



## **GREEN EARTH: THE ENVIRONMENT**

### **THE OCEANS: 70% OF EARTH'S DETERIORATION**

While modern man has managed to pollute the land in a short period of time, the domino effect is being felt in our oceans which constitute 70% of the earth's surface. The effect is felt at home in The Marine Mammal Center in Sausalito, California. Its director, Frances Gulland sees firsthand the effects as his patients include cancer stricken sea lions whose tumors are thought to be associated with PCB's, sea otters infected by a parasite linked to run-off and fur seals sickened by toxic algae. According to Gulland, these animals act "as an early warning system; all these things could happen to us."

A recent study by the National Center for Ecological Analysis and Synthesis in Santa Barbara, California, found that close to one half of the oceans are "fairly degraded" and only 3.7% show little or no impact from human activity. It is important to note that oceans help keep the environment healthy by absorbing carbon dioxide. But now the results of that intake are evident. The seas have risen, warmed and acidified worldwide. Those changes, combined with overfishing, have caused 90% of our big fish to disappear, according to Leon Panetta, co-chair of the Joint Ocean Commission Initiative. According to Panetta, "Pollution has led to almost 26,000 U.S. beaches being temporarily closed or put under advisories and nearly 90% of our wetlands, the nurseries for fish, have vanished due to development. The oceans are in crisis."

How much attention is being paid to the oceans by the federal government? Only \$400 per square mile is being spent compared to \$18,700 per square mile for National Park System. This trend is similar with the National Marine Sanctuary System. Close to 99% of conservation dollars donated go to land causes and 1% to oceans. Yet over 70% of the earth's surface is covered by oceans. In many ways the public is fooled by the clean and placid surface. Yet, below the surface is a whole different story according to Prof. Jane Lubchenco of Oregon State University. Debra Erickson, executive director of the non-profit Kerzner Marine Foundation is trying to educate people about what is happening underwater, specifically

with coral reefs. People that go scuba diving or snorkeling can see the stark difference between a healthy reef filled with colorful creatures and a degraded one that contains bleached coral and not much use. She adds: "When you see a reef that has the proper number of fish in it vs. one that doesn't, it takes your breath away." One hopes with the new consciousness and governmental initiatives with the progressive new administration, one will slowly turn the adverse path that we have been taking since the industrial revolution.

Please continue reading this column. We will add material each month.

Happy and Insightful Reading,

Arnoldo Carlos Vento, Ph.D  
Executive Officer



**The following section contains valuable information that has been researched by National Geographic. It reviews *Air Pollution, the Causes of Global Warming, Acid Rain, Deforestation, Global Warming Solutions, Fuel Cells, and Natural Disasters*. For more information visit [nationalgeographic.com](http://nationalgeographic.com)**

## Air Pollution

Smog hanging over cities is the most familiar and obvious form of air pollution. But there are different kinds of pollution—some visible, some invisible—that contribute to global warming. Generally any substance that people introduce into the atmosphere that has damaging effects on living things and the environment is considered air pollution.

Carbon dioxide, a greenhouse gas, is the main pollutant that is warming Earth. Though living things emit carbon dioxide when they breathe, carbon dioxide is widely considered to be a pollutant when associated with cars, planes, power plants, and other human activities that involve the burning of fossil fuels such as gasoline and natural gas. In the past 150 years, such activities have pumped enough carbon dioxide into the atmosphere to raise its levels higher than they have been for hundreds of thousands of years.

Other greenhouse gases include methane—which comes from such sources as swamps and gas emitted by livestock—and chlorofluorocarbons (CFCs), which were used in refrigerants and aerosol propellants until they were banned because of their deteriorating effect on Earth's ozone layer.

Another pollutant associated with climate change is sulfur dioxide, a component of smog. Sulfur dioxide and closely related chemicals are known primarily as a cause of acid rain. But they also reflect light when released in the atmosphere, which keeps sunlight out and causes Earth to cool. Volcanic eruptions can spew massive amounts of sulfur dioxide into the atmosphere, sometimes causing cooling that lasts for years. In fact, volcanoes used to be the main source of atmospheric sulfur dioxide; today people are.

Industrialized countries have worked to reduce levels of sulfur dioxide,

smog, and smoke in order to improve people's health. But a result, not predicted until recently, is that the lower sulfur dioxide levels may actually make global warming worse. Just as sulfur dioxide from volcanoes can cool the planet by blocking sunlight, cutting the amount of the compound in the atmosphere lets more sunlight through, warming the Earth. This effect is exaggerated when elevated levels of other greenhouse gases in the atmosphere trap the additional heat.

Most people agree that to curb global warming, a variety of measures need to be taken. On a personal level, driving and flying less, recycling, and conservation reduces a person's "carbon footprint"—the amount of carbon dioxide a person is responsible for putting into the atmosphere.

On a larger scale, governments are taking measures to limit emissions of carbon dioxide and other greenhouse gases. One way is through the Kyoto Protocol, an agreement between countries that they will cut back on carbon dioxide emissions. Another method is to put taxes on carbon emissions or higher taxes on gasoline, so that people and companies will have greater incentives to conserve energy and pollute less.

