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## Become a Green Business

**W**e start with the premise that you want to know how your business can contribute to the solution to cancer and other environmental health problems, while at the same time improving your bottom line.

Many of the toxic substances that are accumulating in our bodies have been developed by companies offering us new, improved products. Collectively we have embraced a non-stick, waterproof, fireproof, pestproof, dirtproof, germproof, sweet-smelling, convenient world, but the consequences of our rush to new products is becoming evident in rising cancer rates and other chronic diseases. We need to learn how to do things differently. These 15 solutions explore how businesses can contribute to the goal of a world with far less cancer.

A new vision is emerging for what makes a successful business, with a new language. Its



JOACHIM ROETTIGERS/GAMBITTI

Greenpeace protest against the production of phthalate toxic chemicals, during a BASF shareholder meeting.

Companies that do not understand toxic hazards in their products and who do not take steps to eliminate them face the risk of disruption to their supply chains, exclusion from markets, damage to their reputation, foregone profits and toxic tort litigation.

— Richard Liroff, Senior Fellow, World Wildlife Fund Toxics Program

proponents speak of sustainability, clean production and a “triple bottom line” integrating financial, social and environmental benefits. They admire the efficiencies of closed-loop recycling and zero waste. They get excited about green chemistry, toxics use reduction and chemical substitution. They read papers about industrial ecology and eco-intelligent design. They’re into environmental management, and many are trained in The Natural Step, a system of analysis originating in Sweden that helps a business align its operations with the fundamental laws of nature. Over the dinner table, they discuss big ideas such as biomimicry, natural capitalism and cradle-to-cradle product life cycles. More importantly, they put their ideas into action, creating value and making higher profits along the way.

Businesses are also encouraging their workers to carpool, bicycle and telecommute, and they’re seeking ways to reduce their greenhouse gas emissions. They are serving healthier food in their cafeterias and supporting fitness regimes. They are exchanging their office cleaning products for non-toxic varieties and using unbleached paper. They are retrofitting their buildings to introduce fresh air and daylight and conserve water and energy.

Companies that resist this change put themselves at a disadvantage. Shareholders are already targeting corporate annual meetings to demand disclosure of risks in products. In 2006 DuPont shareholders forced a vote that would

have required DuPont to report on options for eliminating PFOA, the stain repellent chemical used on carpets, textiles and fast-food wrappers that has been found to be carcinogenic. Avon, Chemlawn and Dow Chemical have all faced similar shareholder resolutions demanding safe substitutes.

As the scientific evidence confirms that certain chemicals are carcinogens or endocrine disrupters, companies will eventually be forced by the public or regulators to get rid of them.

On the other hand, there are companies that make chemical safety their top priority. They assess their chemical use throughout the supply chain and comply with the strictest standards globally. They win with innovative materials and products that set them apart from their competitors, and with customers who are increasingly looking for safe, carcinogen-free products.

SC Johnson is one of the biggest manufacturers of cleaning and personal care products, makers of products such as Ziploc, Glade and Windex that have traditionally contained numerous toxic chemicals. They have created a Greenlist™ which classifies and screens the ingredients used in every product the company makes, and they use the information to score the ingredients according to their impact on health and the environment, and reduce the use of chemicals with the highest impact.

Since 1996 SC Johnson has eliminated chlorine-based packaging, including polyvinyl chloride (PVC) bottles; cut 60% of their process waste while increasing production by 50%; reduced the use of virgin materials in packaging by a third;

- Biomimicry: [www.biomimicry.org](http://www.biomimicry.org)
- Clean Production Action: [www.cleanproduction.org](http://www.cleanproduction.org)
- Cleaner Production: [www.cleanerproduction.com](http://www.cleanerproduction.com)
- Corporate Environmental Strategy Journal: [www.cesjournal.com](http://www.cesjournal.com)
- Global Environmental Management Initiative: [www.gemi.org](http://www.gemi.org)
- GreenBiz: [www.greenbiz.com](http://www.greenbiz.com)
- Green Suppliers Network: [www.epa.gov/greensuppliers](http://www.epa.gov/greensuppliers)
- International Society for Industrial Ecology: [www.is4ie.org](http://www.is4ie.org)
- Natural Capitalism: [www.natcap.org](http://www.natcap.org)
- The Natural Step: [www.naturalstep.org](http://www.naturalstep.org)
- The Next Industrial Revolution: [www.thenextindustrialrevolution.org](http://www.thenextindustrialrevolution.org)
- SC Johnson Greenlist: [www.scjohnson.com/community/greenlist.asp](http://www.scjohnson.com/community/greenlist.asp)
- *The Sustainability Advantage*, by Bob Willard, New Society, 2002: [www.sustainabilityadvantage.com](http://www.sustainabilityadvantage.com)
- US Green Seal: [www.greenseal.org](http://www.greenseal.org)
- Zero Waste Alliance: [www.zerowaste.org](http://www.zerowaste.org)

and eliminated large volumes of solvents from their products, in pursuit of the goal of a 50% reduction in volatile organic compounds (VOCs).

The company is doing this out of a desire to integrate sustainability into their product development process, but they are also aware that when a toxic component is *not* eliminated, it has to carry the new European “Dangerous for the Environment” hazard label of a dead fish/dead tree.

No company can achieve an overnight turnaround. What matters is to get started, by setting up a management framework that integrates sustainability goals into your company’s core objectives and working for steady, month-by-month progress, with indicators to show how you are doing.

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## Move to Sustainability

What do most business leaders know about the chemistry of their products? Without being in any way derogatory, the usual answer is “very little.” The chemicals are ordered from a chemical company, the products are manufactured and the resulting toxic by-products are considered a normal — if inconvenient — part of life. Many are found to be dangerous to health and, in some cases, cause cancer.

Take Interface. They make carpets and fabric. In 1994 their factories produced thousands of tons of solid waste, millions of gallons of contaminated water and many tons of toxic gases. Their discarded carpets filled landfills across

For the first twenty-one years of Interface’s existence, I never gave one thought to what we took from or did to the Earth, except to be sure we obeyed all laws and regulations ... Frankly, I didn’t have a vision, except “comply, comply, comply.” I had heard statesmen advocate “sustainable development,” but I had no idea what it meant.

— Ray Anderson, Interface CEO

North America. Their nylon carpets and fabrics, spun from petrochemicals, were bonded in fiberglass and PVC and dyed with hazardous pigments.

That same year the company’s founder and CEO, Ray Anderson, was asked to deliver a speech on Interface’s environmental goals. After reading Paul Hawken’s book *The Ecology of Commerce* and Daniel Quinn’s book *Ishmael*, he realized with pain that Interface was contributing to the assault on the world’s environment and decided to take his company on a journey of environmental rediscovery.

Interface’s managers called their staff together to brainstorm how to make it happen, and they started to ask some central questions. Could they make their products with less fiber? Could they design them to create less waste in the manufacturing process? Could they use materials that could be recycled? Could they put their wastes back into the loop?

Interface’s goal is to become 100% sustainable by 2020. By 2005:

- Greenhouse gas emissions were down by 46%.
- Water use was down by 78% for modular carpets, 40% for broadloom carpets.
- Energy use was down by 31%; biomass and wind were being used for 12%.
- Solid wastes had fallen by 65%, saving \$231 million.



INTERFACE, INC

Interface Fabric loom

- Interface: [www.interfacesustainability.com](http://www.interfacesustainability.com)
- *The Next Sustainability Wave: Building Boardroom Buy-In* by Bob Willard, New Society, 2005

- The number of smokestacks had been reduced by 33%, effluent pipes by 47%.
- The use of petrochemical materials had fallen from 87% to 80%.

Interface has now become a leader in sustainability. Its latest innovation is the development of environmentally conscious fabrics. It created the first commercial interior fabric, Terratex™, made from 100% renewable biopolymer fibers, originating from corn that is processed via fermentation. It consumes less fossil fuel, uses less water and emits fewer greenhouse gases than conventional petrochemical-based polymers. Not only is the product free of carcinogens and other chemical hazards, it is also completely biodegradable.

In order to ensure that the new fabric would not be contaminated by dyes and treatments used to finish it, Interface developed a stringent chemistry screening protocol that does not allow any chemical that is carcinogenic, mutagenic, bioaccumulative, persistent, toxic to aquatic life or sensitive to skin. Only 30 chemicals passed the test.

As Interface has shown, it *is* possible to design a business whose products and processes are non-toxic and still make a healthy profit. It starts with a plan.

1. Set up a leadership team involving every level of your company and write a mission statement. Set an agenda to become fully sustainable by 2020.
2. Identify all of the chemicals in your products. Set up a tracking system for materials from arrival to disposal, using MSDS to find out which products are harmful.
3. Create a plan to substitute or eliminate toxic chemicals.
4. Plan to reduce your greenhouse gas emissions, your wastes and your use of water and energy.
5. Design new products. Take responsibility for products from cradle to grave. Require data from suppliers on chemicals and materials used in products. Work with suppliers to create healthy ingredients. Design products to be reused, recycled or composted. Take back products at end-of-life.
6. Develop a green purchasing plan, including paper, cleaning products, fuel, ink and other basics.
7. Write green contracts in conjunction with all your staff. Provide training opportunities to encourage participation.
8. Work collaboratively with environmental advocates.
9. Link up with other companies that follow the same goals. Find ways to help each other.
10. Support policies and laws that promote green chemistry and the elimination of toxic chemicals.

Many companies are following Interface's lead, including companies as diverse as Patagonia, IKEA, Marks and Spencer and even Wal-Mart. The challenge that our planet faces is for *all* businesses to get on board, so that we can face our grandchildren without shame when they ask, "What did you do to help protect the environment, Grandpa?"

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## Reduce Your Emissions to Zero

**T**o a traditional business, leftover chemicals are just another waste disposal problem. North America is full of landfills, industrial ponds, lagoons, rivers and underground injection wells where industry's unwanted chemicals have been dumped. From there, they migrate, leak, evaporate and infiltrate our lives.

Smart companies, realizing that the way they buy chemicals makes no sense, are asking, "How can I reduce my wastes, my costs and my chemical footprint?" Through process changes, product reformulation, materials substitution and investing in clean technology, wastes can be drastically reduced.

