

Tackling Electronics Waste: A Talk with Bette Fishbein

When INFORM first began talking about extended producer responsibility (EPR) more than 10 years ago, American government and industry leaders had very little interest. Recently implemented in Germany, this innovative policy — which makes manufacturers responsible for their products at end of life — seemed irrelevant in a country where landfill space was plentiful and government responsibility for managing municipal waste was taken for granted. Suddenly all that is changing. Policies requiring product take-back have spread to much of industrialized Europe and Asia, and EPR now covers numerous products manufactured by US companies. In this country, states and communities burdened by rising waste management costs are looking to EPR as a solution for certain product waste streams. Finally, EPR has appeared on the radar screen of US policy makers and environmentalists.



Bette K. Fishbein

In the United States, no one is more familiar with the policy's intricacies than INFORM Senior Fellow Bette Fishbein, whose *Germany, Garbage and the Green Dot: Challenging the Throwaway Society* first called attention to EPR through the lens of the

The Right to Know More: New Research Shows the Benefits of Expanded Toxic Chemical Reporting

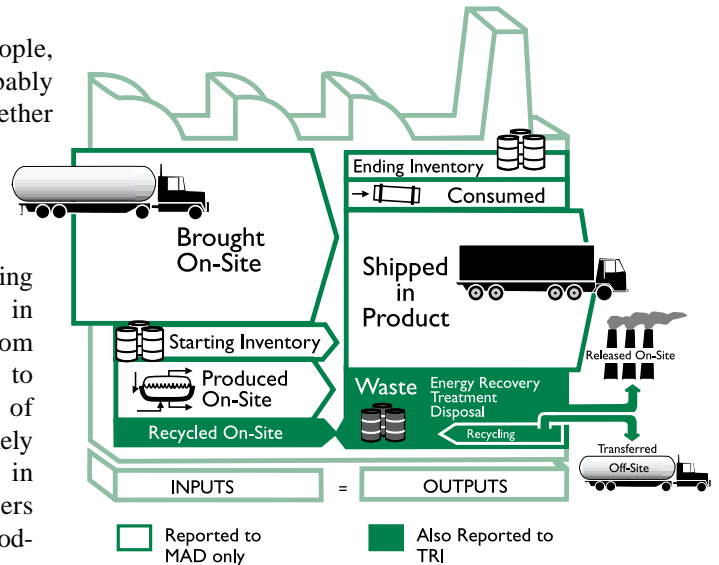
Like many people, you have probably wondered whether the chemicals contained in the products you use are really safe. Nearly 80,000 chemicals are circulating in commerce today, in products ranging from computer equipment to cosmetics. Some of these represent extremely beneficial advances in technology, but others may be not only outmoded but linked to asthma, cancer, birth defects, learning disabilities, and other health problems. Many also damage pets, wildlife, and other parts of the ecosystem. While some products, such as janitorial cleaning supplies and paints, list their chemical constituents, most do not. Consequently, consumers are usually unable to compare products to determine which are likely to be safer.

In a new report, *Expanding the Public's Right to Know*, INFORM makes the case for greater public access to information on the chemicals that products contain, building on earlier research (presented in *Toxics Watch 95*) documenting the significant role of products as sources of contamination. The new report describes a long-standing but relatively unknown New Jersey program that allows policymakers and the public to quantify the toxic chemicals going into industrial feedstocks and into consumer products manufactured in the state. This "materials accounting data" program, established under New Jersey's 1984 Worker and Community Right to Know Act, requires industrial facilities to report, among other things, the quantity of every reportable toxic chemical used and incorporated into products on an annual basis.

Under New Jersey's expanded chemical reporting system, all of a plant's inputs and outputs of toxic chemicals are accounted for, while the federal TRI program focuses primarily on wastes.

It's In the Products...

Materials accounting data supplements waste-related information submitted by 20,000 industrial facilities nationwide (including those in New Jersey) to the US EPA's



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Letter from the President

Transportation — The Key to Our Energy Future



Why should Congress be concerned with alternative fuel vehicles?" asked Montana Senator Max Baucus, chairman of the Senate Finance Committee.

"Because transportation is at the heart of this country's energy crisis," answered INFORM senior consultant Jim Cannon, testifying at committee hearings in July.