## Causes of Global Warming

To bring all this information together, the United Nations formed a group of scientists called the International Panel on Climate Change, or IPCC. The IPCC meets every few years to review the latest scientific findings and write a report summarizing all that is known about global warming. Each report represents a consensus, or agreement, among hundreds of leading scientists.

One of the first things scientists learned is that there are several greenhouse gases responsible for warming, and humans emit them in a variety of ways. Most come from the combustion of fossil fuels in cars, factories and electricity production. The gas responsible for the most warming is carbon dioxide, also called CO<sub>2</sub>. Other contributors include methane released from landfills and agriculture (especially from the digestive systems of grazing animals), nitrous oxide from fertilizers, gases used for refrigeration and industrial processes, and the loss of forests that would otherwise store CO<sub>2</sub>.

Different greenhouse gases have very different heat-trapping abilities. Some of them can even trap more heat than CO<sub>2</sub>. A molecule of methane produces more

than 20 times the warming of a molecule of CO<sub>2</sub>. Nitrous oxide is 300 times more powerful than CO<sub>2</sub>. Other gases, such as chlorofluorocarbons (which have been banned in much of the world because they also degrade the ozone layer), have heat-trapping potential thousands of times greater than CO<sub>2</sub>. But because their concentrations are much lower than CO<sub>2</sub>, none of these gases adds as much warmth to the atmosphere as CO<sub>2</sub> does.

In order to understand the effects of all the gases together, scientists tend to talk about all greenhouse gases in terms of the equivalent amount of CO<sub>2</sub>. Since 1990, yearly emissions have gone up by about 6 billion metric tons of "carbon dioxide equivalent" worldwide, more than a 20% increase.

## Acid Rain

Acid rain describes any form of precipitation with high levels of nitric and sulfuric acids. It can also occur in the form of snow, fog, and tiny bits of dry material that settle to Earth.

Rotting vegetation and erupting volcanoes release some chemicals that can cause acid rain, but most acid rain falls because of human activities. The biggest culprit is the burning of fossil fuels by coal-burning power plants, factories, and automobiles.

When humans burn fossil fuels, sulfur dioxide (SO<sub>2</sub>) and nitrogen oxides (NO<sub>x</sub>) are released into the atmosphere. These chemical gases react with water, oxygen, and other substances to form mild solutions of sulfuric and nitric acid. Winds may spread these acidic solutions across the atmosphere and over hundreds of miles. When acid rain reaches Earth, it flows across the surface in runoff water, enters water systems, and sinks into the soil.

Acid rain has many ecological effects, but none is greater than its impact on lakes, streams, wetlands, and other aquatic environments. Acid rain makes waters acidic and causes them to absorb the aluminum that makes its way from soil into lakes and streams. This combination makes waters toxic to crayfish,

clams, fish, and other aquatic animals.

Some species can tolerate acidic waters better than others. However, in an interconnected ecosystem, what impacts some species eventually impacts many more throughout the food chain—including non-aquatic species such as birds.

Acid rain also damages forests, especially those at higher elevations. It robs the soil of essential nutrients and releases aluminum in the soil, which makes it hard for trees to take up water. Trees' leaves and needles are also harmed by acids.

The effects of acid rain, combined with other environmental stressors, leave trees and plants less able to withstand cold temperatures, insects, and disease. The pollutants may also inhibit trees' ability to reproduce. Some soils are better able to neutralize acids than others. In areas where the soil's "buffering capacity" is low, the harmful effects of acid rain are much greater.

The only way to fight acid rain is by curbing the release of the pollutants that cause it. This means burning fewer fossil fuels. Many governments have tried to curb emissions by cleaning up industry smokestacks and promoting alternative fuel sources. These efforts have met with mixed results. But even if acid rain could be stopped today, it would still take many years for its harmful effects to disappear.

Individuals can also help prevent acid rain by conserving energy. The less electricity people use in their homes, the fewer chemicals power plants will emit. Vehicles are also major fossil fuel users, so drivers can reduce emissions by using public transportation, carpooling, biking, or simply walking wherever possible

## Deforestation

Deforestation is clearing Earth's forests on a massive scale, often resulting in damage to the quality of the land. Forests

still cover about 30 percent of the world's land area, but swaths the size of Panama are lost each and every year.

The world's rain forests could completely vanish in a hundred years at the current rate of deforestation.

Forests are cut down for many reasons, but most of them are related to money or to people's need to provide for their families. The biggest driver of deforestation is agriculture. Farmers cut forests to provide more room for planting crops or grazing livestock. Often many small farmers will each clear a few acres to feed their families by cutting down trees and burning them in a process known as "slash and burn" agriculture.

Logging operations, which provide the world's wood and paper products, also cut countless trees each year. Loggers, some of them acting illegally, also build roads to access more and more remote forests—which leads to further deforestation. Forests are also cut as a result of growing urban sprawl.

Not all deforestation is intentional. Some is caused by a combination of human and natural factors like wildfires and subsequent overgrazing, which may prevent the growth of young trees.

Deforestation has many negative effects on the environment. The most dramatic impact is a loss of habitat for millions of species. Seventy percent of Earth's land animals and plants live in forests, and many cannot survive the deforestation that destroys their homes.