Aim for Zero Emissions and Zero Discharge Herman Miller, a Michigan-based manufacturer of commercial office furniture, is going for zero — zero landfill, zero hazardous waste and zero air and water emissions. In 1991 their Environmental Quality Action Team made zero landfill its first environmental goal, and it is close to reaching it. Their signature office chair is designed for reuse and recycling so that no part of it needs to be landfilled. The company developed a special corn-based fabric that is biodegradable, and to avoid toxic chemicals that would end up as hazardous waste, they have a cradle-to-cradle design protocol that replaces brominated flame-retardants and PVC with safer earth-friendly materials.

Zero water emissions was the goal for Millar Western in Alberta when they installed the technology for their Meadow Lake pulp mill, the first mill in the world to successfully implement

Everyone thinks of waste as an environmental issue. That's a natural mistake. Waste is .... the biggest opportunity North American manufacturers have ever had to increase their profits.

— Charles Rooney, Orr and Boss

zero-liquid effluent discharge technology. While other pulp mills treat and release their waste water, Meadow Lake cleans and reuses all waste water, discharging none to the environment. The mill is designed as a chlorine-free closed-loop water system with no dioxins, furans or other organics contaminating its water.

Small businesses can reach zero too. Perchloroethylene (perc) is a suspected carcinogen that has been the solvent of choice for most dry cleaners, but governments are working to phase it out. In Los Angeles, perc cannot be used in any new cleaning operations. Dry cleaners are investing in alternatives such as wet cleaning and citrus-based cleaners. Carriage Trade Cleaning Centre, in Oshawa, Ontario, was one of the first Canadian cleaners to adopt wet cleaning. Although the investment was expensive, the company has saved on drastically reduced electric and water bills and by not having to buy perc.

Substitute with Non-Toxic or Less Hazardous Substances

Substitution is also a way forward for companies that want to reduce their toxic chemical use. Domfoam, a Montreal manufacturer of polyurethane foam, replaced dichloromethane, a suspected carcinogen, with a non-toxic water-based glue that did the same job. Many printing companies have replaced solvent-based inks with less toxic water-based ones.

A landmark study in 2006 by the Massachusetts Toxics Use Reduction Institute found that industries could save money by replacing hazardous chemicals with cheaper



HERMAN MILLER INC

Herman Miller sustainable designed Mirra chairs, 96% recyclable by weight; no PVC; 42% recycled content; 69% green chemistry composition.

alternatives. They found feasible alternatives for lead, formaldehyde, perchloroethylene, hexavalent chromium and the phthalate DEHP, all known or suspected carcinogens. <sup>1</sup>

Sign up for Chemical Service Programs In a traditional relationship, a business buys chemicals from a number of suppliers. The sales reps want to sell as much as they can to maximize their bonuses, while the companies want to minimize their costs while getting the best performance from their chemicals. This often leads to an adversarial relationship.

The full cost of using chemicals might be 10 times the actual cost, including procurement, delivery, inventory, testing, insurance, health and safety, environmental compliance, use, contamination, misapplication, waste collection, waste treatment and disposal. If a company spends \$7 million a year on chemicals, it might spend \$70 million on associated costs.<sup>2</sup>

One solution is chemical servicing, or “shared savings chemical management.” Instead of paying different companies, you pay one company to manage all your chemical needs with a guaranteed annual contract. If they

- Canadian Centre for Pollution Prevention: [www.c2p2online.com](http://www.c2p2online.com)
- Center for Clean Products and Clean Technologies: <http://eerc.ra.utk.edu/ccpct/index.html>
- *Chemical Management: Reducing Waste and Cost Through Innovative Supply Strategies* by Thomas Bierma and Francis Waterstraat, Wiley, 2000
- Chemical Strategies Partnership: [www.chemicalstrategies.org](http://www.chemicalstrategies.org)
- Clean Production Action: [www.cleanproduction.org](http://www.cleanproduction.org)
- Green Profit: [www.greenprofit.net](http://www.greenprofit.net)
- Journal of Cleaner Production: [www.elsevier.com/locate/jclepro](http://www.elsevier.com/locate/jclepro)
- Lowell Center for Sustainable Production: [www.sustainableproduction.org](http://www.sustainableproduction.org)
- National Pollution Prevention Roundtable: [www.p2.org](http://www.p2.org)
- *The Non-Toxic CEO*, by Mark Wysong: [www.nontoxicceo.com](http://www.nontoxicceo.com)
- Pollution Prevention Resource Exchange: [www.p2rx.org](http://www.p2rx.org)
- Pollution Prevention World Information Network: [www.p2win.org](http://www.p2win.org)
- PollutionWatch, Canada: [www.pollutionwatch.org](http://www.pollutionwatch.org)
- Pulp Mills Zero Discharge: [www.rfu.org/cacw/production.html#ZeroDischarge](http://www.rfu.org/cacw/production.html#ZeroDischarge)
- Southwest Network for Zero Waste: [www.zerowastenetwork.org](http://www.zerowastenetwork.org)
- Toxics Release Inventory: [www.epa.gov/tri](http://www.epa.gov/tri)
- Zero Emissions Forum (UN): [www.unu.edu/zef](http://www.unu.edu/zef)
- Zero Emissions Research Institute: [www.zeri.org](http://www.zeri.org)

reduce your chemical needs, they share in the savings. Instead of thinking adversarially, their managers help you to become more efficient in your use of chemicals.

When Chicago-based Navistar International, which makes diesel engines for trucks and buses, made the change, its chemical service provider installed a new process to clean and rinse its grinding-fluid wastes, reducing chemical usage by 50% and wastes by 90%.

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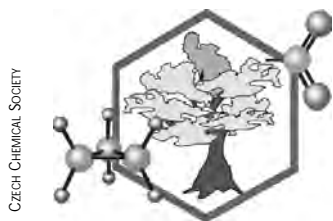
## Embrace Green Chemistry

**E**volution has taken place over billions of years, but the science of chemistry is barely 250 years old. It is still in its infancy, and there is a reason why many of the processes that industry uses result in pollution - and cancer.

When a company decides to develop a new product, its chemists work to create a set of chemical reactions to produce it. Typically, they take carbon from fossil fuels and a lot of elements from the periodic table, and use relatively simple reagent designs to achieve the reactivity they want. The process often results in substances and contaminants unknown to nature. Many persist as toxic pollutants and end up contributing to cancer, reproductive failures, birth defects and other health problems. They even attack the planet's ozone layer, threatening all life on Earth.

Nature works the other way around. It takes a handful of common elements and uses a huge range of elaborate biochemical processes to achieve its ends. It applies a lot of intelligence, which has evolved over millions of years, and the result is zero pollution.

That is what green chemistry is learning from nature: how to create the products we need with



The Czech Chemical Society's Green Chemistry logo.  
[www.csch.cz/green.htm](http://www.csch.cz/green.htm)

If chemists direct their strengths to contributing to a sustainable civilization, chemistry will become more interesting and compelling to people, and may lose its "toxic" image<sup>1</sup>.

— Terry Collins, Thomas Lord Professor of Chemistry, Carnegie Mellon University, Pittsburgh

more intelligence, fewer elements and no toxic waste. By embracing green chemistry, and using only those chemicals that are found inside the human body (carbon, oxygen, hydrogen, nitrogen and iron), businesses can leave behind the dirty past and step into a clean, sustainable future.

#### Green Chemistry in Practice

- Instead of using heavy metals such as cadmium and lead to make paint, green chemists are making paints from vegetable oils. They are making water-repellent coatings that mimic the way a lotus leaf works and developing colors based on the biochemistry of butterfly wings.
- Instead of using chlorine-based bleaches in the pulp industry, which leave many toxic chlorinated residues like dioxins and furans, green chemists are whitening paper using the catalytic reaction of oxygen or hydrogen peroxide, nature's principal oxidizing agents.
- Instead of making plastics from oil, green chemists are making bio-plastics from bio-based polymers and fermented corn sugars.
- Instead of using harsh solvents in cleaning processes, with their high off-gassing of volatile organic compounds and toxic waste streams, green chemists are developing solvents that use supercritical carbon dioxide, ethyl lactate made from corn, and room temperature ionic liquids.
- Instead of using chemical agents to reduce vat dyes in the textile industry, green chemists

are using electrons, resulting in less use of chemicals, water and wastewater treatment.

- Instead of making glues from neurotoxins such as toluene or methyl ethyl ketone, green chemists are making super-strong fibers from protein and water that mimic the way a silkworm makes silk. They have also discovered that common blue mussels use the iron in seawater as a super-bonding agent when they cling to rocks.

Green chemistry has gone from an idea to a multi-million dollar business in 15 years, but it needs help to proceed further. Universities are quickly establishing green chemistry courses and starting to train young chemists in environmental principles.

Regulations that ban lead, cadmium and brominated flame-retardants are driving the trend in Europe. The European Social Investment Forum reported in 2005 that “over the next 5 to 10 years, green chemical innovation could be a significant source of competitive advantage for companies manufacturing chemicals used in consumer products, particularly in markets where brand or product differentiation

Green chemistry represents a primary, long-term solution to many of the chemical problems facing California. It is a key element of an industrial development strategy that is environmentally, socially, and economically sustainable.

— Green Chemistry in California

based on green credentials is a key component of value for the final customer.”<sup>2</sup>

In California, a special report on *Green Chemistry in California*, written for two Senate and Assembly environmental committees, has called for a comprehensive chemicals policy, embracing green chemistry, to place California on the path to a sustainable future.