While the Bush Administration has acknowledged that the US urgently needs an energy plan, the one it introduced this spring gave short shrift to transportation. INFORM's testimony (available on our web site) focused on the environmental, health, security, and economic reasons for making fundamental change in transportation a top national priority. We have an historic opportunity, Jim Cannon explained, to move our country closer to the advanced propulsion systems and cleaner fuels of the future, using the financial incentives Congress is now considering as a primary driver.

The 217 million vehicles traveling our nation's roads consume 67 percent of our oil, and are the main reason for our steadily rising reliance on foreign oil. From 1975 to 1999, energy use for transportation grew 43 percent, outpacing the 15 percent growth in total energy use. Almost 60 percent of this oil is imported, accounting for one-third of the US trade deficit. Meanwhile, many developing nations are aspiring to their own gasoline- and diesel-dependent transportation systems, and China is already importing 30 percent of its oil. In the decade ahead, competition for shrinking global supplies is bound to escalate rapidly.

Vehicle emissions are also damaging the health of a generation of our children. Emissions from diesel trucks and buses are a primary culprit in the virtual epidemic of asthma sweeping this country. While all the reasons for these rising rates are not understood, diesel emissions are widely recognized as a major trigger. Furthermore, a link between diesel emissions and cancer is increasingly being made, with the US Environmental Protection Agency recently labeling them a "likely" human carcinogen. In every major city, children are regularly doused with diesel particulates — from trucks, from

buses, and from most of the 445,000 school buses that carry 23 million of them to and from school each day.

Further, transportation-related emissions generate more than a quarter of the greenhouse gases that make our country the leading contributor to global climate change. From 1990 to 1998, US greenhouse emissions increased 11 percent. This may be the ultimate threat to the world our children inherit.


But we now have an opportunity to start weaning ourselves from our addiction to oil. Since 1982, nearly all of the world's 90 vehicle manufacturers have introduced totally new vehicles: natural gas-powered vehicles, hybrid electric vehicles that are two to three times more fuel-efficient than conventional vehicles, even demonstration fuel cell vehicles powered by pollution-free, renewable hydrogen. While these vehicles will continue to be refined, many are road-ready now. What they need is a boost: financial incentives to install refueling infrastructure, tax credits to cover the incremental costs of new vehicles. For vehicle manufacturers, financial incentives will drive greater competition. For consumers, they will put vehicles like Toyota's Prius (and the other green vehicles listed on page 8) within reach.

The financial incentives that Congress is now considering would catalyze change on a grand scale. With each new hybrid electric car, each new fleet of natural gas taxis or buses, and each new hydrogen fuel cell demonstration vehicle, we can leave the age of oil behind — and watch as our air gets cleaner, our children healthier, and our economy stronger.

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The Right to Know More (continued from page 1)

Toxics Release Inventory (TRI). This federal program collects data on the quantities of nearly 650 toxic chemicals released by these plants into the air and water, as well as the amounts incinerated, recycled, treated, and disposed of on-site and elsewhere.

But the TRI does not track what may be the greatest source of hazardous chemicals in the environment: consumer products, which can pose exposure risks when they are manufactured, used, recycled, or disposed of in incinerators or landfills. For example, new evidence suggests that mercury-containing light switches, antilock brake systems, and other components of wrecked vehicles are significant sources of mercury air emissions from iron and steel smelters in New Jersey. And research using materials accounting data, conducted by INFORM in 1999, found that more than 90 percent of the toxic materials leaving the state's industrial facilities leave not as waste but as products. These materials therefore are not reported in most states, where only TRI data is collected.

The Big Picture

Expanding the Public's Right to Know illustrates how materials accounting data can be used to fill the gap left by the TRI, enabling the public to also learn:

- How much of each toxic chemical was used overall by a facility during the previous year.
- How much was transported into the facility as feedstock.
- How much was shipped out of the facility in products.

With the exception of Massachusetts, New Jersey is the only state that requires industrial plants to report the quantity of toxic chemicals being incorporated into the products they manufacture. "As a result," says Alicia Culver, director of INFORM's Chemical Hazards Prevention Program

and a co-author of the report, "the public is largely kept in the dark about toxic chemicals used by industrial facilities in the United States."

A Tool for Communities

To demonstrate the added value of materials accounting data, *Expanding the Public's Right to Know* compares specific information available under New Jersey's program with TRI data. For example, it examines a New Jersey-based vinyl producer's use of DEHP, a persistent, bioaccumulative toxin (PBT) widely used to make polyvinyl chloride (PVC) and other plastic resins more pliable. (DEHP is a probable human carcinogen and reproductive toxin.) According to the TRI, this plant generated about 2700 pounds of DEHP waste in 1996, while materials accounting data revealed that it shipped out more than 25 million pounds of DEHP in its vinyl product. Moreover, INFORM determined that about one-third of the 75 million pounds of PVC resin made by this company in 1996 consisted of DEHP, which can readily leach from vinyl products such as toys and packaging.

