Environmental Management Plans and Education: Is Homo Sapiens Destined for the Endangered Species List?

by Carey L. Huffman

There are many truly sad examples of what man has done, and is still doing to the animals and the natural environment around him. But what of the devastation man is bringing upon himself in his own environment?

After a fall storm in Ponca City, Oklahoma in 1986, Charles Holick's cellar became filled with oily, foul smelling water which officials later associated with the town's resident refinery. According to Holick, his family then began suffering from blinding headaches and difficult breathing. The state health department found air samples containing high levels of benzene, a known carcinogen, which prompted the city in 1988 to buy Holick's property well above market value.[1] Growing scientific evidence indicates that the air within buildings, even in the largest and most industrialized cities, can be seriously more polluted than the air outdoors. These indoor air pollutants include radon, asbestos, benzene, formaldehyde, perchloroethylene, paradichlorbenzene, and a broad array of airborne pathogens. Exposure to these air toxics is a serious environmental health problem, second only to smoking as a cause of lung cancer.[2]

We have developed from a nation of predominantly rural families into one where over eighty percent of the American population lives in a man-made urban environment. An environment that is continuously being polluted by every one of its inhabitants. An environment, "that leaves one-half of our population breathing unhealthy air."[3] An environment that destroys nearly 500,000 acres of wetlands annually. An environment where 70% of municipal landfills are expected to reach capacity in 15 years. An environment where approximately 400,000 underground storage tanks are leaking and contributing to ground-water contamination. An environment that produces enough toxic hazardous waste every year to fill the Superdome in New Orleans 1,500 times.[4] Will our own pollution add our species to the endangered species list?

The effect of pollution on wildlife and wilerness is a serious problem. However, we must come to realize as a society that the most damage being done by our pollution is to our children and ourselves in the cities in which we live. Most Americans will spend nearly all of their lives in an urban environment, never directly being effected by the destruction of natural wildernesses. It is the day-by-day exposure to the contaminants in our present civic communities that constitute the most dangerous aspect of environmental pollution. Urban pollution can cause migraine headaches, rashes, minor vision problems, asthma, lung disease, toxic poisoning, and cancer.[5] Nevertheless, there are solutions to these problems that can be implemented by our government, the business community and private citizens. This article will discuss some of the government's action in the field, and will then address the role which businesses and private citizens can play in the solution.

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Governmental Action

Our government has addressed this situation with legislation and regulations, including the Clean Air Act, the National Environmental Education Act, the Toxic Substances Control Act,

and the EPA's Toxic Release Inventory National Report. Our nation's business community, although sometimes slow to respond, has been prompted, either by legal reasons or concern for their public image, to begin to reduce their urban polluting, although much remains to be done. As for ourselves, the answer to reducing urban pollution rests in both modifying our personal conduct and in supporting and promoting environmental reforms.

In 1970, the year of the first Earth Day, both President Nixon and the United States Congress initiated the first substantial government involvement in preventing the destruction of our environment. President Nixon played an important role in the establishment and creation of the Environmental Protection Agency (EPA). In the past twenty years, the EPA has grown from 5,500 to 17,170 employees with an annual budget of $5,145,000,000. The EPA now administers 11 major federal environmental statutes and 9,000 regulations, resulting in civil and criminal penalties of $45,000,000 in 1989. In the same year, Congress passed the first National Environmental Education Act (NEEA). Although not proving as successful as the EPA, the NEEA, which operated out of the Department of Education, possessed great potential to include environmental issues in the classroom curriculum. Because of underfunding and the lack of implementation by the Department of Education, the NEEA was repealed in 1981 as a budget cutting measure. Eight years later, however, Senator Quentin Burdick (D-ND) and Representative George Miller (D-CA) reintroduced the idea of the NEEA, and during the 101st Congress, new environmental education legislation was passed.[6] Even thoughthe government can and does play a significant role in reducing urban pollution, both the business community and private citizens can have a much greater impact.

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In the early 90's, three major amendments were made to the Clean Air Act. These changes represent the government's continued interest in reviewing and regulating pollution controls for the nation's businesses. First, electric power plants must reduce the levels of sulfur dioxide (SO2) emissions by 10 million tons per year relative to their levels in 1980. Second, state-of-the-art emissions control equipment must be installed in the major producers of hazardous air pollutants (benzene, acrylonitrile, beryllium, and coke oven emissions). Third, several measures have been added to improve air quality in counties currently violating the national ambient air quality standards (NAAQS).[7] These reforms are to be implemented during this decade to deal directly with reducing the amount of pollutants which businesses may legally produce.