- Canadian Green Chemistry Network: [www.greenchemistry.ca](http://www.greenchemistry.ca)
- Center for Green Chemistry, University of Massachusetts Lowell: [www.greenchemistry.uml.edu](http://www.greenchemistry.uml.edu)
- EPA Green Chemistry Program: [www.epa.gov/greenchemistry](http://www.epa.gov/greenchemistry)
- Green Chemistry Group, University of York (UK): [www.york.ac.uk/res/gcg](http://www.york.ac.uk/res/gcg)
- *Green Chemistry in California*: <http://coeh.berkeley.edu/FINALgreenchemistryrpt.pdf>
- Green Chemistry Institute (US): [www.chemistry.org/greenchemistryinstitute](http://www.chemistry.org/greenchemistryinstitute)
- *Green Chemistry Journal*: [www.rsc.org/greenchem](http://www.rsc.org/greenchem)
- Green Chemistry Network (UK): [www.chemsoc.org/networks/gcn](http://www.chemsoc.org/networks/gcn)
- GreenBlue: [www.greenblue.org](http://www.greenblue.org)
- *Greenlist* (weekly): [www.turi.org](http://www.turi.org)
- Institute for Green Oxidation Chemistry: [www.chem.cmu.edu/groups/Collins](http://www.chem.cmu.edu/groups/Collins)
- Leeds Cleaner Synthesis Group (UK): [www.chem.leeds.ac.uk/People/CMR](http://www.chem.leeds.ac.uk/People/CMR)
- Twelve Principles of Green Chemistry: [www.epa.gov/greenchemistry/principles.html](http://www.epa.gov/greenchemistry/principles.html)

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## Phase Out Toxic Chemicals in Products

**H**ow is a hardworking cosmetics executive to respond? It's a great morning, and your quarterly results look good. You are proud of your company's efforts to make your business more sustainable.

But then your secretary tells you there's a group of women at the front entrance carrying signs and claiming that their bodies are contaminated with dibutyl phthalate, a chemical your company uses to make nail polish. Dibutyl phthalate has been linked to developmental problems and liver and kidney damage. They're very upset.

What are you to do? The public has become alarmed by the increased incidence of cancer

and the disturbing evidence of chemicals in their bodies. Even the Disney Corporation was targeted when Greenpeace found that PVC-embossed Mickey Mouse and Princess T-shirts were leaking hazardous chemicals into the bodies of the children who wear them.

Some chemicals simply have to go. It was true in the past for DDT, and it's true today for the persistent organic pollutants that are being phased out under the global Stockholm Convention, including nine pesticides, PCBs, dioxins and furans (see Solution 93).

It is also true for a whole new parade of troubling chemicals, including brominated flame-retardants like PDBEs (used as fire-retardants in foams, furniture and computers); perfluorinated compounds (used to make everything from Teflon-coated cookware to stain- and water-resistant coatings for bedspreads, furniture, shirts, handbags and other common products); bisphenol A (a hormone-mimicking chemical used in plastic food packaging, cans

We should be able to trust industry not to make dangerous chemicals, and manufacturers not to use them. But this toxic toy story shows us that they won't clean up their acts unless we force them to. We can all make a difference by shopping wisely and choosing environmentally sound products, but only by demanding tougher laws can we be sure that all hazardous chemicals are replaced with safer alternatives.

— Nadia Haiama-Neurohr, Greenpeace



GREENPEACE

Disney children's wear often contains toxic chemicals. However, some retailers have pledged to avoid toxic chemical in their products.

and hard clear plastic baby bottles); formaldehyde (used in pressed wood shelving, cupboards and plywood); various pesticides; and phthalates (used to soften plastic, in everything from cosmetics to baby toys). In time it will be true for all chemicals whose toxic and bio-accumulative effects cannot be contained.

The European Union (EU) is leading the drive to clean up, as it moves to a tighter system of chemical regulation (see Solution 69). There are 600 substances used in cosmetics in North America that can no longer be used in Europe, including any compound linked to cancer, genetic mutations or reproductive effects. The EU has banned all use of lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls and PBDEs in electrical and electronic equipment. It has also banned the use of six phthalate chemicals in children's toys such as the Teletubbies and rubber ducks, but only after a long and bitter eight-year battle with the chemical and toy industries.

There is a better way. After seeing its name listed in red in a Greenpeace report called *The Chemical House*, Samsung Electronics became the first electronics company to substitute safer chemicals in all its products, and it phased out brominated flame-retardants by the end of 2005.

In creating its SD Video Camera, Panasonic designed it to be easily recycled and to use no hazardous materials, following a 40-step process that carefully reviewed all materials it was using. Through its Green Plan 2010, Panasonic's parent company, the Matsushita Electric Group, set a

- Campaign for Safe Cosmetics: [www.safecosmetics.org](http://www.safecosmetics.org)
- *The Chemical Home*: [www.greenpeace.org.uk](http://www.greenpeace.org.uk)  
Click on "Campaigns" then click on "Toxics".
- Computer Take Back Campaign:  
[www.computertakeback.com](http://www.computertakeback.com)
- Database of POPs Alternatives:  
<http://dbserver.irptc.unep.ch/irptc/owa/ini.init>
- IKEA: [www.ikea.com.sg/about\\_ikea/environment.asp](http://www.ikea.com.sg/about_ikea/environment.asp)
- Marks & Spencer: [www.marksandspencer.com/csr](http://www.marksandspencer.com/csr)
- Panasonic Sustainability Report:  
[www.panasonic.net/eco/index.html](http://www.panasonic.net/eco/index.html)
- Persistent Organic Pollutants: [www.chem.unep.ch/pops](http://www.chem.unep.ch/pops)
- PFCs Report: [www.ewg.org:16080/reports/pfcworld](http://www.ewg.org:16080/reports/pfcworld)
- Rethink: Fresh Ideas for a Cleaner World:  
<http://rethink.ebay.com>

goal to exclude hazardous materials from all its products worldwide, including PVC.

IKEA, the Swedish furniture maker, has also phased out the use of PVC in all products (except the isolating plastic on electric cables), as well as its azo-dyes, used to color textiles, leather and natural fibers. Azo-dyes can be carcinogenic to people working with the dyeing process over many years and can cause skin problems for consumers.

The major British retail chain, Marks & Spencer, has developed a special code of conduct for the suppliers who are dyeing, printing and finishing the 300 million items of clothing that it sells each year. It has banned the use of 56 harmful chemicals in textiles including phthalates and nonylphenol ethoxylates, known hormone-disrupting chemicals. It has also banned PVC from its children's wear and food packaging. The company's policy is "to phase out chemicals that they believe to be harmful to customers, production workers or the environment, and to support substitution by safer chemicals."

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## Phase Out Most Uses of Chlorine

When the universe was born, it contained 92 fundamental elements, including chlorine, from the Greek word *chloros*, meaning “pale green.” It is a poisonous greenish-yellow gas that combines easily with many other elements, most commonly found as the relatively benign sodium chloride, known as salt.

In the 1890s, Herbert Dow developed a way to harvest chlorine from salt using electrolysis on brine found in central Michigan, where an

PVC is one of the most environmentally hazardous consumer materials ever produced.

— Joe Thornton, Professor of Biology,  
University of Oregon, author of  
*Pandora's Poison*

ancient inland sea had left large underground salt deposits. He combined the chlorine with other elements, and Dow Chemical was off and running as the early leader in chlorine chemistry.

Today there are 15,000 chlorinated compounds in commercial use. Chlorine is used to disinfect swimming pools, bleach paper and make a myriad of products such as pesticides, pharmaceuticals, resins, detergents, solvents and plastic PVC. The global production of chlorine is about 40 million tons a year.

Many of these products are toxic enough. But there is another dark side to chlorine chemistry. When chlorine or its waste materials are released into the environment or burned, they create many accidental and very toxic by-products, including the family of chemicals known as dioxins and furans, among which is the most deadly dioxin, known as TCDD (tetra-chloro-dibenzo-p-dioxin). Dioxins and furans often escape into air and water where they bioaccumulate and biomagnify up the food chain and eventually reach our bodies. There they accumulate mainly in our fatty tissues, where they can be implicated in cancer and birth defects. Along with dioxins and furans, chlorine by-products combine with organic matter (the carbon-based “stuff of life”) to create a long, very problematic list of chlorinated organic pollutants.

Over half of the 362 toxic compounds found in the Great Lakes are chlorinated organic chemicals, and many fish in them are no longer safe to eat, especially for children and pregnant mothers.<sup>1</sup> The International Joint Commission, the US-Canadian body that oversees the Great Lakes, has called for chlorine to be phased out as



MAKE OUR MILK SAFE (MOMS)

PVC Day of Action at the Target store in Albany, CA, urging them to phase out PVC from their packaging and products, organized by BE SAFE, Make Our Milk Safe (MOMS), and the Ruckus Society.

a feedstock for other chemicals and in plastics. In 1993 the American Public Health Association urged industry to stop using chlorine.

The biggest source of dioxins is polyvinyl chloride (PVC), used in pipes, tubing, windows, vinyl siding, flooring, wiring, packaging and consumer goods. Producing PVC is a risky occupation, in spite of industry cleanup, and the danger continues when PVC burns in a municipal waste incinerator, when a building catches fire or when a plant explodes, as Formosa Plastics' PVC plant did at Illiopolis, Illinois, in April 2004, causing four towns to be evacuated.

Chlorine has been used to make DDT, chlordane and dieldrin — the pesticides Rachel Carson sounded the alarm about in her 1962 bestseller *Silent Spring* — as well as the herbicide Agent Orange, used extensively in Vietnam and implicated in multiple cancers of Vietnam veterans and Vietnamese civilians. Another dioxin-contaminated pesticide, 2,4,5-T, was also used as a herbicide to spray Canada's Maritime forests until citizen opposition stopped it.

Chlorine is also used to produce chlorofluorocarbons (CFCs), once used widely in coolants and aerosols, that came close to destroying the Earth's protective ozone layer. Millions of cases of skin cancer, and millions yet to come, can be laid at the feet of chlorine.

There are replacements for 90% of the industrial processes that use chlorine, and Greenpeace lists the many alternatives on its comprehensive website. The pulp and paper industry has already moved to using chlorine dioxide instead of elemental chlorine in the bleaching process

- *Blue Vinyl* (the film): [www.bluevinyl.org](http://www.bluevinyl.org)
- Dioxins and furans: [www.epa.gov/opptintr/pbt](http://www.epa.gov/opptintr/pbt)
- *Dying from Dioxin*, by Lois Gibbs et al., Black Rose Books, 1997
- Euro Chlor Sustainability Goals: [www.eurochlor.org/index.asp?page=179](http://www.eurochlor.org/index.asp?page=179)
- *Health Effects of Dioxin*, by Ted Schettler: [www.greenaction.org/zerodioxin/healtheffects.shtml](http://www.greenaction.org/zerodioxin/healtheffects.shtml)
- The Legacy of Agent Orange: [www.heureka.clara.net/gaia/orange.htm](http://www.heureka.clara.net/gaia/orange.htm)
- *Pandora's Poison: Chlorine, Health, and a New Environmental Strategy* by Joe Thornton, MIT Press, 2001
- PVC Alternatives: [www.healthybuilding.net/pvc/alternatives.html](http://www.healthybuilding.net/pvc/alternatives.html)
- PVC Alternatives Database: <http://greenpeace.org/toxics/pvcdatabase>
- PVC Information: [www.pvcinformation.org](http://www.pvcinformation.org)
- PVC Phase-out: [www.acereport.org/pvc1.html](http://www.acereport.org/pvc1.html)
- PVC, The Poison Plastic: [www.pvcfree.org](http://www.pvcfree.org)
- Scientific Facts on Dioxins: [www.greenfacts.org](http://www.greenfacts.org) Search "dioxins"
- *Trespass Against Us: Dow Chemical and the Toxic Century* by Jack Doyle, Common Courage Press, 2005

for most of its products. Natural linoleum makes a perfectly adequate flooring substitute for PVC. Playmobil phased PVC out of its toys 20 years ago, and Lego has almost completely eliminated it. Reebok has eliminated PVC from its running shoes, and Sony has plans to remove PVC from its electronic products.