"The two systems tell starkly different stories about the quantity of DEHP used by this plant," Culver observes. "New Jersey's expanded right to know program allows community leaders to learn the quantity of toxic chemicals used by industrial facilities so they can identify potential threats to public health or the environment. They can then begin to ask questions about the steps these companies are taking to reduce or eliminate opportunities for exposure."

Why Expand the Right to Know Now?

When industrial facilities first began reporting to the TRI in 1987, having data on their toxic emissions available to the public gave them a powerful

incentive to reduce these releases. Over the years, the TRI has become the primary indicator of environmental performance at many of the nation's largest manufacturing plants. INFORM's research suggests that an expanded chemical reporting system similar to New Jersey's—one that tracks the quantity of toxic substances used and "shipped in product"—would yield additional pollution prevention benefits. Communities that adopt such a program can use the data to encourage firms to reduce their overall use of toxic chemicals and find safer substitutes to potentially harmful substances contained in their products.

New Jersey will make its materials accounting data available to the public (on the Internet) for the first time in the coming year, and INFORM is providing assistance to the NJ Dept. of Environmental Protection in designing the site and publicizing it statewide. INFORM is also developing a web page describing its own Right to Know More Initiative, which aims to foster a constituency for expanded toxic chemical reporting in other states. As INFORM president Joanna Underwood explains, the goal is not simply to require companies to produce more data—the point is the insights that the data provides. "When the main concern was pollution caused by industrial wastes, the information that was needed most was about wastes. Now that we have a better understanding of the environmental and health threats that may be posed by products, we need comprehensive data on the quantities of toxic chemicals they contain. New Jersey and Massachusetts have taken the lead in allowing the public to gain these insights. The rest of the US deserves the same."❖

For more information, see *Expanding the Public's Right to Know: Materials Accounting Data as a Tool for Promoting Environmental Justice and Pollution Prevention* (2000) and *Tracking Toxic Chemicals: The Value of Materials Accounting Data* (1997) on INFORM's web site.

Tackling Electronic Waste (continued from page 1)

German experience. Since that time, Bette has worked tirelessly to educate government and environmental leaders here and abroad about EPR as a strategy that encourages the corporate redesign of products to create less waste, be more easily recyclable, and have fewer toxic constituents. She has conducted research, served as a resource for interested states and communities, and contributed her knowledge at international conferences working to develop policy guidelines. On a recent afternoon, we asked our resident expert to talk about the current status of EPR in the USA.

A lot seems to be happening with EPR recently. What kinds of initiatives have you been participating in?

After so many years of resistance, the interest we're seeing is really quite amazing. Most recently, the electronics industry decided to come to the table to discuss a voluntary solution to the growing problem of TV and computer waste. In April, I attended the first of six meetings of the National Electronics Product Stewardship Initiative Stakeholder Dialogue, which includes representatives from government, industry, and environmental organizations. A key question we're addressing is who should be responsible financially for the collection, transport, and recycling of discarded electronic products. INFORM can

make a major contribution to these talks because of its expertise on EPR in the US and abroad.

Why is all this activity centering around electronics?

Municipal waste systems are already being flooded by discarded TVs and

Not far behind are cell phones, Palm Pilots, and other electronic products with very short life spans — consumers typically discard these items in less than two years. Recently, the planned introduction of a cell phone that's actually disposable has received a lot of publicity [see photo, facing page].

You'll be able to use it for an hour and then throw it away.

A New Lease on Computer Life

Because computers are replaced and discarded so frequently, and because they contain so many toxic components, some states are restricting their disposal in landfills and trash incinerators. Two main strategies are emerging to manage this waste: product take-back and leasing.

Take-back provisions written into computer purchase agreements require vendors to take physical and/or financial responsibility for their products when users in private businesses and government agencies are ready to discard them. They can also require vendors to certify that toxic components are either reclaimed or managed as hazardous waste. Contracts that include such requirements give manufacturers an incentive to find cost-effective ways of collecting, reusing, and recycling used equipment because this will provide a competitive edge.