Deforestation also drives climate change. Forest soils are moist, but without protection from sun-blocking tree cover they quickly dry out. Trees also help perpetuate the water cycle by returning water vapor back into the atmosphere. Without trees to fill these roles, many former forest lands can quickly become barren deserts.

Removing trees deprives the forest of portions of its canopy, which blocks the sun's rays during the day and holds in heat at night. This disruption leads to more extreme temperatures swings that can be harmful to plants and animals.

Trees also play a critical role in absorbing the greenhouse gases that fuel global warming. Fewer forests means larger amounts of greenhouse gases entering the atmosphere—and increased speed and severity of global warming.

The quickest solution to deforestation would be to simply stop cutting down trees. Though deforestation rates have slowed a bit in recent years, financial realities make this unlikely to occur.

A more workable solution is to carefully manage forest resources by eliminating clear-cutting to make sure that forest environments remain intact. The cutting that does occur should be balanced by the planting of enough young trees to replace the older ones felled in any given forest. The number of new tree plantations is growing each year, but their total still equals a tiny fraction of the Earth's forested land.

## Global Warming Solutions

Even if we stopped emitting greenhouse gases (GHGs) today, the Earth would still warm by another degree Fahrenheit or so. But what we do from today forward makes a big difference. Depending on our choices, scientists predict that the Earth could eventually warm by as little as 2.5 degrees or as much as 10 degrees Fahrenheit.

A commonly cited goal is to stabilize GHG concentrations around 450-550 parts per million (ppm), or about twice pre-industrial levels. This is the point at which many believe the most damaging impacts of climate change can be avoided. Current concentrations are about 380 ppm, which means there isn't much time to lose. According to the IPCC, we'd have to reduce GHG emissions by 50% to 80% of what they're on track to be in the next



century to reach this level.

### **Is this possible?**

Many people and governments are already working hard to cut greenhouse gases, and everyone can help.

Researchers Stephen Pacala and Robert Socolow at Princeton University have suggested one approach that they call "stabilization wedges." This means reducing GHG emissions from a variety of sources with technologies available in the next few decades, rather than relying on an enormous change in a single area. They suggest 7 wedges that could each reduce emissions, and all of them together could hold emissions at approximately current levels for the next 50 years, putting us on a potential path to stabilize around 500 ppm.

There are many possible wedges, including improvements to energy efficiency and vehicle fuel economy (so less energy has to be produced), and increases in wind and solar power, hydrogen produced from renewable sources, biofuels (produced from crops), natural gas, and nuclear power. There is also the potential to capture the carbon dioxide emitted from fossil fuels and store it underground—a process called "carbon sequestration."

In addition to reducing the gases we emit to the atmosphere, we can also increase the amount of gases we take out of the atmosphere. Plants and trees absorb CO<sub>2</sub> as they grow, "sequestering" carbon naturally. Increasing forestlands and making changes to the way we farm could increase the amount of carbon we're storing.

Some of these technologies have drawbacks, and different communities will make different decisions about how to power their lives, but the good news is that there are a variety of options to put us on a path toward a stable climate.

Hazardous wastes are poisonous byproducts of manufacturing, farming, city septic systems, construction, automotive garages, laboratories, hospitals, and other industries. The waste may be liquid, solid, or sludge and contain chemicals, heavy metals, radiation, dangerous pathogens, or

other toxins. Even households generate hazardous waste from items such as batteries, used computer equipment, and leftover paints or pesticides.

The waste can harm humans, animals, and plants if they encounter these toxins buried in the ground, in stream runoff, in groundwater that supplies drinking water, or in floodwaters, as happened after Hurricane Katrina. Some toxins, such as mercury, persist in the environment and accumulate. Humans or animals often absorb them when they eat fish.

The rules surrounding hazardous waste are overseen in the U.S. by the federal Environmental Protection Agency (EPA) as well as state departments of environmental protection. EPA requires that hazardous waste be handled with special precautions and be disposed of in designated facilities located throughout the United States, which charge for their services. Many towns have special collection days for household hazardous waste.

A common hazardous waste facility is one that stores the waste in sealed containers in the ground. Less toxic waste that is unlikely to migrate, like soil with lead, is sometimes allowed to remain in place under the ground and then be sealed with a cap of hard clay. Communities may eventually decide to use these sites for golf courses or parks, or to label them “brownfields” sites, suitable for commercial or industrial uses.

Violations, like dumping hazardous waste in town dumps to avoid paying the fees charged by waste transporters and waste facilities, may result in hefty fines.

EPA began regulating hazardous waste in 1976. Many toxic waste dumps that pose a threat to communities today are holdovers from the era prior to 1976. Other waste sites are the result of more recent illegal dumping.

The federal Resource Conservation and Recovery Act regulates how hazardous waste must be handled and stored. It also lists some but not all of the wastes that EPA considers hazardous. Substances that are not on the list but are toxic are also considered hazardous waste and subject to EPA’s rules. The Superfund Act contains rules about cleaning up hazardous waste that was dumped illegally.

Communities and environmentalists have long complained about lax

enforcement of hazardous waste regulations, both by the federal government and state governments. Meanwhile, many corporations argue the regulations are too strict and lobby Congress to soften or remove certain rules.