Terrence Collins, Director of the Institute for Green Oxidation Chemistry at Carnegie Mellon University, believes that the use of PVC should be "restricted to those uses where uncontrolled combustion cannot occur," such as buried piping.

In Europe the chlorine industry has established 14 sustainability benchmarks. Between 1985 and 2001, it achieved a 94% reduction in emissions to water and 90% to air; a 2010 target is set for a further 75% reduction to water and 50% to air.

## 57

## Protect Your Workers

**H**usky Injection Molding Systems, based in Ontario, has 3,000 employees worldwide. It is one of the world's leading suppliers of injection molding equipment and services to the plastics industry, and spends over \$4 million a year on employee benefits, including on-site aerobics classes, a fitness center, daycare center, naturopath, masseuse, doctor, physiotherapist, smoking-cessation program and a cafeteria that serves organic, vegetarian food and has eliminated fries and all meat except chicken and fish. When employees walk or cycle to work, drive a fuel-efficient car or do community service, they earn shares in the company through Husky's GreenShares program. All this pays off financially. Compared to other companies in the same industry, Husky has far lower rates of employee turnover and absenteeism, and its injury claims are 80% below average.

## Exposed to Carcinogens at Work

Aluminum Smelter Workers	Metal Workers
Asbestos Workers	Miners
Auto Workers	Paint Sprayers
Chemical Workers	Pathologists
Diesel Truck Drivers	Pharmaceutical Workers
Dry Cleaners	Plastics and Rubber Workers
Electrical Workers	Pulp and Paper Workers
Farmers	Steel Workers
Firefighters	Textile Workers
Hairdressers	Wood Workers
Iron Workers	... and many other occupations <sup>3</sup>
Lab Technicians	
Mechanics	

It's quite incredible. If other companies took this kind of a lead, we'd be a much better society.

— Anthony Hannem, Husky worker

Since you have paid to hire and train workers and win their loyalty, protecting them against serious health problems like cancer surely makes sense.

Husky not only encourages a healthy lifestyle for its workers, it also tries hard to protect their health by ridding its operations of carcinogens and other toxic chemicals. Since 1997 Husky has eliminated the annual use of 250,000 liters of trichloroethane by converting to water-based washers; stopped using more than 4,000 liters of toluene and naphtha a year; eliminated the release of 86 tonnes of VOCs by converting its painting processes to water-based; eliminated all use of herbicides, pesticides and chemical fertilizers; and reduced the number of hazardous chemicals used by 40%.<sup>1</sup>

In 1978 the US National Institute of Occupational Safety and Health estimated that 20% to 40% of all cancers were occupational in origin. There are at least 60 occupations where workers are exposed to carcinogens, and therefore suffer higher cancer rates (see box). The World Health Organization reports that cancer accounts for 34% of all global work-related mortalities.<sup>2</sup> Some of the toxic substances are passed onto workers' children, causing cancer in the next generation, while others cause brain damage, liver and kidney damage, sperm loss, infertility, birth defects and reproductive disorders.

Substitute for Carcinogens and Other Hazardous Chemicals

A common response by many businesses has been to push the issue under the carpet, or supply

- MSDS National Search: [www.msdssearch.com](http://www.msdssearch.com)
- MSDS Index: [www.hazard.com/msds](http://www.hazard.com/msds)
- National Whistleblowers Center: [www.whistleblowers.org](http://www.whistleblowers.org)
- Ten Ways to Find Safer Cleaners: [www.turi.org](http://www.turi.org)
- Where to find MSDS Sheets: [www.ilpi.com/msds](http://www.ilpi.com/msds)

personal protective equipment and improve the ventilation. However, the real solution is to reduce or eliminate the problem. In some places like British Columbia, legislation gives workers the right to substitute less hazardous materials for carcinogens. This gives companies and workers the chance to work together on alternatives.

**Step 1:** Raise the issue with your joint company-worker Health and Safety Committee, and agree on a process to identify possible carcinogens. Analyze the Material Safety Data Sheets (MSDS) for every chemical, and create an inventory of known and possible carcinogens. (The MSDS should be no more than three years old.) It always pays to involve your employees; they know all about workplace hazards and have a personal interest in making the workplace safer.

**Step 2:** Use toxics reduction, clean production and green chemistry knowledge to research possible substitutes. Massachusetts companies that have to comply with the Toxics Use Reduction Act have saved millions. Invite occupational health professionals like the Occupational Health Clinics for Ontario Workers (OHCOW) into the workplace to assess the toxic hazards and give advice on reduction or substitution.

**Step 3:** Plan to eliminate all your carcinogens over time, including from your cleaning products. Develop a substitution strategy, with goals and a timetable.

**Step 4:** Do regular air testing while the toxins are still in use, and use all the necessary safety systems, such as ensuring that your employees never go home in contaminated work clothes.

**Step 5:** Where there is evidence of illness, work with your employees to develop a workplace epidemiology map, or pay for health studies of the most threatened. If one worker has a headache, it's just a headache. If many workers do, it's an occupational health problem that should be addressed sooner rather than later.

**Step 6:** Put an end to secrecy, and guarantee that whistleblowers who raise concerns about environmental harm or worker health will be protected from recrimination or firing. In the long run, they could save you an enormous amount of grief.



Silent Spring Institute

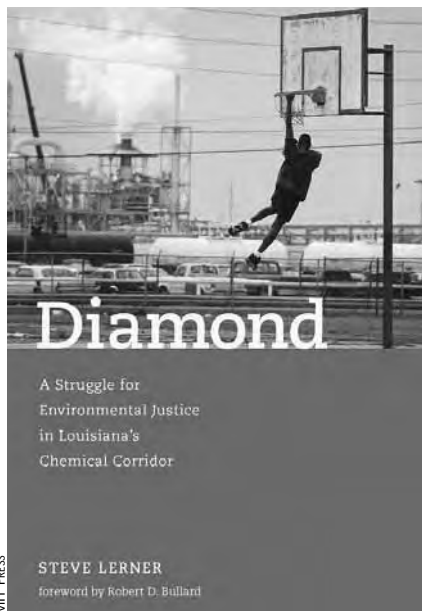
Members of the Silent Spring Institute team up with Communities for a Better Environment to answer community questions about how much pollution enters homes near an oil refinery and major highway.

## 58

## Protect Your Neighbors

**A**s a business, you have neighbors. If you operate a small dry-cleaning business, downtown gas station, or car-repair shop that releases gases into the air, your fumes may be entering your neighbor's lungs and settling in their bodies.

If you run an oil refinery or a chemical complex, people who live in the neighborhood may breathe your emissions when your valves leak or when you spill unwanted chemicals into the air. They may be at risk when your trucks move through their communities. They may be poor or minorities, who can't easily buy homes elsewhere. The book *Diamond: A Struggle for Justice in Louisiana's Chemical Corridor* conveys a powerful sense of what it means to live in a fenceline community.



In the course of one generation, we have contaminated virtually all of Earth's biological systems. Every day, we expose millions of people to chemicals and chemical mixtures for which the toxicity is unknown.

— Michael Wilson, Center for Occupational and Environmental Health, U of C, Berkeley

Your neighbors may live five miles away but take their drinking water and the water their children play in during summer from a source that has been contaminated with your wastes. Years ago an employee may have been told to dump unwanted wastes into a pit, pond or deep well that is now leaking, like the hexavalent chromium from the power utility PG & E that leaked into the residents' water supply at Hinkley, California. How quickly can you say "Erin Brockovich"?

You may also have other neighbors — frogs, birds and fish that live in a nearby creek, pond or stretch of farmland. If you are careless, they will swim in toxic water, breathe toxic air and get cancer, too.

#### Talk to Your Neighbors

Hold an annual open house or a community meeting. Give your neighbors good, clear, open information. They have a right to know what chemicals you are using and the risk that your emissions pose. Don't wait until they come knocking on your door — go and meet with them in their homes, halls and churches. They may be angry. They may demand to have the air tested. They may want you to change the way you do things. Sit and listen, and then work with them to see what can be done.

#### Sign a Good Neighbor Agreement

The goal is to lay your mutual needs down on paper. In the US, 67 million people breathe air that has been polluted by oil refineries. In the mostly African-American community of Richmond, California, in the 1990s, the

Chevron Richmond Refinery signed a Good Neighbor Agreement with the West County Toxics Coalition representing community groups. After negotiations, Chevron agreed to:

- Install 350 leakless valves in a new project and retrofit 200 to 400 valves in their existing refinery.
- Continue to reduce their toxic emissions beyond the 60% achieved from 1988 to 1992.
- Provide job skills training to 100 local residents.
- Contribute \$2 million to a local health center.
- Install sirens and computers, train emergency workers and establish and fund a city Emergency Services coordinator for 5 years.
- Redirect \$5 million in corporate philanthropy to local communities, over 5 years.
- Spend \$100,000 over 3 years to restore native vegetation along bayshore property.
- Work with the local parks department to complete a feasibility study for constructing a bike trail.

### Don't Hide Behind Single Chemical Analysis

If you know you are releasing multiple chemicals, be willing to talk about cumulative impacts and synergistic effects. Don't hide behind the language of individual chemical analysis and "acceptable risk." There are many resources that you can use to find creative solutions and safe, green alternatives.