Leasing of computer equipment can encourage reuse and recycling because vendors automatically take back their products at the end of most leases. Lessors can require vendors to certify in the leasing contract that returned equipment will be reused or recycled. Reuse or recycling is most likely to occur when the manufacturer retains both ownership of the product after the lease term and responsibility for the product at end of life. Like take-back, leasing has the potential to encourage manufacturers to redesign their products to contain fewer toxic materials and be more durable, upgradable, and recyclable.

computers. Americans throw out more than 20 million computers a year, and according to estimates from the National Safety Council in Washington, DC, the total computer waste load will soon reach 315 to 680 million units.

The problem with these products, aside from the space they take up in landfills, is that they contain high levels of toxic materials — a single computer monitor, or CRT, has four to eight pounds of lead, to say nothing of the brominated flame retardants, mercury, and cadmium these products may contain. Disposing of hazardous materials is expensive, so municipalities are looking for manufacturers to take some responsibility for their products at end of life. In Massachusetts and California, CRTs have been banned from disposal facilities, and Minnesota is asking producers to find ways of removing their CRTs from the municipal waste stream at industry expense. So far this is a voluntary initiative,

but manufacturers are worried that some states will eventually pass legislation that would actually require them to take back and recycle their products when consumers are ready to discard them.

Aren't such electronic "take-back" requirements already in the works in Europe?

Yes, and that's creating another huge pressure on the industry. The EU is now finalizing its Waste Electrical and Electronic Equipment directive, which will require all producers who sell in Europe — including US manufacturers — to take back and recycle this waste at high levels. The EU is also planning to ban the use of key hazardous substances such as mercury, lead, cadmium, hexavalent chromium, and some brominated flame retardants. It will be a few years before these directives take effect, but they're going to have a huge impact on electronics producers everywhere.

How are US manufacturers responding to these pressures?

Well, they want to preempt legislation in this country, and a voluntary solution seems like the path of least resistance. The stakeholder dialogue is one response, but some companies are also initiating take-back programs on their own. Sony is phasing in a program that will recycle all products with the Sony label, but the company will not pay for collection. Hewlett-Packard and IBM will take back and recycle computer equipment made by any manufacturer, but their programs involve a fee. It remains to be seen how much these companies will actually collect and recycle under these circumstances.

How is INFORM trying to influence the stakeholder dialogue with industry?

By continually emphasizing opportunities to "close the materials loop," which is a strategy we've been talking about for years. In a closed materials loop, waste materials are used as raw materials in the manufacture of new products. The great thing about EPR is that it can help close the materials loop by encouraging industry to come

up with products that are more environmentally friendly — more easily and economically reusable and recyclable, and containing fewer toxic components. But this will only happen if producer "responsibility" is defined sufficiently broadly. So the key issues to be addressed will be, first, Who pays for the collection, shipping, and recycling of discarded electronic products? Second, how should recycling targets be set and enforced? Third, will regulations be needed to ban hazardous substances in electronic products?

In Europe, manufacturers will have primary responsibility for collecting the waste equipment from households, as well as recycling and disposing of it. About 70 percent of the materials collected will have to be reused or recycled, which is a very aggressive



Telepree Communications

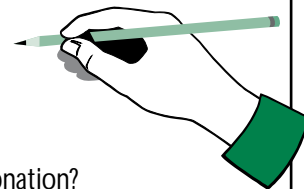
This voice-activated cell phone has a nonrechargeable battery and prepaid airtime cartridge that can be thrown away when the available minutes have been used up. Plans are to market disposable cell phones as low-cost alternatives to traditional wireless phone services.

target. And key toxic substances will have to be phased out over the next seven years. These provisions will result in the design of products with fewer toxic constituents that can be more easily reused or recycled. And though American companies will have to meet these requirements for products they market in Europe, they're doing all they can to fight similar mandates at home. Industry's position in the US is that such efforts should be voluntary. This is a step forward, since voluntary initiatives are better than no take-back initiatives at all. But only time will tell whether the voluntary approach will

really bring us closer to the goal of "environmental sustainability" and the establishment of closed-loop systems of materials use. ❖

For more information on EPR and computer take-back, see *Extended Producer Responsibility: A Materials Policy for the 21st Century* and "Return to Vendor: A Solution to Obsolete Computer Equipment" on INFORM's web site.