One EPA rule that has proved very controversial governs industrial sludge. EPA allows sludge containing heavy metals to be included in fertilizers that are used by farmers on food crops or sold directly to the public. Environmental and other organizations say dangerous levels of the metals are taken up by some plants and subsequently eaten by people, with particularly negative effects on children.

## Fuel Cells

According to many experts, we may soon find ourselves using fuel cells to generate electrical power for all sorts of devices we use every day. A fuel cell is a device that uses a source of fuel, such as hydrogen, and an oxidant to create electricity from an electrochemical process.

Much like the batteries that are found under the hoods of automobiles or in flashlights, a fuel cell converts chemical energy to electrical energy.

All fuel cells have the same basic configuration; an electrolyte and two electrodes. But there are different types of fuel cells, based mainly on what kind of electrolyte they use.

Many combinations of fuel and oxidant are also possible. The fuel could be diesel or methanol, while air, chlorine, or chlorine dioxide may serve as oxidants. Most fuel cells in use today, however, use hydrogen and oxygen as the chemicals.

Fuel cells have three main applications: transportation, portable uses, and stationary installations.

In the future, fuel cells could power our cars, with hydrogen replacing the petroleum fuel that is used in most vehicles today. Many vehicle manufacturers are actively researching and developing

transportation fuel cell technologies.

Stationary fuel cells are the largest, most powerful fuel cells. They are designed to provide a clean, reliable source of on-site power to hospitals, banks, airports, military bases, schools, and homes.

Fuel cells can power almost any portable device or machine that uses batteries. Unlike a typical battery, which eventually goes dead, a fuel cell continues to produce energy as long as fuel and oxidant are supplied. Laptop computers, cellular phones, video recorders, and hearing aids could be powered by portable fuel cells.

Fuel cells have strong benefits over conventional combustion-based technologies currently used in many power plants and cars. They produce much smaller quantities of greenhouse gases and none of the air pollutants that create smog and cause health problems. If pure hydrogen is used as a fuel, fuel cells emit only heat and water as a byproduct. Hydrogen-powered fuel cells are also far more energy efficient than traditional combustion technologies.

The biggest hurdle for fuel cells today is cost. Fuel cells cannot yet compete economically with more traditional energy technologies, though rapid technical advances are being made. Although hydrogen is the most abundant element in the universe, it is difficult to store and distribute. Canisters of pure hydrogen are readily available from hydrogen producers, but as of now, you can't just fill up with hydrogen at a local gas station.

Many people do have access to natural gas or propane tanks at their houses, however, so it is likely that these fuels will be used to power future home fuel cells. Methanol, a liquid fuel, is easily transportable, like gasoline, and could be used in automobile fuel cells. However, also like gasoline, methanol produces polluting carbon dioxide.

## More About Natural Disasters



### **Avalanches**

Cascades of snow, ice, and rock.

[Go Down Under](#)



### **Hurricanes**

Monster storms that wreak havoc.

[Read More](#)



### **Tornadoes**

Nature's most violent storms.

[Find Out More](#)



### **Earthquakes**

When the Earth moves.

[See What's Shakin](#)



### **Lightning**

Electric, striking bolts.

[Learn More](#)



### **Tsunamis**

Waves of surging destruction.

[Find Out More](#)



COASTAL WATERWAY POLLUTED BY CHEMICAL WASTE



BEACH POLLUTED BY WASTE OF HUMANS



## CHEMICAL WASTE WASHING UP ON COASTLINE

- (National Geographic)

## PLASTIC CONTAINERS BUYING GUIDE

- **Plastic Containers 101**
- **Environmental Impact**
- **Product Comparison**
- **Smart Shopper's List**





## GladWare Containers and Lids

[Buy This Recommended Product](#)



## Ziploc

- From \$3-\$6
- Safer #5 plastic
- Widely Available

[Buy This Recommended Product](#)



## Preserve Food Storage



- 100 percent recycled
- Safer #5 plastic
- Available from [www.recycline.com](http://www.recycline.com)

See [our full product comparison](#) for more details.

## What to Look For

Plastics are classified by their "resin identification code"—a number from #1 to #7 that represents a different type of resin. That number is usually imprinted on the bottom of your container; flip it upside down, and you'll see a recycling triangle with the number in the middle.

Here's a quick breakdown of plastic resin types:

#1 polyethylene terephthalate (PET or PETE)

Examples: Disposable soft drink and water bottles

#2 high density polyethylene (HDPE)/

Examples: Milk jugs, liquid detergent bottles, shampoo bottles

#3 polyvinyl chloride (V or PVC)

Examples: Meat wrap, cooking oil bottles, plumbing pipes

#4 low density polyethylene (LDPE)

Examples: Cling wrap, grocery bags, sandwich bags

#5 polypropylene (PP)

Examples: Cloudy plastic water bottles, yogurt cups/tubs

#6 polystyrene (PS)

Examples: Disposable coffee cups, clam-shell take-out containers

#7 other (plastics invented after 1987; includes polycarbonate, or PC, and polylactide, or PLA, plastics made from renewable resources as well as newer plastics labeled "BPA-Free")

Examples: Baby bottles, some reusable water bottles, stain-resistant food-storage containers

## What To Buy:

**#2 HDPE, #4 LDPE and #5 PP:** These three types of plastic are your best choices. They transmit no known chemicals into your food and they're generally recyclable; #2 is very commonly accepted by municipal recycling programs, but you may have a more difficult time finding someone to recycle your #4 and #5 containers.

