

# Safeguarding the Environment: Critical Issues for Today and Tomorrow

*S. Noble Robinson*

Underlying all environmental issues is the tension between stewardship of the environment and the goals of business, namely growth and profitability. Today, the message of the scientists is being heard:

The Earth has a finite assimilative capacity. Pollution – if unchecked – will cause deforestation and desertification, loss of species, increased incidence of cancer, and other destructive consequences. The challenge is for business and government to find ways of managing growth for sustainable development, without stressing the Earth's resources to a point from which they cannot recover. In this article, we review some of the most pressing environmental issues we face today and suggest questions business leaders should be addressing.

## Critical Issues

The environmental issues most likely to affect tomorrow's business strategies are, for the most part, those already considered critical today. They include ozone depletion, global warming, acid rain, toxic air emissions, and waste generation and disposal.

**Ozone Depletion.** The depletion of the ozone layer that plays a critical role in protecting the Earth's atmosphere became the first of the truly global environmental issues. It is now generally acknowledged that a major cause of this depletion has been chlorofluorocarbons (CFCs). Today, CFC user industries – in particular, industries using these compounds as foaming agents, aerosols, or de-greasing solvents – are being hit hard by worldwide restrictions and have had to devise innovative approaches to respond to this industry crisis. The cost and time required to develop substitutes for CFCs, design and implement new manufacturing processes using these substitutes, and retool such equipment as refrigeration systems, has been and will continue to be enormous.

One of the lessons to be learned from this issue is the need to heed scientific warnings. Between the time when scientists first publicly theorized about the harmful effects of CFCs and the time when industry and the public acknowledged the credibility of the concern (about 1987), some 15 years elapsed. During that time – and since – the condition of ozone depletion has become more serious, and the industrial infrastructure built around CFCs has continued to expand. Business now faces the need for substantial capital investments for equipment modifications and materials substitutions that could have cost far less if companies had heeded early warning signals. However, some foresighted companies – including Atochem North America (formerly Pennwalt), Allied-Signal, and Du Pont – were keeping a close eye on this developing issue. When the world came to grips with the problem, they were ready to move ahead with CFC substitutes.

While it is no easy task to identify which early scientific warnings harbor major challenges for the future, some issues bear watching. For example, evidence suggests that water – both its lack of availability and its increasingly poor quality – may constitute the next major global environmental crisis. Certainly the damage we have done to the Earth's water resources through the last 50 years has increased our awareness of the fragile nature of our waterways and drinking water.

Another issue with potentially major ramifications is the use of oil and other fossil fuels to generate energy. Although we all acknowledge that these resources are finite, investment in alternative energy sources has fallen off considerably. The key question here is how industries, governments, and individual companies can keep attuned to the warning signs, choose the best Earth-saving technologies and resources to invest in along the way, and determine the right time to make a change.

**Global Warming.** Many scientists believe that emissions of methane, CFCs, nitrogen oxides, and carbon dioxide are building up in the atmosphere and creating a „greenhouse effect,“ whereby energy will be reflected back to the Earth and raise the Earth's temperature over the next 50 years by as much as 5°C. Whether or not history will confirm the current warming trend as having been truly caused by a greenhouse phenomenon or as simply a long-term weather trend won't be determined in the near future. Even so, scientists and policymakers – and the public – will likely continue to translate this concern into a demand for strong control measures, such as regulating carbon dioxide emissions, reducing the burning of fossil fuels and charging energy („carbon“) taxes. These measures and taxes, in turn, will push companies to reduce energy consumption and to enhance their overall conservation ethic.

Leading companies are already putting systems in place to strengthen their waste-management programs, reduce their energy consumption, and increase their operational efficiency. Although they are generally making these changes in response to regulatory and economic pressures other than those associated with global warming, nonetheless these new systems will position foresighted companies early to respond to the pressures of global warming. Meanwhile, these companies will reap the benefits of conservation.

**Acid Rain.** The transport of sulfur dioxide and nitrogen oxides over long distances and their redeposition as sulfuric and nitric acid – the phenomenon known as „acid rain“ – contributes to the acidification of lakes and waterways. Consequences include destruction of aquatic life, corrosion of buildings and other properties, and destruction of trees.

In the United States, recent measures to curb acid rain are contained principally in the Clean Air Act of 1990, which directs public utilities to reduce their sulfur dioxide emissions. The immediate impact of the Act is on the utility industry, but other industries will feel this impact too as utilities eventually pass on some of their increased costs. Moreover, once the utility industry has cleaned up its emissions, pressure will mount for other industrial sources to reduce their emissions. Therefore, companies now installing equipment and fossil-fuel-fired facilities will likely benefit by outfitting that equipment to meet future emissions-control requirements and avoid the heavy cost of later retrofit.