Our Wish List



Do you have any of these items available for donation? INFORM's staff would welcome the following:

17" monitor for PC

Scanner

Color printer for Macintosh

Fireproof cabinets

Prospective donors are encouraged to contact Sam Arnoff, director of finance and administration, at (212) 361-2400 or by e-mail at arnoff@informinc.org.

Working for Healthy Air

Action on Mercury Pollution

New Jersey will soon begin considering a wide range of measures to reduce air emissions of mercury, thanks in part to the efforts of INFORM staff. Endorsing the goal of the Northeastern Governors' Mercury Action Plan to "virtually eliminate" human-caused mercury releases, the state's Mercury Pollution Task Force will propose a five-year plan to reduce emissions by 50 percent.

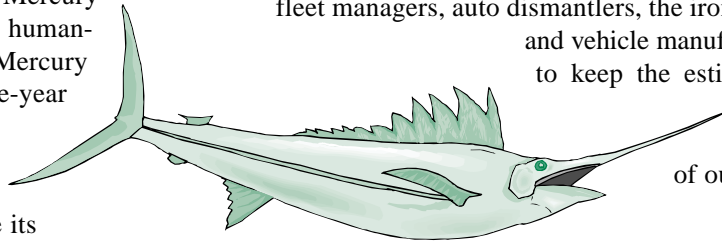
The task force has been studying sources of mercury in New Jersey since its formation by the state Dept. of Environmental Protection in 1999. A persistent, bioaccumulative toxin (PBT), mercury has been targeted for reduction throughout the US by the Environmental Protection Agency. The New Jersey task force estimates that nearly 5000 pounds of the chemical were released to the air in the state in 2000, from sources such as iron and steel manufacturing, municipal waste incineration, coal combustion, crematoria, and religious and cultural uses.

Under the auspices of INFORM's Chemical Hazards Prevention program, Senior Research Associates Alicia Culver and Janet Cox provided the task force with information on mercury-containing products, descriptions of mercury-reduction programs that have been implemented elsewhere, and recommendations for reducing mercury in products sold, used, and discarded in New Jersey. These include:

- Supporting federal and state legislation that would require manufacturers to take end-of-life responsibility for their mercury-containing products (such as vehicles, thermostats, batteries, and fluorescent lamps), and for the recycling or proper disposal of their toxic constituents.
- Implementing state purchasing policies that encourage agencies and departments to buy low-mercury fluorescent tubes, mercury-free vehicles, and nonmercury thermostats, light switches, and fever thermometers.
- Expanding recycling programs for fluorescent tubes, thermostats, and batteries.
- Banning the incineration of products containing mercury.

While much of the task force's work has focused on well-known sources of mercury such as coal combustion and

waste incineration, other important sources have recently become priorities. For example, vehicle light switches account for most of the estimated half-ton of mercury emissions from New Jersey's six iron and steel manufacturing plants. Generally, these switches are not removed from junked cars before they are crushed, shredded, and processed as scrap. Changing the status quo in this area will not be easy, but members of the task force, INFORM, and advocates from around the country are working to develop programs involving fleet managers, auto dismantlers, the iron and steel industry, and vehicle manufacturers and dealers to keep the estimated 215 tons of mercury now "on the road" out of our air and water.



Promoting Business Innovation

Corporate Vanguard

INFORM found a new and important partner this spring in the Conference Board, a premier business leadership organization focused on enhancing business enterprise and the contributions of business to society. For the first time in its 85-year history, the Conference Board invited an environmental organization (INFORM) to co-sponsor its annual Environment Conference. Held at the end of April in New York City, the event was an opportunity for INFORM president Joanna Underwood to address issues of producer responsibility before an audience of over 100 American and international corporate officers. Companies represented included Dow Chemical, E.I. du Pont de Nemours, Starbucks, and Hewlett-Packard.

Ms. Underwood talked about three essential business shifts that will transform our economy and move us toward true environmental sustainability:

- Redesigning products to make them more resource-efficient: durable, reusable, and recyclable at the end of their useful life
- Reassessing the prolific use of toxic chemicals in commercial products
- Moving toward solar and other nonpolluting energy sources, including a shift in transportation from oil-derived fuels to natural gas and, ultimately, to hydrogen.

INFORM PUBLICATIONS

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The conference presented an opportunity for the business sector to demonstrate its eagerness to lead in the creation of an environmentally sustainable economic order. "US industry has at its disposal the ingenuity needed to transform products and production methods to protect a jeopardized world, responding ahead of the curve to decreasing resources and an increasingly concerned public," Underwood observed. "At your doorstep begins the road to sustainability and our capacity to leave a resource-rich and healthy environment to the world's children."