- *Diamond: A Struggle for Justice in Louisiana's Chemical Corridor*: [www.commonweal.org/pubs/diamond.html](http://www.commonweal.org/pubs/diamond.html)
- Eco-Efficiency Centre: [www.dal.ca/eco-burnside](http://www.dal.ca/eco-burnside)
- EnviroClub, Quebec: [www.enviroclub.ca](http://www.enviroclub.ca)
- Erin Brockovich: [www.lawbuzz.com/famous\\_trials/erin\\_brockovich/erin\\_brockovich\\_ch1.htm](http://www.lawbuzz.com/famous_trials/erin_brockovich/erin_brockovich_ch1.htm)
- Good Neighbor Agreements: [www.cpn.org/topics/environment/goodneighbor.html](http://www.cpn.org/topics/environment/goodneighbor.html)
- Responsible Care: [www.responsiblecare.org](http://www.responsiblecare.org)
- Responsible Care Canada: [www.ccpa.ca/ResponsibleCare](http://www.ccpa.ca/ResponsibleCare)

### Create a Green Business Program

If you run a small business, take advantage of local green business programs to identify how you can make your business more sustainable. If there is no such program, encourage your Chamber of Commerce or local government to develop a green business program to help you and your fellow businesses go green, as they are doing in Arizona, Anchorage (Alaska), Halifax (Nova Scotia), the San Francisco Bay Area (see Solution 65) and in Quebec, with its successful EnviroClub. Your staff will appreciate it and enjoy the process of becoming a healthy neighbor.

### Establish a Care Organization in Your Community

In Canada the chemical industry has established a Responsible Care program. Under the program, companies agree to give information about their chemicals to the community and to discuss chemical safety with them. They keep the communities regularly updated through meetings or ads in local newspapers, and their plants are audited regularly by a group that includes independent auditors and at least one community member. This model has now been adopted worldwide.

## 59

## Stop Sabotaging the Solutions

**F**or decades, whenever new information has arisen about the toxicity of a product, or an attempt has been made to regulate a chemical for public health reasons, some companies have responded by denying the information, undermining the science and attacking the proposed regulations.

The tobacco companies led the way in the 1950s, when health advocates first warned that smoking caused lung cancer. Corporate CEOs and hired scientists were willing to assert, often under oath, that nicotine was not addictive and there was no conclusive evidence of harm. For

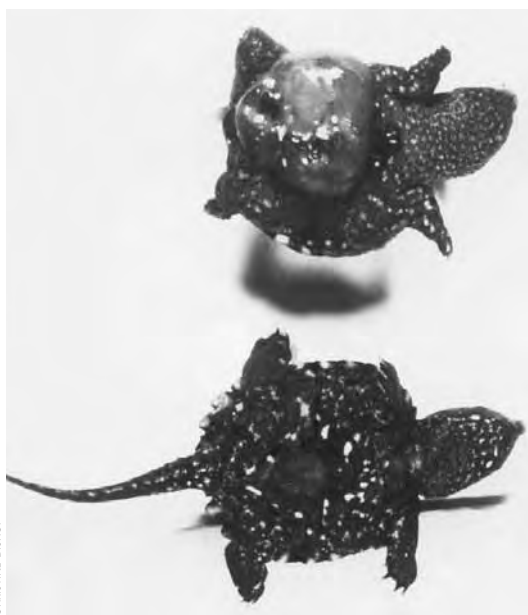
Our wombs are no place for poisons.  
Our babies have the right to be born  
toxin-free.

— Laurie Valeriano, Washington Toxics  
Coalition, and mother of three

decades they profited while sowing doubt in the public's mind, making it very hard for public health protectors to do their work.

As long ago as 1961, DuPont knew that the perfluorocarbons (PFCs) they used to make Teflon accumulated in the body. Their tests showed that it did not break down in the environment and that it caused cancer, liver damage and birth defects in animals. By 1981 they had evidence pointing to the risk of children being born with birth defects. By 1984 they knew that the tap water in Little Hocking, near DuPont's Teflon plant at Parkersburg, Ohio, was contaminated with PFOA. No-one was told until 2002, when town officials petitioned the government to perform tests that detected the chemical. In 2005, after 3M had decided to phase it out, DuPont was still insisting that PFOA was safe.

Corporations use four strategies to fight new regulations. They campaign against the public's right to know. They manufacture doubt by hiring scientists to come up with opposing studies, while labeling their opponents' studies as "junk science." They hire product-defense companies to try to defeat "hostile" legislation, and lobby, lobby, lobby in Washington and Ottawa. And in the US, they buy political favors by contributing to the campaign funds of politicians. (In Canada, since 2006, no company or individual can donate more than \$1,000 to a political party.) They have used these methods to deny the adverse health effects of killers like tobacco, DDT, PCBs, asbestos, beryllium, lead, mercury, vinyl chloride, chromium, benzene, benzidine, dioxins, perchloroethylene, nickel, MTBE



CHRISTINE BISHOP

Deformed snapping turtle hatchling contaminated with PCBs.

additives in gasoline, formaldehyde and numerous pesticides.

In 1986 two things caused the chemical industry to worry. First, California voters approved Proposition 65, a citizens' initiative that requires companies to label their products for ingredients that might cause cancer or reproductive toxicity. Second, the US Congress approved the Community Right to Know Act, establishing the EPA's Toxics Release Inventory. Both initiatives were successful, causing companies to change their product formulations and reduce their emissions rather than be listed among the worst pollution offenders.

The Chemical Manufacturers Association (now the American Chemistry Council) was furious. After developing a war plan to raise \$70 million, they used their resources to successfully battle a Massachusetts 1989 toxics use reduction initiative,<sup>1</sup> California's 1990 Big Green initiative,<sup>2</sup> a 1992 Ohio right to know initiative<sup>3</sup> and a 1992 Massachusetts initiative to prohibit corporate contributions to ballot campaigns.<sup>4</sup> The American Chemistry Council has fought every citizens' attempt to write the precautionary principle into law, which it sees as "a threat to the entire US chemical industry." It also organized to fight Europe's REACH legislation, the best safe chemicals policy initiative in the world until it was weakened by European and US corporations (see Solution 69).

At the time of writing (summer 2006), Republicans in the US Congress were pushing legislation that would wipe out the ability of California and other states to ban or strictly

- ACC Memo to fight the precautionary principle: [www.cbgnetwork.org/351.html](http://www.cbgnetwork.org/351.html)
- California's Proposition 65: [www.oehha.ca.gov/prop65.html](http://www.oehha.ca.gov/prop65.html)
- Cancer Prevention Declaration: [www.preventcancer.org](http://www.preventcancer.org)
- Center for Progressive Reform: [www.progressiveregulation.org](http://www.progressiveregulation.org)
- Chemical Industry Archives: [www.chemicalindustryarchives.org](http://www.chemicalindustryarchives.org)
- Louisville Charter: [www.louisvillecharter.org](http://www.louisvillecharter.org)
- PFCs: [www.ewg.org:16080/reports/pfcworld](http://www.ewg.org:16080/reports/pfcworld)
- Project on Scientific Knowledge and Public Policy: [www.defending-science.org](http://www.defending-science.org)
- *Toxic Deception*, by Dan Fagin and Marianne Lavelle, Common Courage Press, 1999
- *Trade Secrets*, with Bill Moyers: [www.pbs.org/tradesecrets](http://www.pbs.org/tradesecrets)

limit the use of pesticides and toxic industrial chemicals that jeopardize human health.<sup>5</sup>

What is the solution? Call off the attack dogs and step back to reconsider the options, as IKEA, Interface, Nike, Samsung, Panasonic, Husky and others have done. "Responsible Care" is not enough. With the discovery in 2005 that newborn babies have 200 chemical contaminants in their blood, business leaders must surely wake up and realize that there is a juggernaut of public outrage and liability suits coming down the road. How many mothers are going to say, "I care more about my non-stick frying pan than my baby's health"?

If need be, break away from business associations that persist with deceit and denial. Form new business alliances that endorse the principles of sustainability and the public's right to know. Sign pro-health declarations such as the Louisville Charter for Safer Chemicals and Canada's Cancer Prevention Declaration. Join the movement to prevent cancer and other toxic-induced health hazards, instead of fighting it.

## 60

## Solutions for Transport Companies

The fuels we use for travel, as well as the tires and the interiors of new cars, all contribute to the rise in cancer.

You've probably stood next to a bus or a truck when it spewed thick, black diesel smoke. "This can't be good for me or my kids," you might have muttered. You were right. Diesel fumes threaten you and your child with a risk of lung cancer that is seven times higher than the combined total cancer risk from all other air toxics.

Diesel and gasoline fumes, soot, particles of old tires as they wear away and volatile chemicals off-gassing from plastics and glues in new cars all contribute to a higher cancer risk. An American study of 500,000 people found that the death rate from lung cancer caused by particulates in air pollution increases steadily as the air grows dirtier.<sup>1</sup>

Cars and trucks also pollute the air with three more carcinogens: benzene, 1,3-butadiene

Our children and grandchildren are going to be mad at us for burning all this oil. It took the Earth 500 million years to create the stuff we're burning in 200 years. Renewable energy sources are where we need to be headed.

— Jack Edwards, Professor of Geology,  
University of Colorado

and polycyclic aromatic hydrocarbons (PAHs). Large vehicles with more than two axles, such as buses, motor homes, and tractor trailers, produce 60 times more PAHs, 32 times more 1,3-butadiene and 9 times more benzene than a smaller vehicle with two axles.<sup>2</sup>

A Denver study found that children who live within 1,500 feet of a busy street carrying 20,000 vehicles an hour have a sixfold increased risk of cancer, including leukemia.<sup>3</sup> Living close to a major road increases your risk of asthma, emphysema and heart attack.

So what are the solutions? How can a bus, truck, car, taxi or shipping company contribute to the solutions to cancer? The short-term solutions include:

- Replace mufflers with particle filters or oxidation catalysts.
- Purchase and manufacture vehicles that use cleaner alternative fuels or ultra-low sulfur diesel, which produces 90% fewer emissions.
- Install closed crankcase ventilation systems to stop diesel fumes from escaping into school and transit buses.
- Train your drivers to switch off, instead of idling.
- Equip long-haul truck stops with electric cables to power the rigs overnight.
- Plug cruise ships into the grid when they dock, instead of burning non-stop diesel to generate electricity.

