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Let's Get Technical

Time to put the engineers to work

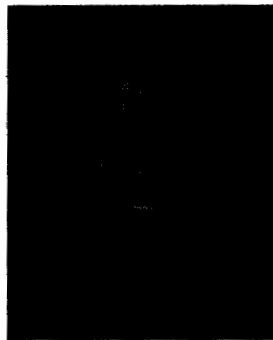
Engineers are natural allies of environmentalists. We point out problems in the world; engineers solve them—at least when they're allowed to. A good example is the 2002 Detroit Auto Show, where the Sierra Club unveiled the

"Freedom Package," a set of proven technologies that could dramatically improve the fuel efficiency of every non-hybrid motor vehicle sold today. I later learned from a vice president at Ford that some bright, young engineers in the audience came back fired up, saying: "We have those technologies. Let's use them; let's use them big." It didn't happen. At a time of record gas prices, Detroit has ceded the high-efficiency automobile market to Japan and Germany. (The only exception is the Ford Escape, which is based on technology licensed from Toyota.) Had Detroit listened to its young engineers, this spring might not have seen record sales for Toyota and Nissan, and junk status for Ford and GM's debt.

For the past two decades, I've heard variations on this story again and again. I've always been struck by how much easier it is to talk about a company's environmental problems with its scientists and engineers than with its finance people, lobbyists, lawyers, or CEO—unless the CEO is also an engineer.

Why is this? Because engineers are essentially problem solvers. If we ask them to make a civilian version of a military assault vehicle, they'll find a way to do it. If we ask them to figure out how to power our homes with less energy, they can do that too. One path leads to the Hummer, the other to solar cells.

Technology is a servant, and it does its master's bidding. In this country, those who control technology have asked it to make them richer and more powerful, and it's done that—but at the expense of other people, other generations, and



BY CARL POPE

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other species. *The Sorcerer's Apprentice* is not just a tale of technology gone mad; it is a story of putting too much power in immature hands.

What would be a mature use of technology? First, as in medicine, it should do no harm, and that requires firm rules. Laws and regulations are what make it possible to responsibly operate chemical plants, oil refineries, and sewage-treatment facilities. The absence of rules invites irresponsibility.

For instance, regulation-guided technology could have promised environmentally safe delivery of oil from northern Alaska via the Trans-Alaska Pipeline and its terminal at Prince William Sound. But after lowered safety standards caused tugboat escorts to be phased out, a reckless skipper put the *Exxon Valdez* on the rocks—and Exxon has yet to fully accept the consequences.

Second, the many new technologies that could be either hazardous or beneficial need to be developed in a publicly accountable way, with appropriate incentives. If researchers are paid to maximize the profits of the few, they are likely to pursue options that increase risk to the public.

Genetically modified foods are a good example. While their advocates like to talk about how we could use genetic engineering to design barley that could grow in the brackish water of the poorest parts of Africa, the best scientists in this field are not working for public institutions trying to help poor farmers. Instead, they're working for multinational corporations that are patenting expensive seed vari-

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eties farmers can douse with herbicide. The technical wizardry of biotech has been devoted to capturing more of the income of rich farmers in the United States, Canada, Europe, and Australia, not to improving the lot of subsistence farmers in the Third World. The reason is not that researchers have tried and failed to find genetic solutions to the problems of poor farmers, but simply that those genetic solutions would not be profitable.

In the absence of firm rules and responsible incentives, corporations often cling to dangerous but profitable old technology, even when engineers have gone on to design better versions. For example, one American woman in six has enough mercury in her body to threaten the health of any baby she might bear. A major source of this poison is a handful of outmoded chemical plants that make chlorine by pumping brine through a vat of mercury. Seven such plants emit more than 65 tons of mercury into the air each year—even more than the emissions from all of the nation's coal-fired power plants. Despite the ready availability of cost-effective pollution-control technology, the Bush administration has refused to issue emission standards that would keep this poison out of our bodies.

What kind of incentive would it take to clean up the chlorine industry? If these plants were held responsible for the costs of treating everyone who will eventually be poisoned by their mercury releases, their parent corporations would promptly shut them down and replace them with modern mercury-free chlorine production processes.

The planet cannot sustain 6 billion humans aspiring to better lives without 21st-century solutions. We need the services of science and technology, and the skills of engineers. We need to enlist human genius to solve problems, not merely to increase profits. Our role as environmentalists increasingly will be to make sure the appropriate rules and incentives are in place, and then to stand back and let the engineers get to work. ■

CARL POPE is the Sierra Club's executive director. E-mail carl.pope@sierraclub.org.