**#1 PET:** Fine for single use and widely accepted by municipal recyclers; avoid reusing #1 water and soda bottles, as they're hard to clean, and because plastic is porous, these bottles absorb flavors and bacteria that you can't get rid of.

**PLA:** plastics made from renewable resources such as corn, potatoes and sugar cane and anything else with a high starch content; although you can't recycle these plant-based plastics, you can compost them in a municipal composter or in your backyard compost heap.

## Plastics to Avoid:

**#3 PVC:** Used frequently in cling wraps for meat, PVC contains softeners called [phthalates](#) that interfere with hormonal development, and its manufacture and incineration release [dioxin](#), a potent carcinogen and hormone disruptor.

**#6 PS:** Polystyrene-foam cups and clear plastic take-out containers can leach styrene, a possible human carcinogen, into food.

**#7 PC:** The only plastic made with [bisphenol A](#), polycarbonate is used in baby bottles, 5-gallon water-cooler bottles and the epoxy linings of tin food cans. Bisphenol A has been linked to a wide variety of problems such as heart disease and obesity.

## Shopping Tips

- Plastics are classified by their "resin identification code"—a number from #1 to #7 that represents a different type of resin. That number is usually imprinted on the bottom of your container; flip it upside down, and you'll see a recycling triangle with the number in the middle.
- When purchasing cling-wrapped food from the supermarket or deli, slice off a thin layer where the food came into contact with the plastic and store the rest in a glass or ceramic container or wrap it in non-PVC cling wrap.

## Usage Tips

- Avoid storing fatty foods, such as meat and cheese, in plastic containers or plastic wrap.
- Hand-wash reusable containers gently with a nonabrasive soap; dishwashers and harsh detergents can scratch plastic, making hospitable homes for bacteria.
- A "microwave-safe" or "microwavable" label on a plastic container only means that it shouldn't melt, crack or fall apart when used in the microwave. The label is no guarantee that containers don't leach chemicals into foods when heated. Use glass or ceramic containers instead

## REFRIGERATORS BUYING GUIDE

- **Refrigerators 101**
- **Environmental Impact**
- **Product Comparison**
- **Smart Shopper's List**



**Amana ASD2522WE**



### Sanyo SR-1030W

- \$465.75
- 21% more efficient than federal standards
- Good for apartments and small spaces



### Sun Frost RF-12

- \$2,279.00
- 51% more efficient than federal standards
- 32 cubic feet of storage

See [our full product comparison](#) for more details.

**Did You Know:** All products reviewed by *The Green Guide* and available for purchase through Evo.com are independently chosen, researched and reviewed by *The Green Guide* editors. Evo is not informed in advance of publication which products *The Green Guide* editors are choosing to review, nor are suggestions for products or product categories transmitted from the Evo staff to *The Green Guide* editors. *The Green Guide* does not accept or receive payment or consideration by product manufacturers. Because we list manufacturer suggested retail prices, these may differ from prices found at individual retail sites.

## [Smart Shopper's List](#)

### **What to Look For**

Your refrigerator is probably the most power-hungry appliance in your house, and you'll save money and energy by replacing any model made before 2001. Even post-2001 models may not be as efficient as a new model; use Energy Star's [refrigerator calculator](#) to compare how much energy your fridge uses with the energy used by our [Product Picks](#).

**Energy Star:** The most efficient machines are Energy Star rated and use at least 20 percent less energy than federal standards.

**Top-freezer models:** These are the most energy-efficient and repair-free of the configurations offered, followed by bottom-freezer models. Side-by-side refrigerator/freezers are often more convenient, but they're more likely to need repair and can use roughly 7 to 13 percent more energy than top-freezer models. Automatic icemakers increase energy use by 14 to 20 percent.

**Capacity:** Buy a refrigerator that will accommodate everything, rather than buying a new one while keeping your old fridge to store overflow. A typical 1990 model refrigerator costs about \$75 per year to run, and releases over 1,200 pounds of CO<sub>2</sub> each year; it's much more economical and eco-minded to store all your food in a single refrigerator.

### **Usage Tips**

- Don't keep your fridge too cold. Refrigerators should be kept between 37 and 40 degrees and freezers at 5 degrees. Colder temperatures waste energy. To test the temperature, leave an appliance thermometer in a glass of water in the middle shelf for 24 hours. In the freezer, place a thermometer among packs of frozen food.
- Clean the coils annually.
- Cover food and drink to avoid evaporation in the fridge, which can force the compressor to work harder.
- Keep your freezer filled. Frozen blocks of food keep freezer temperatures more stable.