- Diesel and Health in America: [www.catf.us/goto/dieselreport](http://www.catf.us/goto/dieselreport)
- Electric Vehicle World: [www.evworld.com](http://www.evworld.com)
- Peak Oil: [www.peakoil.net](http://www.peakoil.net)
- Plug-In Hybrids: [www.calcars.org](http://www.calcars.org)
- *Plug-in Hybrids: The Cars that Will Recharge America* by Sherry Boschert, New Society Publishers, 2006.
- *Stormy Weather: 101 Solutions to Global Climate Change* by Guy Dauncey with Patrick Mazza: [www.earthfuture.com/stormyweather](http://www.earthfuture.com/stormyweather)
- *Taking Our Breath Away: The Health Effects of Air Pollution and Climate Change*: [www.davidsuzuki.org](http://www.davidsuzuki.org)

- Design vehicles with interiors and plastics that don't release VOCs and other toxic gases, as the Japanese Automobile Manufacturers Association is doing.
- Ask your suppliers to produce tires that do not release PAHs and 1,3-butadiene as they wear down.
- Design cleaner engines for garden equipment and outboard motors, using overhead valve technology and fuel injection.

The long-term solutions involve thinking beyond diesel and gasoline. Global warming makes it essential that we stop burning fossil fuels. It is also a reality that, as we pass the halfway mark in the world's oil supply, what's left will become increasingly expensive until it is all gone. Now is a very good time to take action.

The most rational source of power for future vehicles is electricity. You can run a small electric vehicle for \$10 to \$20 a month, and the world has an ample potential supply of sustainable green electricity from the sun, wind, tides, waves, geothermal, microhydro and other non-nuclear sources, combined with conservation and efficiency, if we put our minds to it.

For longer trips, the emerging "plug-in hybrid" technology, adds extra batteries to a gas-electric hybrid vehicle, enabling it to operate as an electric vehicle for all local trips, while using a limited amount of bio-fuel (ethanol or biodiesel) for longer distances.

For a permanent solution to both global warming and peak oil, our global civilization needs to embrace a new sustainable energy revolution, just as it embraced oil, gas and automobiles 100 years ago. We will see cities being redesigned to encourage more walking and cycling and more use of fast, efficient transit systems, powered by electricity and biodiesel. We will see community car-sharing and ride-sharing and much more use of railways for freight.

One very welcome benefit of this revolution will be that air pollution will gradually disappear, along with the cancers it causes. The noise and stress of city life will disappear too, because electric vehicles are silent, and our grandchildren will look back from their green, peaceful, clean-air cities and wonder how we tolerated all the noise and smog.



Plug-in Hybrid Electric Vehicle.

Felix Kramer

## 61

## Solutions for Power and Mining Companies

### Solutions for Power Companies

**C**oal-fired power plants are the leading toxic air polluter in North America, releasing mercury, dioxins and other chemicals that contribute to asthma and cancer, as well as being a major contributor to global climate change.

The incineration of garbage is another bad idea that keeps trying to resurrect itself. When you burn plastic you get dioxins and furans that are the most potent synthetic chemicals ever tested. Then there's nuclear power that increases the risk of cancer in nearby communities and among nuclear workers. (see p. 52) If coal, nuclear and garbage are off the table, how should power companies proceed?

### Efficiency

The cheapest source of new power is efficiency. All power companies should invest in rebates and programs designed to double the efficiency of every building, light, appliance and piece of equipment, as Seattle Light and Power is doing. All governments should ramp up their efficiency

- Global Alliance for Incinerator Alternatives: [www.no-burn.org](http://www.no-burn.org)
- National Campaign Against Dirty Power: [www.cleartheair.org/dirtypower](http://www.cleartheair.org/dirtypower)
- *Stormy Weather: 101 Solutions to Global Climate Change*, by Guy Dauncey with Patrick Mazza, New Society Publishers, 2001: [www.earthfuture.com](http://www.earthfuture.com)
- World Information Service on Energy: [www10.antenna.nl/wise](http://www10.antenna.nl/wise)

Nearly all negative social and environmental aspects (of mining) are avoidable if companies would operate according to the best possible standards.

— International Council on Mining and Metals

standards for appliances, as California did 20 years ago. The short-term potential is for everything to become twice as efficient; in the long-term, things could be 10 times as efficient.

### Wind and Solar Energy

A 2005 Stanford study showed that the world has five times more land-based wind energy potential than we use for all purposes.<sup>1</sup> North Dakota alone has enough wind to provide one third of all America's power needs — two thirds, if everything was twice as efficient. In 1980 solar photovoltaics (PV) cost \$76 a watt. Today it costs \$3.50. When it falls to \$2, everyone will want to buy. Japan, Germany and California are leading the way, and the market is growing by 25% a year. We can also obtain safe, sustainable power from geothermal, microhydro, tidal, wave and biogas energy and forest and agricultural wastes. Worldwide, these sources could provide 8 times more energy than we currently use; 16 times more if everything was twice as efficient. The world would be not only cleaner, but safer and healthier.

### Solutions for Mining Companies

Mining has always been one of the most hazardous occupations, whether for asbestos, gold or other minerals. Miners have long had to contend with lung diseases and cancer, as well as the dangers of explosions and rockfalls.

Mining companies have often walked away from closed mines, leaving a toxic mess and a huge cleanup bill. In the beautiful Silver Valley in Idaho, the old mining town of Wallace is contaminated with lead from mining facilities that



Solar PV house in Victoria, Canada.

spewed lead, arsenic, cadmium and other toxic pollutants into the area. It is now America's largest Superfund site, and its residents have the highest rates of cancer and attention deficit disorder in Idaho — both associated with heavy-metal poisoning.<sup>2</sup>

There are numerous studies that show higher rates of cancer and other diseases among miners and in mining communities,<sup>3</sup> and there are 500,000 abandoned mines across the US. In 2001 alone, the hard-rock mining industry released 2.8 billion pounds of toxic waste.<sup>4</sup> Globally, the picture is appalling.

What is to be done? Asbestos mining should be banned worldwide because of its health aspects (see Solution 96). Uranium mining should also be banned because the whole nuclear cycle is so dangerous. (see p. 53). Coal mining should be severely cut back due to its role in global climate change.

For the other kinds of mining, the International Labor Organization's long-term goal is "to ensure that without exception, an individual can devote a lifetime to a mining career and emerge healthy and unharmed."<sup>5</sup>

- Diesel Emissions Evaluation Program: [www.deep.org](http://www.deep.org)
- Framework for Responsible Mining: [www.frameworkforresponsiblemining.org](http://www.frameworkforresponsiblemining.org)
- Good Practice Mining: [www.goodpracticemining.org](http://www.goodpracticemining.org)
- Haber Gold Process: [www.habercorp.com](http://www.habercorp.com)
- International Council on Mining and Metals: [www.icmm.com](http://www.icmm.com)
- Mines and Communities: [www.minesandcommunities.org](http://www.minesandcommunities.org)
- MiningWatch Canada: [www.miningwatch.ca](http://www.miningwatch.ca)
- Westerners for Responsible Mining: [www.bettermines.org](http://www.bettermines.org)

Can it be done? The answer is quite encouraging. In 1998, after years of harmful practices, the mining industry started out on a new journey. A multi-stakeholder review process, known as the Global Mining Initiative, was launched, culminating in the formation of the International Council on Mining and Metals (ICMM), with a mandate to promote sustainable development within the sector. This led in 2003 to commitments to embrace a Sustainable Development Framework, including Ten Principles for Sustainable Development, and in 2005 to join the Global Reporting Initiative with "an unprecedented level of transparency."

Other positive initiatives are also brewing. The new non-toxic Haber Gold Process can replace the use of cyanide to dissolve gold ores; the Canadian mining industry is supporting an initiative to reduce miners' exposure to underground diesel exhaust; and ICMM members are developing a program to manage the chemicals they use more sustainably. Even in the dirty world of mining, companies can contribute to stopping cancer.

## 62

## Solutions for Builders

**Y**ou may not know it, but North America is in the middle of a green building revolution. It's an exciting time to be a builder, developer, architect or engineer. You have a prime opportunity to show leadership, while crafting a world that will be a better place for your children and grandchildren.

In a peaceful, sustainable world, the buildings we live and work in will be healthy and safe. In order to start, we have first to eliminate a number of building products and practices that make us sick and contribute to the increased risks of cancer.

**Asbestos** is the most blatant example of a building product that has turned into a disaster. Asbestos dust causes a rare kind of lung cancer, mesothelioma, and yet it has been used all over North America in insulation, roofing shingles, asbestos cement, and heating and ventilating systems. In the US, 35 million homes and thousands of schools were insulated with vermiculite

Green building is the next wave, and it's here to stay.

— Kenneth D. Lewis, President of Bank of America

contaminated with asbestos from the W.R. Grace mine in Libby, Montana, which also exposed its own workers. Asbestos-related diseases are killing 10,000 Americans a year; 75,000 will die by 2015. The situation is similar in Canada, where asbestos-contaminated insulation materials were widely sold. Worldwide, the asbestos cancer epidemic may take 10 million lives before asbestos is banned worldwide and exposures are brought to an end.<sup>1</sup> (See Solution 96)

**Pressure treated wood** infused with chromated copper arsenate is another toxic building material. Thanks to a campaign led by the Healthy Building Network, it is no longer legal to manufacture or sell it. Arsenic is a known carcinogen, yet the green telltale treated lumber is still in our fences and decks where children play, getting the arsenic-contaminated dirt on their hands. Independent research found that a typical area of arsenic-treated wood the size of a four-year-old's hand contains 120 times the amount of arsenic that the EPA allows in a six-ounce glass of water.<sup>2</sup> A Quebec company, Pluri-Capital, has developed a new type of wood that has been treated only with heat to preserve it.

**Plywood, particleboard and composite wood products** used for shelving, cupboards and building are made using glues that contain urea formaldehyde, a probable carcinogen that carries a risk of nasal cancer.<sup>3</sup> These gases contaminate indoor air. California is moving to virtually eliminate formaldehyde from wood products. Again, there are other good choices available.