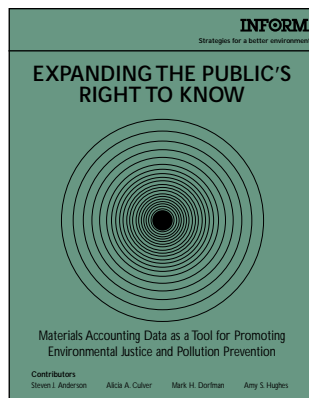
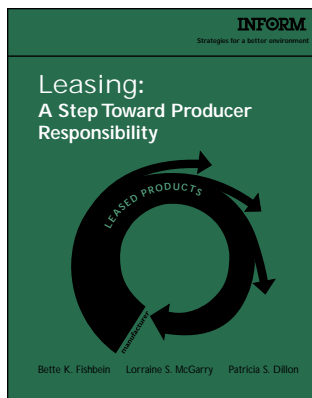


Matthew Hacketthorn

INFORM president Joanna Underwood (*right*) with Sara D. Evans, Manager of the Resource Recovery and Local Assistance Branch of Kentucky's Department of Environmental Protection, at the state's Waste Management Workshop in May. "We welcomed Joanna's participation because we wanted to reintroduce waste prevention to the dialogue in our state," Evans said. "INFORM's involvement in major legislation over the years lent so much

credibility to the workshop." In her talk, Underwood described five components of an effective waste prevention program at the state level: (1) implement producer take-back policies for certain product wastes; (2) provide economic incentives to stimulate the market for reused/remanufactured products; (3) mandate the purchase of environmentally preferable products by government agencies; (4) ban all nonessential uses of toxic chemicals such as mercury; (5) place bans or surcharges on certain landfilled wastes. She promised a full library of resources and the support of INFORM staff to help local recycling coordinators promote waste prevention in Kentucky, a state where illegal dumping has risen to crisis proportions.

These two new reports are now available in print and on INFORM's web site. See ordering information at right.



INFORM: Green and Mean on the Road

A report from the US Dept. of Transportation released this spring indicates that fuel economy is at its lowest level since 1980—an average of 24.5 miles per gallon for all cars and light trucks sold in the 2001 model year. Peak fuel economy was 26.2 mpg in 1987, before automakers started selling large numbers of gas-guzzling SUVs. But efficient and clean-burning alternatives do exist, including the natural gas-powered Civic GX from Honda, which received the top rating for both fuel economy and greenhouse gas emissions from the American Council for an Energy Efficient Economy.

	Manufacturer/Model ¹	Fuel/Drivetrain	Fuel Economy (mpg) ²	Fuel Costs/Year ²	Greenhouse Gas Emissions (tons/yr) ²	EPA Emissions Score ³
GREEN	Honda Civic GX	Natural Gas/Conventional	32.3	\$398	5.0	10
	Honda Insight	Gasoline/Hybrid Electric	64.0	\$398	3.1	6
	Toyota Prius	Gasoline/Hybrid Electric	48.6	\$531	4.0	7
	Toyota RAV-4 EV	Battery/Electric	103.7	\$391	4.1	10
	Toyota Camry	Natural Gas/Conventional	25.0	\$510	6.3	7
MEAN	GMC Sierra C/K	Gasoline/Conventional	12.2	\$2125	15.3	0
	1500 Ferrari 550 Maranello	Gasoline/Conventional	9.7	\$2805	18.7	3
	Dodge Ram 2500	Gasoline/Conventional	13.8	\$1821	13.5	0
	GMC K150 Yukon Denali	Gasoline/Conventional	13.5	\$1962	14.0	0
	Ford Excursion	Gasoline/Conventional	12.5	\$2040	14.9	2

¹ All vehicles are model year 2001. Rankings based on fuel economy, greenhouse gas emissions, and EPA emissions score. See American Council for an Energy Efficient Economy, *Green Book*, <http://www.greencars.com/indexplus.html>. ² US Dept. of Energy, <http://www.fueleconomy.gov>.

³ On a scale of 1 to 10, with 10 being the highest. Scores are for vehicles sold nationwide; versions sold in California are often cleaner. See US EPA, *Green Vehicle Guide*, <http://www.epa.gov/autoemissions/>.

INFORM reports

Strategies for a better environment

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Shipped in Product



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