- Don't clutter the fridge top; it can hamper the compressor's proper air circulation.
  - Don't put your refrigerator in direct sunlight or next to an oven or dishwasher.
  - Check the door seals. They should be able to hold a piece of paper in place.
  - Defrost the freezer regularly and avoid frost build-ups of more than a quarter-inch.
- [Buying Guide](#)

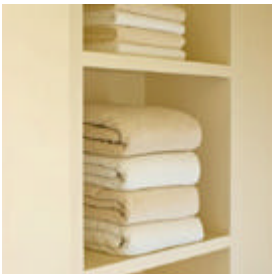
## **BLANKETS AND COMFORTERS BUYING GUIDE**

- **Blankets and Comforters 101**
- **Environmental Impact**
- **Product Comparison**
- **Smart Shopper's List**



### **Under the Nile blankets**

[Buy This Recommended Product](#)



### **Organic Inspirations blankets**

- MSRP: \$79-\$89
- Organic cotton
- Color-grown or low-impact-dyed cotton

[Buy This Recommended Product](#)



### **Coyuchi Inc. blankets**

- \$198-\$221
- Organic, Fair Trade Certified cotton
- No chemical finishes

[Buy This Recommended Product](#)

See [our full product comparison](#) for more details.

**Did You Know:** All products reviewed by *The Green Guide* and available for purchase through Evo.com are independently chosen, researched and reviewed by *The Green Guide* editors. Evo is not informed in advance of publication which products *The Green Guide* editors are choosing to review, nor are suggestions for products or product categories transmitted from the Evo staff to *The Green Guide* editors. *The Green Guide* does not accept or receive payment or consideration by product manufacturers. Because we list manufacturer suggested retail prices, these may differ from prices found at individual retail sites.

[Smart Shopper's List](#)

### **What to Look For**

Throwing an extra heavy blanket or comforter on your bed in winter can save the planet, sort of. For every degree you turn down the thermostat, you keep up to 320

pounds of greenhouse gases out of the atmosphere over the course of the season. Here's what to look for in a blanket that's as easy on the planet as you are.

**Eco-Fibers:** As a rule, softer, breathable natural fibers such as cotton and wool—even if they are not ecologically produced—are always preferable to petrochemical fabrics like polyester.

When possible, choose organic cotton, which is grown without synthetic pesticides or genetically engineered seeds. You can also find Fair Trade Certified cotton, although its use in sheets is rare.

For blankets and comforter batting, choose wool over polyester, and look for organic or "Pure-Grow" wool, which come from ranches that don't dip their sheep in pesticide baths. Ask the manufacturer or retailer whether their wool is treated with mothproofing insecticides, which should also be avoided.

**Chemical-Free Dyes:** People who prefer colored sheets to brighten up their décor should look for either heavy-metal-free or vegetable-based dyes. A product that uses "SKAL-certified" dyes means that they are free of heavy metals. Also, check out FoxFiber™ "color-grown" cotton, which is bred (not genetically-modified) to grow in different colors, though usually only browns, beiges and greens. Color-grown cotton is also less likely to fade in the wash than dyed cotton.

**Chlorine-Free Bleaching:** Opt for unbleached or chlorine-free bleached products. Conventional cotton, and some organic cotton, is bleached with chlorine after harvesting in a process that releases cancer-causing dioxin into the atmosphere.

### Shopping Tips

- Avoid textiles labeled permanent press, no-iron, crease-resistant, shrink-proof, stretch-proof, water repellent or water-proofed. Some finishes, such as those to prevent stains and wrinkles, can release formaldehyde into the air.
- Look for products that are machine-washable to keep dust and allergen levels at a minimum (wool is naturally inhospitable to dust mites).
- Allergy sufferers and asthmatics should also avoid bedding and comforters stuffed with down feathers, which may cause allergies to flare up.



## WASHING MACHINES BUYING GUIDE

- **Washing Machines 101**
- **Environmental Impact**
- **Product Comparison**
- **Smart Shopper's List**



### **Kenmore HE2 Plus Super Capacity**

[Buy This Recommended Product](#)



### **Samsung WF218ANW**

- \$798.99
- 102% more efficient than federal standards
- Variable spin cycles help speed drying times

### [Buy This Recommended Product](#)



### **LG Electronics WM3001HWA**

- \$1,699.00
- 115% more efficient than federal standards
- Allergiene cycle helps reduce allergens

### [Buy This Recommended Product](#)

See [our full product comparison](#) for more details.

**Did You Know:** All products reviewed by *The Green Guide* and available for purchase through Evo.com are independently chosen, researched and reviewed by *The Green Guide* editors. Evo is not informed in advance of publication which products *The Green Guide* editors are choosing to review, nor are suggestions for products or product categories transmitted from the Evo staff to *The Green Guide* editors. *The Green Guide* does not accept or receive payment or consideration by product manufacturers. Because we list manufacturer suggested retail prices, these may differ from prices found at individual retail sites.

### [Smart Shopper's List](#)

#### **What to Look For**

Energy-efficient washers can use up to 50 percent less energy and 60 percent less water than standard machines. If you have a top loader, regardless of how old it is, consider replacing it with an energy-efficient front loader.

**Energy Star-rated:** These machines are 37 percent more energy-efficient and use 18 to 25 gallons per load, about half what traditional washers use. The percentages on our Product Comparison chart represent how much more energy-efficient an appliance is than federal standards require.

**Water Factor:** Part of the Energy Star rating, the Water Factor is a ratio of how much water is used compared to the size of the drum. For example, a machine with a 4-cubic-foot drum that uses 24 gallons per load has a water factor of 6. The figure is more accurate than gallons per load, since washers vary so much in size. The lower the number, the better. Energy Star-rated machines have water factors ranging from 3.2 to 7.9.

