Future increased turnout in its campus program by ten percentage points.

"Making a commitment to act increases the likelihood the person will take action," says Alicia Prevost, director of Defend Our Future.

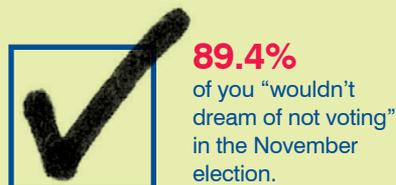
## Moms: a force to be reckoned with

Politicians definitely do not want to tangle with a 740,000-strong group of mothers (and fathers) fighting for their children's health. Moms Clean Air Force, backed by EDF, launched a campaign in March to get parents who care about clean energy and climate to vote.

This summer, mothers, children and activists from across the country will have a chance to raise their collective voices through a "Play-In" on July 13 in Washington, DC, by the Capitol. A menu of kids' activities will keep little ones engaged while mothers remind lawmakers what's really on the line as they dither about climate change: the future generation.

## Guess who's the most active?

EDF sent members a survey earlier this year. It revealed that you are a passionate, politically engaged group. With your help, America will elect candidates who support the environment.



**Nearly 80%** of you expressed interest in playing an active role in our voter education campaign.

**More than 80%** of you rank climate change as a very important issue. After climate, your priorities are "protecting clean water," "promoting renewable energy" and "restoring our oceans and marine ecosystems."

ERIN LEIGH MCCONNELL

## Latinos: a rising voice

The Latino community today has the power to make or break an election. The number of Latino voters has soared to about 28 million, from 8.8 million in 1992, with large electorates in key swing states like Colorado, Florida and Nevada. While 63% of Latinos want the federal government to address climate change, less than half of potential Latino voters made it to the polls during the 2012 election cycle.

Since 2013, EDF has worked with Latino advocacy organizations on climate change and other environmental issues. Several of our partners such as Voto Latino are leading national efforts to engage Latino voters.

## WHAT YOU CAN DO

- ✓ **Encourage a young person** you know to register and pledge to vote for candidates in either party who support climate action at: [defendourfuture.org/register](http://defendourfuture.org/register).
- ✓ **Get more information** and find other ways to help at: [defendourfuture.org/challenges](http://defendourfuture.org/challenges).
- ✓ **Join Moms Clean Air Force!** Whether you're a parent or a grandparent, you can make a difference at: [momscleanairforce.org](http://momscleanairforce.org).
- ✓ **Take the pledge** to vote for safe, clean energy at: [momscleanairforce.org/pledge](http://momscleanairforce.org/pledge).

**“In a few decades, the relationship between the environment, resources and conflict may seem almost as obvious as the connection we see today between human rights, democracy and peace.”**

**—Wangari Maathai, Nobel Peace Prize winner and environmentalist**