We need to stop using **paints, varnishes and adhesives** that give off high levels of volatile



Canmore's LEED Silver Civic Centre, Alberta.

organic compounds (VOCs), many of which are known or suspected causes of cancer, along with many other toxic additives. If it smells bad, it is bad. There are plenty of safe alternatives: just google on “non-toxic paint” or “green building supplies.”

**PVC (vinyl)** is another big concern. It is used in everything from pipes and cables to windows and carpets. Polyvinyl chloride plastic is very hazardous to make and very toxic when it burns, releasing dioxins that cause cancer, endocrine disruption, birth defects and immune system damage. There is a movement to get rid of it altogether, led by the Healthy Building Network, and some excellent databases of alternatives that help with the switch.

Basements in large areas of central and eastern North America need to be protected from **radon**, a naturally occurring radioactive gas that contributes to lung cancer. Radon-resistant construction techniques in new buildings are very simple and cheap (\$350–\$500).

If you are constructing or renovating a commercial or institutional building, there is a good way to address all these problems. It’s called Leadership in Energy and Environmental Design (LEED), a green building certification program that is taking North America by storm. LEED uses a scoring system that rewards everything from energy efficiency to indoor air quality, green energy, paints, adhesives and recycled products. There will soon be LEED certification for single-family homes and neighborhoods.

The full vision of green building shows great promise for a world with far less cancer.

- *Blue Vinyl* (DVD): [www.bluevinyl.org](http://www.bluevinyl.org)
- Building Green: [www.buildinggreen.com](http://www.buildinggreen.com)
- Canada Green Building Council (LEED): [www.cagbc.org](http://www.cagbc.org)
- Citizen’s Guide to Radon: [www.epa.gov/radon/pubs/citguide.html](http://www.epa.gov/radon/pubs/citguide.html)
- Green Communities: [www.epa.gov/greenkit](http://www.epa.gov/greenkit)
- Green Building Products, by Alex Wilson, New Society Publishers, 2006
- Healthy Building Network: [www.healthybuilding.net](http://www.healthybuilding.net)
- Indoor Air Pollution (Asbestos): [www.epa.gov/iaq/asbestos.html](http://www.epa.gov/iaq/asbestos.html)
- Indoor Air Pollution (Formaldehyde): [www.epa.gov/iaq/formalde.html](http://www.epa.gov/iaq/formalde.html)
- Indoor Air Pollution (Radon): [www.epa.gov/radon](http://www.epa.gov/radon)
- Indoor Air Pollution (VOCs): [www.epa.gov/iaq/voc.html](http://www.epa.gov/iaq/voc.html)
- Materials to Avoid: [www.healthybuilding.net/target\\_materials.html](http://www.healthybuilding.net/target_materials.html)
- PVC Alternatives Database: <http://greenpeace.org/toxics/pvcdatabase>
- PVC Facts: [www.healthybuilding.net/pvc/facts.html](http://www.healthybuilding.net/pvc/facts.html)
- PVC-free Materials List: [www.healthybuilding.net/pvc/PVCFreeAlts.html](http://www.healthybuilding.net/pvc/PVCFreeAlts.html)
- Radon Resistant Construction: [www.epa.gov/radon/construc.html](http://www.epa.gov/radon/construc.html)
- Treated Wood Campaign: [www.healthybuilding.net/arsenic/arsenic2\\_newsletter2.htm](http://www.healthybuilding.net/arsenic/arsenic2_newsletter2.htm)
- US Green Building Council (LEED): [www.usgbc.org](http://www.usgbc.org)
- *Your Green Home*, by Alex Wilson, New Society Publishers, 2006

Zero-energy developments will generate their own power and not need coal-fired or nuclear power. Communities that make walking and cycling easy will encourage us to keep fit. Village centers will allow us to walk to local stores and schools and forgo cars that release benzene and diesel fumes. Local allotments and urban farms will encourage us to grow fresh, local, organic produce.

## 63

## Solutions for Farmers and the Food Industry

### Solutions for Farmers

You, too, can become an organic farmer.

If there is one area of change that is critically important as we work to reduce the record-high cancer rates, it is the movement by farmers to organic agriculture. The food is healthier, the use of chemical pesticides and fertilizers disappears, the phyto-nutrients that protect us against cancer reappear, the soil recovers, wildlife returns, the vet bills fall and farmers feel more at peace with the world, knowing they are contributing something good.

Since the modern farming revolution began with the development of chemical fertilizers in 1843, yields have increased, but everything else has been diminished. The percentage of trace minerals in fruits and vegetables in conventionally grown foods has fallen by up to 76% since the 1940s, as soils have become depleted.<sup>1</sup> Many associations have linked conventional farming to an increased risk of cancer (see p. 41), and evidence grows that parents' exposure to pesticides contributes to their children's cancer risk,<sup>2</sup> as well as to parental infertility.<sup>3, 4</sup>

The public is paying attention. Organic food sales in America are growing by 20% a year, compared to 2% to 4% for food in general. In Britain 50% of all baby food is now organic. Organic shoppers are buying because they think it is better quality food and because they don't want pesticides.

In 2005, 7,700 American farms cultivated 890,000 hectares organically (0.22% of the farmland); in Canada 3,500 farms cultivated 488,000 hectares (0.7%). The leaders are Lichtenstein,

People are applying the precautionary principle to their own lives by purchasing food that has not been produced by industrial methods. From the simple stance of hazard avoidance, organically produced food is the best option that we have.

— Dr. Vyvyan Howard,  
toxico-pathologist,  
University of Liverpool, UK

where 26% of the farmland is organic, followed by Austria (13.5%), Switzerland (11%) and Finland (7%).<sup>5</sup> By 2013 the Rodale Institute predicts that there will be 100,000 certified organic farmers in the US, representing 5% of its 2 million farmers. For farmers who want to make the change, there is plenty of support available.

### Solutions for the Food Industry

In one year, American fast-food chains spend more than \$3 billion on TV advertising. In the US, the typical child will watch 20,000 advertisements for junk food, and the typical adult will drink 240 liters of soft drinks — well over 500 cans — a year. Two thirds of American adolescents drink sodas daily, and even the tots are at it: 20% of children aged 1 and 2 consume soft drinks each day.<sup>6</sup> The resulting accumulation of overweight and obese people is building an enormous problem, laden with diabetes and cancer. A quarter of American children are overweight, and 12% are classed as obese.

What can the food industry do to help us get back to healthy eating?

The World Health Assembly recommends that companies reduce the amount of salt, sugar and fat in their products and the size of servings, and that they create policies for corporate social responsibility and develop staff health programs. It also recommends that nutritional labeling become the standard worldwide.



CAROLYN HERRIOT

Organic grapes, mouth-watering and healthy.



CAROLYN HERRIOT

A banquet gathered from local organic farms.

Driven by concerned parents and health professionals, the State of California banned junk food on school campuses, which it may follow with a ban on sodas and other sweetened beverages.

Instead of fighting moves like this, and lobbying in Washington for pre-emptive legislation to stop states from protecting consumers from toxins and other contaminants,<sup>7</sup> the food industry would be wiser to get behind them, and support initiatives such as the demand for nutritional labeling to help people make healthy choices.

The industry can do a lot to promote organic food. On Vancouver Island, BC, Thrifty Foods, a major supermarket chain with many stores, has made a serious commitment to stock organic food, carrying over 70 varieties of organic fruits and vegetables and 400 organic grocery items.

Britain's Marks & Spencer has made commitments called Behind the Label for their food products, including sustainable fish, free-range

- California Project LEAN: [www.californiaprojectlean.org](http://www.californiaprojectlean.org)
- Canadian Organic Growers: [www.cog.ca](http://www.cog.ca)
- Center for Informed Food Choices: [www.informedeating.org](http://www.informedeating.org)
- *Chew on This, Everything You Don't Want to Know About Fast Food*, by Eric Schlosser
- Cyberhelp for Organic Farmers: [www.certifiedorganic.bc.ca/rcbtoa](http://www.certifiedorganic.bc.ca/rcbtoa)
- European Public Health Alliance: [www.eph.org](http://www.eph.org)
- *Food Politics: How the Food Industry Influences Nutrition and Health*, by Marion Nestle
- International Federation of Organic Agricultural Movements: [www.ifoam.org](http://www.ifoam.org)
- National Sustainable Agriculture Information Service: [www.attra.org](http://www.attra.org)
- The New Farm: [www.newfarm.org](http://www.newfarm.org)
- Oregon Tilth: [www.tilth.org](http://www.tilth.org)
- Organic Advocates: [www.organicadvocates.org](http://www.organicadvocates.org)
- Organic Agriculture Centre of Canada: [www.organicagcentre.ca](http://www.organicagcentre.ca)
- Organic Monitor: [www.organicmonitor.com](http://www.organicmonitor.com)
- Organic Trade Association: [www.ota.com](http://www.ota.com)
- Rodale Institute: [www.rodaleinstitute.org](http://www.rodaleinstitute.org)
- Soil Association (UK): [www.soilassociation.org](http://www.soilassociation.org)
- Sustainable Agriculture Research & Education: [www.sare.org](http://www.sare.org)
- Ten Reasons Why Organic Food Is Better: [www.earthfuture.com/earth](http://www.earthfuture.com/earth)
- *The End of Food*, by Thomas Pawick.
- The New Farm: [www.newfarm.org](http://www.newfarm.org)
- Transitioning to Organic Production: [www.sare.org/publications/organic/organic.pdf](http://www.sare.org/publications/organic/organic.pdf)

eggs, no GM food, reduced salt, no hydrogenated fats in ready meals and no artificial colorings, flavorings or flavor enhancers in their chilled ready meals.<sup>8</sup>

Which is smarter — to wait until the juggernaut of liability suits and ignominy hits share prices, or get ahead of the curve and become part of the solution?

# 64

## Solutions for Supermarkets and Retailers

Retail stores worldwide are overflowing with products,<sup>1</sup> many of which contain dangerous chemicals. The dust in our homes is contaminated with the same chemicals, and traces are showing up in our bodies. Is there a connection? Definitely. Is there anything retailers can do about it? Absolutely.