**Front-loaders:** Front-loading machines are, in general, more efficient than their top-loading counterparts, using 40 to 60 percent less water and 30 to 50 percent less energy. They also have the benefit of faster spin times, which means your clothes dry faster. Some local utilities offer rebates for purchasing front loaders.

## Shopping Tips

- Select a washer with variable spin times. Faster spin cycles rid clothes of more water and aid in drying times.

## Usage Tips

- Adjust the washing machine so that water levels match the load of laundry.
  - Wash only full loads.
  - Wash your clothes in cold water. A slight 10 percent of the electricity consumed in washing a load of clothes goes to run a washer's motor; the remaining 90 percent is used to heat the water. Washing clothes in cold water can cut CO2 emissions down by 100 pounds and save you up to \$64 a year on your energy bill. In situations where hot water is necessary (for instance, to kill dust mites in bedding), use cold water to rinse.
  - Use less detergent, and you'll save water by not having to run extra rinse cycles.
- [Home](#)
  - [Buying Guide](#)

## CHOCOLATE BUYING GUIDE

- **Chocolate 101**
- **Environmental Impact**
- **Product Comparison**
- **Smart Shopper's List**



### Divine Chocolate

[Buy This Recommended Product](#)



### Theo's 3400 Phinney Chocolate

- \$3.25/bar
- Fair Trade Certified
- Certified Organic flavors include Hazelnut Crunch and Coconut Curry

[Buy This Recommended Product](#)



## Equal Exchange

- \$4.25/bar
- USDA organic
- Fair Trade Certified

[Buy This Recommended Product](#)

See [our full product comparison](#) for more details.

**Did You Know:** All products reviewed by *The Green Guide* and available for purchase through Evo.com are independently chosen, researched and reviewed by *The Green Guide* editors. Evo is not informed in advance of publication which products *The Green Guide* editors are choosing to review, nor are suggestions for products or product categories transmitted from the Evo staff to *The Green Guide* editors. *The Green Guide* does not accept or receive payment or consideration by product manufacturers. Because we list manufacturer suggested retail prices, these may differ from prices found at individual retail sites.

[Smart Shopper's List](#)

## What to Look For

Choosing better chocolate means that you're keeping harmful pesticides out of waterways and you're showing support for farming methods that encourage biodiversity. You also allow farmers to get paid more equitably for their efforts, which in turn keeps child labor off chocolate plantations.

**Certified Organic:** Chocolate labeled USDA "Certified Organic" has been grown without the use of synthetic pesticides and fertilizers on land that was free of such chemicals for at least three years prior to certification.

**Fair Trade:** The "Fair Trade Certified" label is a third-party certification administered in the U.S. by TransFair USA, which means that cacao beans were purchased directly from growers or their cooperatives for at least \$0.10 more than the current market price, allowing farmers to invest in community developments such as education and healthcare. Currently, Fair Trade-certified farmers are paid at least \$0.80 per pound, \$0.89 if it's certified organic. Certification also imposes some environmental-protection standards on growers, including a ban on the most hazardous pesticides and the use of integrated pest management techniques, such as growing cacao under shade canopies.

**Rainforest Alliance:** Combining aspects of the certifications above, the Rainforest Alliance (RA) focuses on how farms are managed rather than how beans are traded, and covers all aspects of production including environmental protection, worker rights and welfare and the interests of local communities. Certification requires that at least 40 percent of the cacao-growing plantation has to be covered in shade at all times in areas where the original natural vegetative cover is forest, which allows for wildlife preservation and a reduction of pesticides, but they do allow the use of some agrichemicals when pest-related damages would be greater than the farmer could cope with economically. RA-certified cacao farms must also pay workers, including minors, at least the local minimum wage, provide safe working conditions and implement measures to reduce minors' participation in the harvest.

## **Shopping Tips**

- Consider the source of your cocoa even when chocolate isn't the main ingredient. Ben and Jerry's now carries Fair Trade Certified chocolate and vanilla ice cream, and Green and Blacks offers a rich organic chocolate ice cream. For your next batch of cookies, try Sunspire's organic and fair-trade chocolate baking chips (\$4.39/9 oz.; [www.worldpantry.com](http://www.worldpantry.com)).
- 

## **BABY BOTTLES BUYING GUIDE**

- **Baby Bottles 101**

- **Environmental Impact**
- **Product Comparison**
- **Smart Shopper's List**



### **BabyLife Wee-go Bottle**

[Buy This Recommended Product](#)



### **Sassy MAM Assure UltiVent**

- \$11.99/3-5 oz. bottles
- #5 Polypropylene
- silicone nipple

[Buy This Recommended Product](#)



### **BornFree Vented Glass Bottles**

- \$7.99/2-5 oz. bottles
- silicone nipple
- Available in multiple sizes

[Buy This Recommended Product](#)

See [our full product comparison](#) for more details.

**Did You Know:** All products reviewed by *The Green Guide* and available for purchase through Evo.com are independently chosen, researched and reviewed by *The Green Guide* editors. Evo is not informed in advance of publication which products *The Green Guide* editors are choosing to review, nor are suggestions for products or product categories transmitted from the Evo staff to *The Green Guide* editors. *The Green Guide* does not accept or receive payment or consideration by product manufacturers. Because we list manufacturer suggested retail prices, these may differ from prices found at individual retail sites.