What have the businesses of America been doing to justify such far reaching regulations? According to a study done by the EPA, in 1989 more than 66 million people in America were exposed to levels of ozone (O3) which exceeded the NAAQS.[8] Another study by Krupnick and Portney found that during the same year, 33.6 million people were exposed to excessive levels of carbon monoxide (CO), 27.4 million to particulate matter, 8.5 million to nitrogen dioxide (NO2), and 100,000 to SO2.[9] In just these five categories, 135.6 million people suffered from urban pollution in one year. Many businesses, especially small firms, are finding that reducing their contribution to the above statistics by reducing their urban pollution, can reduce their legal liability, save them money and improve their public image.

Private Sector Action

For many companies the first step in reducing pollution is an environmental audit. An

audit can be performed by either a company's own environmental manager, or by an outside consultant. The audit consists of surveying the firm's physical plant, equipment, operating procedures, production processes and waste disposal methods. Any environmental violations, whether controlled by statutes or not, and suggested corrective measures are included in a report submitted to the company.[10] Environmentally conscious companies are realizing that it is far easier to prevent pollution than it is to clean it up and deal with the governmental fines and potential law suits. Three such companies are Diceon Electronics, United Piece Dye Works and the Robbins Co.

Diceon Electronics employs an environmental manager, Al Karg, to monitor the toxic chemicals used to clean the company's waste water. A second responsibility for Karg is to search for processes that are more cost-effective while utilizing less-toxic chemicals. Recently he discovered a process that reduces the firm's water-treatment costs by two-thirds while increasing the amount of recyclable metals present in the residue. The reduction in operating costs in addition to reduced waste-handling fees saves Diceon Electronics $98,000 a year.[11] Although not every environmentally positive modification will produce such extensive monetary savings, United Piece Dye Works found itself in need of revising its waste-handling procedures in order to comply with new, stricter statutory standards. North Carolina introduced rigid new limits on phosphorus emissions which were substantially lower than the amounts being discharged by United Piece Dye Works. Harold Lloyd, technical director of the plant, was aware of many complex and expensive ways to treat the factory's discharge to remove the phosphorus. He initiated an audit to find alternative solutions. The audit showed that the phosphate chemicals could be replaced in the production process with nonphosphate substances, thereby lowering the terminal production of phosphorus well within the new statutory standards at no major additional cost. "We found that eliminating the source of [pollution] is better than trying to doctor the problem."[12] The Robbins Co. also found that it was easier to prevent pollution than to clean it up. However, in their situation more was needed than simply substituting one chemical for another.[13] An excessive amount of heavy metals was being discharged in violation of the firm's federal permits. Company president Robert Chatel hired Paul Clark as environmental manager to find some way of bring the company's discharge within the new standards. Clark's answer was not merely to reduce the waste-water's metal content, but to reduce the waste-water. A "closed-loop" system for waste-water treatment was designed and built so that impurities are removed from the water which is then reused, never leaving the facility. This innovation reduces hazardous pollution by 89%, saved the Robbins Co. $479,000 in costs and helped the company avoid a $30 million citizens' law suit.[14] Diceon, United Piece Dye Works and the Robbins Co. not only successfully reduced urban pollution, but rediscovered the merit of the old proverb, "An ounce of prevention is worth a pound of cure."

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Every business can implement the lesson learned by Diceon, United Piece Dye Works and the Robbins Co. without waiting for a problem to arise or tougher new statutes to be enacted. Eric Hillenbrand, an environmental consultant, has developed the following program for managing business related environmental issues without unreasonably large expense. Here are his suggestions for a small business plan:

Environmental Management Plan

Basics

The environmental management plan should revolve around:

*Planned, systematic assessment of environmental requirements;
*A capital and operating plan for complying with current and future requirements;
*A translation of compliance demands into day-to-day management, operations, control and reporting;
*Training for staff with environmental accountability;
*Spotting potential liabilities in acquisitions or in waste disposal;
*Planning for emergency responses to problems;
*Regular environmental audits;
*Good external relations with regulators, your customers, and the community.

Implementation

The plan you have created will work best if the company can:
*Show that top management is sincere;
*Come up with specific environmental objectives for managers;
*Designate an environmental manager (even if it becomes a part-time duty of someone on staff);
*Look at operations and products to assess possible environmental problems;
*Draw a plan for minimizing environmental problems;
*Continually monitor the environmental plan itself.[15]

A company following this program greatly reduces its risk of environmental pollution while greatly increasing the quality of its public image.

The public however, can do more than just approve or disapprove of businesses' environmental fitness. "The measures required to address [the] remaining pollution problems will fall increasingly on individuals."[16] In order to prepare for this responsibility we must make ourselves aware of that personal conduct which most damages our environment. Perhaps the best way that this can be achieved is through developing an environmental education system which will not only educate our adults, but even more importantly, our children.