**Toxic Air Emissions.** Many industrial processes result in the emission of substances that have chronic or acute health effects on people and the environment. While these effects are generally local or regional rather than global, the issue of toxic air emissions control will likely become worldwide, as industrial nations such as the United States, Japan, and Western Europe turn their attention to this matter. For this reason, it is particularly important for multinational companies that are installing facilities in other parts of the world – particularly in less developed countries or those with less stringent environmental regulations – to install emissions-control equipment that meets standards as high as any they must meet anywhere else. Otherwise, they are certain to incur the high cost of retrofit later.

Unlike global warming and ozone depletion, which are still somewhat abstract in the minds of the general public, toxic air emissions is a more personal – and highly emotional – issue. Understanding this, companies with foresight are creating close ties with their employees, local communities, and public interest groups in order to address their concerns. Companies are finding it in their best interest to educate the public about real versus perceived risk, providing the facts and letting the public understand their operations and the protection programs they have in place. Examples of industrywide efforts include the Responsible Care programs of the U.S. Chemical Manufacturers' Association and the Canadian Chemical Producers' Association. Similar initiatives are now growing in Europe, including one by the European Chemical Industry Council.

**Waste Generation and Disposal.** Industrial countries throughout the world are facing a dearth of disposal facilities for solid and hazardous waste – a condition aggravated by the public's „not-in-my-back-yard“ resistance to the siting of new facilities. Complicating the matter further is the lack of infrastructure for helping companies and individuals contribute to overall waste reduction, as well as the slow commercialization of new waste disposal and waste recovery technologies. In many countries, incentives to date have been insufficient to improve the situation, but that may be changing. Although higher costs for transporting and disposing of wastes will likely help reduce waste generation, so too will voluntary programs being promoted by governments to reduce waste, increase recycling, and prevent pollution. The U.S. Environmental Protection Agency, for example, is supporting voluntary recycling efforts because it believes that industry's technical and management specialists are the most skilled at finding ways to reduce wastes. From companies' points of view, the most powerful incentives will likely be the reduced costs and greater efficiencies they can realize by implementing some of these programs.

The more difficult waste disposal issue remains that of siting facilities. Industry and government must work together to find ways to improve public understanding and acceptance. Progressive companies have taken the initiative early on in the siting process to involve potentially affected citizens and community groups through organizations such as local assessment committees. In this way, companies can educate the public on the issues involved and provide specific information on the proposed facility or operation, to help address health and environmental concerns.

### **Business Response**

Companies can save considerable time and money – and in some cases achieve a competitive edge – by anticipating the effects of these environmental issues rather than waiting for their full impact. Other articles in this issue of *Prism* suggest specific actions management can take to position their companies for environmentally sound performance. We suggest pursuing two basic policies:

- In manufacturing and other operational processes, take steps to minimize pollution, create efficiencies, and promote sustainable development.
- In product design, build in waste-minimization and resource-conservation mechanisms, including those for environmentally sound packaging, ease in recycling, and minimal disposal impact.

In addition, it will be important to track technical and regulatory progress on all these issues and to understand the „good“ science that underlies them. Management should work closely with lawmakers and regulators to

ensure that productive, not regressive, laws and regulations are passed and that appropriate benefits are achieved for the costs incurred. Cooperation between government and industry can yield excellent results, as evidenced by the planned phaseout of CFCs and the investment in new substitute technologies.

Finally, companies need to communicate with their employees, customers, neighbors, and shareholders about their environmental programs, goals, and progress thus far, explaining the real versus perceived risks. Failure to promote a company's genuine environmental stewardship will result in lost competitive edge – possibly quite soon. Moreover, a sound public reputation can be a major asset to a company when dealing with an environmental accident.

The challenge to corporations for the coming years will be to make a profit while demonstrating substantial commitment to protecting both human health and the environment. At the same time, companies that anticipate the continued pressure for better environmental performance and that consistently track emerging issues will gain a competitive edge. They will be aware of new technologies to minimize waste and of ways to improve their overall corporate performance through better attention to environmental, health, and safety issues.

*S. Noble Robinson, a director of Arthur D. Little's Environmental, Health, and Safety Consulting Practice, is manager of the company's Environmental and Risk Management Unit. A chemical engineer by training, Mr. Robinson has 35 years of experience in both operations and environmental management.*