[Smart Shopper's List](#)

### **What to Look For**

Most plastic baby bottles are made with polycarbonate, a rigid durable plastic that has the potential to leach bisphenol A into your baby's drinks. Bisphenol A (BPA) has been linked to a number of health problems, including hormone disruption and obesity, and the National Toxicology Program recently concluded that there is "some concern for neural and behavioral effects" in infants and children, given current exposure rates to



BPA. Fortunately, preventing exposure is easy if you choose glass or safer plastic (#2, #4 or #5) bottles.

**Glass:** Glass baby bottles, which don't leach toxic chemicals, are a time-tested alternative to polycarbonate plastic. Glass bottles are, of course, breakable, and put children at risk of injury in the case of an accident. Additionally, glass can chip or crack when sterilized, which could lead to glass splinters in baby's beverage. As with plastic, careful and regular inspections of the bottle allow parents to detect any flaws in the glass. Recycle any scratched, cracked, or chipped glass bottle.

**#2 HDPE, #4 LDPE and #5 PP Plastics:** These opaque bottles are made of either polypropylene or polyethylene, which are not known to leach carcinogens or endocrine disruptors. Look on the bottom of the bottle for the recycling symbol: polyethylene has #2 (high-density polyethylene, HDPE) or #4 (low-density polyethylene, LDPE) in the chasing-arrow triangle, and polypropylene (PP) has #5. Polycarbonate bottles are #7 and may be labeled "Other" or "PC." If the bottle isn't labeled, call the manufacturer.

**PES Plastics:** Although polyether sulphone, or PES, hasn't been studied as thoroughly as #2, #4 and #5 plastics, lab studies have found that it does not leach BPA or phthalates (a hormone-disrupting plasticizer commonly used in #3 PVC plastics). PES plastics may be labeled with a #7 like polycarbonate is, since both plastics fall into the "Other" category. If you see a #7 and aren't sure if it's PES or PC, call the manufacturer before using it.

**Silicone Nipples:** Replace standard rubber nipples (amber-colored) with clear, silicone nipples. Not only are silicone nipples free of cancer-causing nitrosamines, but they last longer.

### Usage Tips

- Before first use, sterilize bottles in boiling water.
- Inspect bottles and nipples before each use and discard those with cracks or scratches.
- To avoid dangerous hot spots, breast milk or formula should never be heated in the microwave. Stovetop heating can cause glass bottles to burst and plastic ones to melt, especially when supervised by sleep-deprived parents. Instead, place the filled bottle in a bowl of hot water and swirl it periodically.

- To avoid tooth decay and injuries, don't let baby sleep with or walk around with the bottle.

### LCD TVs

What they are: Images are created when electricity passes through liquid crystals, a process that prevents screen burn (a problem with plasmas) and also reduces waste heat. The technology works at any size, allowing for smaller, less energy-consuming TVs. However, LCDs contain a fluorescent bulb, and a blown bulb means the end of the TV. As with all TVs, LCDs have plastic shells treated with brominated flame retardants and wiring that has various toxic heavy metals such as cadmium, chromium, antimony and beryllium.

Health: Brominated flame retardants, which attach to dust and get inhaled or ingested, have been found to trigger learning problems in children and to interfere with certain hormones. The other toxic materials are well enclosed and should pose little risk to users, but they could be released into the air or waterways during manufacture or disposal.

Life span: 60,000 hours

Screen size range: 12 inches and up

Energy Use: .12 to .37 watts per square-inch in full operation (about 106 watts for a 27-inch LCD); .32 to 76.11 watts on standby

Disposal: LCDs have the same disposal issues as plasmas (see next slide).

**PLASMA TV—SAME HEALTH AND HAZARD ISSUES AS LCD. HOWEVER, USING SMALLER SCREENS REDUCES RISK. OPT FOR ENERGY STAR LCD WITH 42 INCH OR LESS.**

## Home & Garden



Photo courtesy Shutterstock Images

### Question

I'm in the market for a low-VOC carpet, but I'm having problems finding one in mid-price range. The cheaper carpets are very plain, and those I've seen with attractive designs, such as kilims, are high-priced. Is there a happy medium?

Molly R.  
New Haven, CT

### Answer

Volatile organic chemicals (VOCs) are often found in mothproofing, water-stain protectors, synthetic backings and underlays and adhesives. But the adhesives and backings are probably the largest source of VOCs in the carpet, so avoiding those is key.

Opt for natural-fiber backings; the healthiest carpet pads are those made from untreated 100 percent wool, cotton, camel's hair, sisal, hemp or seagrass, says Paul Novak of E.C.O. When laying the carpet down, use carpet tacks if you can, rather than glue. Or buy carpet tiles, such as those from Interface Flor, that are held in place with stickers.

Moth-, stain- and water-proofing treatments can be hard to avoid, as they're applied even to greener products. Ask the retailer or manufacturer what sort of chemical

treatments, if any, have been applied. If you have the option to have your carpet custom-made, ask for a treatment-free product.