Environmental Education

"As any parent knows, it is more effective to teach an infant not to throw food than to clean the kitchen after each meal. Likewise, it is easier to increase environmental awareness than it is continually to clean up waste, pollution, and other damage to the environment."[17] Senator Burdick used these words to support his drive for renewed congressional interest in a second National Environmental Education Act. With the assistance of Representative Miller, legislation was passed in 1991 reopening the door of the American classroom to federally supported environmental education. An EPA Office of Education is to be established to work in conjunction with the Department of Education to develop and provide environmental-education training for teachers and to develop a model curriculum to be taught on a voluntary basis. The legislation also provides for small grants to schools for environmental projects, college environmental internships in federal agencies and national and regional excellence awards in environmental education (EE). Although Senator Burdick and Representative Miller are to be

commended for their part in the revival of federal participation in EE, the question that comes to mind is, did they ask for too little? This legislation operates on the voluntary participation of teachers to first attend the extra-curricular instructional seminars, and then go through the difficult and time consuming chore of incorporating the EE material into their subject's curriculum and their personal lesson plans. Was it wise to rely on purely voluntary means of executing the major facet of this EE legislation, the teaching of children?

UNESCO and UNEP organized a pilot EE program in April 1990 for the Andean Region (Bolivia, Peru, Columbia, Venezuela and Ecuador). Even though this region contains some of the most unspoiled environments in our world, the approach to EE taken here is one of mandatory adherence, not voluntary cooperation. In this pilot program, three main priorities have been established: first, the infusion of environmental themes into the current university curricula and a basic EE course requirement for graduation; second, environmental teaching for all teaching staff emphasizing EE goals, guidelines, methods, techniques and teaching aids; and third, access to the university for primary and secondary teachers, media and community leaders to increase their EE and awareness.[18]

Germany has assumed the position of making EE mandatory in its primary schools since the 70's. This is accomplished with an EE class consisting of biological, geographical and social science components, although there is movement toward modifying the class' structure. In addition to this separate class, "the average student will cover approximately six environmental themes per year...ecosystems in biology, air in chemistry, environmental problems in other countries in geography, global environment problems in religion, and energy in physics." As for Germany's University programs, they closely resemble that of the Andean Region pilot program.[19] It would seem that Germany has managed to fashion the best of the three approaches by addressing the entire spectrum of education from primary to university, and making EE mandatory in each phase.

UNESCO and UNEP have also begun to address the specific problem of urban pollution education through the International Environmental Education Program (IEEP).

"The overriding objective is to increase understanding of people's relationship to the city environment, natural and built, emphasizing how they affect it and are affected by it, and to use the whole city as an educational laboratory to facilitate interdisciplinary study and discussion concerning its component parts."[20]

Similar programs already exist in Brazil and Peru, and are being used by those governments to help alleviate the problems associated with overcrowding and urban pollution.

For more than two centuries, America has been a leader among nations, and although we remain in the forefront of creating environmental urban pollution, we have fallen behind in regard to pioneering the solutions. Yet as it has always been, our country is nothing but a collection of its individual citizens, representing both their desires and their needs. In order for our country to solve its problem of urban pollution, and environmental pollution in general, we must come together as a people and express both our desire and our need to have a solution to this grave and terrible threat be found and implemented. For if we do not, it is not too unreasonable to ask if our own pollution will add our species to the endangered species list?

NOTES

1. Kevin Kelly, Business Week, You Got Trouble Right Here in Ponca City, June 27, 1988, at 38.
2. EPA Journal, The Conventional Pollutants,, September/October 1990, at 19.
3. EPA Journal, An Interview with William K. Reilly, September/October 1990, at 4.
4. EPA Journal, Facts to Reflect On, September/October 1990, at 29.
5. Alan Krupnick and Paul Portney, Science, Controlling Urban Air Pollution: A Benefit-Cost Assessment, Vol. 252, at 522-28.
6. Senator Quentin Burdick, EPA Journal, Starting Fresh with Environmental Education, September/October 1990, at 32-33.

7. These three new standards apply to six common pollutants: carbon monoxide, ground-level ozone, lead, nitrogen dioxide, PM-10, and sulfur dioxide.
8. EPA, National Air Quality and Emissions Trends Report, 1989, (Government Printing Office).
9. Krupnick and Portney, supra note 5.
10. Bradford McKee, Nation's Business, The Best Defense Against Pollution, November 1991, at 53-56.
11. Id.
12. Id.
13. Id.
14. Id.
15. Eric Hillenbrand, COSE Update, Environmental Fitness in the Small Company, a publication of the Cleveland-based Council of Smaller Enterprises.
16. Krupnick and Portney, supra note 5.
17. Senator Burdick, supra note 6.
18. International Journal of Environmental Studies, News and Views: Environmental Education, Vol. 38, #2/3 1991.
19. Id.
20. International Journal of Environmental Studies, News and Views: Environmental Education, Vol. 35, #3/4 1990.