In a British survey, 9 out of 10 consumers said they wanted tougher monitoring of the

retail industry on ethical and environmental issues, and 6 out of 10 said they would be willing to boycott products that are ethically unsound. Some companies are quietly rising to the challenge. Hennes & Mauritz, an international retailer of affordable fashions, has a strict chemical policy that clothing suppliers must meet if they want their business — no azo-dyes, no flame-retardants, no PVC, no formaldehyde and

the list of assorted carcinogens and hazardous chemicals goes on.

There is also the question of food. Of American adults 20 years or older, 30% are obese; 16% of those aged 6 to 19 are overweight.<sup>2</sup> Obesity itself is a contributing cause of cancer because many carcinogenic chemicals cling to fat.

Supermarkets could feature fruit and vegetables in their advertising. They could replace candy near the checkout with healthy alternatives and increase their supply of locally grown organic food. They could use bio-based materials for packaging, eliminating plastic and styrofoam that migrates into food.<sup>3,4</sup> Eggs packed in styrofoam have been found to contain seven times more ethyl benzene and styrene than eggs packed in cardboard.<sup>5</sup>

— David Croft, head of Co-op Brand, UK

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### Safe Cosmetics

On any given day, a North American consumer may use cosmetics and personal care products containing 200 different chemical compounds, many of them banned in Europe. Popular brands contain acrylamide (linked to mammary tumors), formaldehyde (a probable human carcinogen) and lead acetate (a known carcinogen and reproductive toxin). Many nail polishes and hair sprays contain phthalates that cause birth defects in laboratory animals, particularly males. Underarm cosmetics are being investigated for their possible carcinogenic effects.

The Campaign for Safe Cosmetics has persuaded many companies to sign a Compact for Safe Cosmetics to agree not to use chemicals that are known or strongly suspected of causing



BREAST CANCER FUND ON BEHALF OF THE CAMPAIGN FOR SAFE COSMETICS

In *USA Today* by the Safe Cosmetics Coalition. [www.safecosmetics.org](http://www.safecosmetics.org).

cancer, mutation or birth defects. It has published a Report Card that ranks the progress of the various companies and is pressuring the cosmetics industry to clean up. Some companies, like Avalon Organics, have signed onto the Compact and made major changes in their product formulations to avoid chemicals regarded as suspect.

#### Dangerous Chemicals

In Britain Friends of the Earth has a Safer Chemicals Campaign that asks retailers to reduce their use of risky chemicals in a wide range of products. IKEA tops their League Table of good producers.

In the US nine organizations have formed Clean Production Action to run the Safer Products Project, including a Safer Chemicals Pledge in which retailers pledge to inventory the hazardous chemicals in their products and develop plans to eliminate them. Many major retailers have no policies at all to ensure that their suppliers will avoid the use of hazardous chemicals.

- IKEA uses The Natural Step to guide its environmental commitments. It has phased out most high-priority hazardous chemicals and brominated flame-retardants from its mattresses, carpets and furniture. It requires suppliers to follow environmental guidelines and not use anything on a list of forbidden or restricted chemicals, including pesticides, carcinogens and phthalates in children's products. It has set a goal to maximize the use of organic cotton in its furniture.
- Patagonia and the Vancouver-based Mountain Equipment Co-op have both made

- Adverse Health Effects of Plastics: [www.ecologycenter.org/erc/fact\\_sheets/plastichealtheffects.html](http://www.ecologycenter.org/erc/fact_sheets/plastichealtheffects.html)
- Campaign for Safe Cosmetics: [www.safecosmetics.org](http://www.safecosmetics.org)
- IKEA: [www.ikea-group.ikea.com/responsible](http://www.ikea-group.ikea.com/responsible)
- Mountain Equipment Co-op: [www.mec.ca](http://www.mec.ca)
- The Natural Step: [www.naturalstep.org](http://www.naturalstep.org)
- Obesity: [www.cmaj.ca/misc/obesity/usobesity.shtml](http://www.cmaj.ca/misc/obesity/usobesity.shtml)
- Organic Cotton: [www.sustainablecotton.org](http://www.sustainablecotton.org)
- Patagonia: [www.patagonia.com/enviro](http://www.patagonia.com/enviro)
- Safer Chemicals Campaign: [www.foe.co.uk/campaigns/safer\\_chemicals](http://www.foe.co.uk/campaigns/safer_chemicals)
- Safer Products Pledge: [www.safer-products.org](http://www.safer-products.org)

their sportswear lines 100% organic cotton. In the US 10% of all agricultural chemicals are used to produce cotton.

- Staples Business Depot collects dead cell-phones, pagers and rechargeable batteries to prevent mercury, cadmium and lead from contaminating the environment and recycles them through a company called CollectiveGood.
- In Britain the Co-op has developed an "honest labelling" initiative, eliminated GM ingredients from its brand-name products, introduced a comprehensive range of organic products and eliminated 20 pesticides from its produce and many toxic chemicals from its household cleaning products, including fabric conditioners.
- Dell has developed a list of more than 50 banned or restricted materials that won't be used in their computers. It includes all halogenated flame-retardants and all substances that show strong indications of risks to human health. Dell was among the first US electronics manufacturers to publicly adopt a precautionary approach to its choice of materials.

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## Solutions for All Businesses

**S**mall businesses can be an equally important part of the cancer solution — including the butcher (offer organically raised beef and chicken), the baker (offer whole wheat and organic grains) and the candlestick maker (use beeswax or soy wax; the emissions from petroleum-based wax may include reproductive toxins, neurotoxins, carcinogens and phthalates).<sup>1</sup> The changes are small, but collectively they make a big difference.

Dry cleaners can switch from perchloroethylene (linked to ten kinds of cancer)<sup>2</sup> and silicone-based solvents<sup>3</sup> to citrus and banana



GUY DAUNCEY

Elite Dry Cleaners, Victoria, Canada.  
[www.greendrycleaner.com](http://www.greendrycleaner.com).

We contribute to a better world by pursuing sustainability and environmental wisdom. Environmental advocacy is part of our heritage, and a responsibility we gladly bear for future generations.

— Herman Miller's Corporate Values Statement

juice, wet-cleaning or liquid CO<sub>2</sub>. Laundries can use biodegradable and non-toxic detergents.

Coffee shops can sell more organic coffee, so that coffee growers are not exposed to pesticides. Hotels can evaluate the cleaners, sanitizers, paints and pesticides they use and substitute safer alternatives.

Golf courses can become organic, as can lawn care companies.

Auto repair shops can change from naphtha-based solvents to water-based washers, minimize the liquids they use, clean up spills immediately using dry clean-up practices and use a squeegee and dustpan or oil mop instead of liquid methods.

Printers can adopt computerized pre-press operations, eliminating the use of photochemicals, use alcohol-free printing and low-VOC inks and recycle their solvents.

Furniture makers can use recycled materials, avoid the use of PVC and seek alternatives to fluorinated fire-retardants.

Every business has a role to play in becoming part of the solution, including hotels, beauty salons, embalmers and restaurants, as well as larger industrial businesses. In San Francisco, the Bay Area Green Business Program has set up a first-class program to help local businesses enjoy the benefits of becoming clean and green that deserves to be copied worldwide. In Halifax, Nova Scotia, the Eco-Efficiency Centre offers small companies advice on good environmental practices.

All businesses have purchasing departments, which provide an opportunity to control what you buy. Many large companies have created a

demand for less-toxic alternatives through their purchasing policies. Kaiser Permanente, Catholic Healthcare West, Intel, Hewlett-Packard, Bentley Prince Street, IBM and Apple have all developed chemical and material screening programs for their supplies.<sup>4</sup> Other US and EU companies that are working with their suppliers to produce safer products include Herman Miller, Samsung, Sony, Fujitsu, Nike, Marks & Spencer and Boots Group PLC.

#### The Big Picture

As a world, we face enormous problems, from the growing contamination of our bodies to the loss of rainforests. Because of our activities, 60% of all ecosystems are in a state of decline or collapse.<sup>5</sup> Why are we acting as if we had another planet to go to when we have ruined this one? None of us wants to be part of this great ecological destruction, and yet we all are.

In the past, corporations almost single-mindedly pursued profits, with little regard for environmental and health concerns. Many corporate directors act on the assumption that they are required by law to maximize their shareholders' financial interests, regardless of how dubious the means might be. Some directors struggle with this view of the world as a moral wasteland where compassion, integrity and sustainability have no place.

There are solutions. Redefine your company's goals. Choose the corporate path less traveled where higher values guide business success, and carry your customers with you. If IKEA and the Mountain Equipment Co-op can make good

- BE SAFE Precautionary Platform: [www.besafenet.com](http://www.besafenet.com)
- Center for Health, Environment and Justice: [www.chej.org](http://www.chej.org)
- *Mid-Course Correction: Toward a Sustainable Enterprise, The Interface Model*, by Ray Anderson, Peregrinzilla Press, 1999.
- Prevent Cancer Now: [www.preventcancer.org](http://www.preventcancer.org)
- *The Natural Step Story: Seeding a Quiet Revolution*, by Karl-Henrik Robert and Ray Anderson, New Society Publishers, 2005.

- Auto Repair Shops: [www.greenbiz.ca.gov/BGAuto.html](http://www.greenbiz.ca.gov/BGAuto.html)
- Bay Area Green Business Program: [www.greenbiz.ca.gov](http://www.greenbiz.ca.gov)
- Dry Cleaning: [www.greendrycleaner.com](http://www.greendrycleaner.com)
- Organic Golf: [www.growingolutions.com/home/g1/page/123/13](http://www.growingolutions.com/home/g1/page/123/13)
- Organic Lawn Care: [www.environmentalfactor.com](http://www.environmentalfactor.com)
- Printers and Publishers: [www.ec.gc.ca/nopp/voc/en/secP.cfm](http://www.ec.gc.ca/nopp/voc/en/secP.cfm)
- Small Business Environmental Home Page: [www.smallbiz-enviroweb.org](http://www.smallbiz-enviroweb.org)

money following this path, so can you. Don't shift your production to countries with lax standards in order to continue polluting. Set your benchmark by countries with the highest standards, not the lowest.

Campaign for good legislation, not against it. Dissociate yourself from industry groups that work to undermine good legislation. Support organizations that are working for solutions to cancer, such as the Center for Health, Environment and Justice and Prevent Cancer Now.

Be open to rethinking how the world works. The cancer epidemic and the ecological collapses are a sign that something is very wrong. So, too, is the global climate crisis. Businesses can play a huge role in making things right again.