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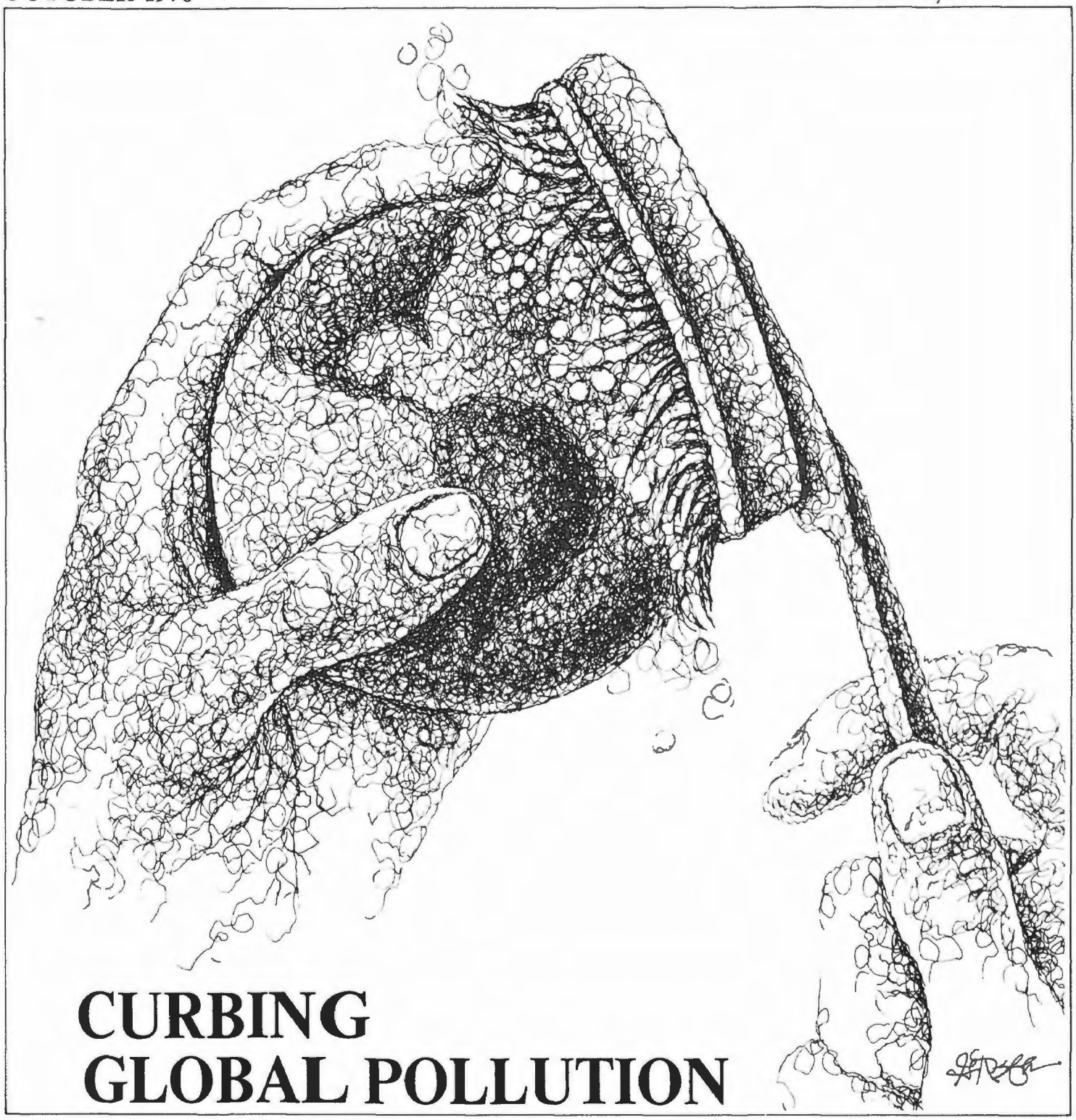

CURBING GLOBAL POLLUTION

U.S. ENVIRONMENTAL PROTECTION AGENCY

THE INTERNATIONAL ENVIRONMENTAL SCENE

In Tokyo $15,000 a year is being spent to breed and raise fireflies so they can be released on a summer evening to the "Ooohs" and "Aaahs" of young children.

The fireflies, long a fragile symbol of summer in Japan, have been decimated by the pollution which accompanied that island nation's modern agriculture and rapid economic growth.

These insects were once such a great attraction in Japan that tour companies ran special trains to view them. Fireflies were captured and then released inside the family's mosquito netting so that youngsters drifted off to sleep watching their own private stars twinkling just overhead.

Now, however, the New York Times reports, fireflies are never or rarely seen in Japanese cities. Two years ago one of Tokyo's ward governments began the special firefly program as a symbol of environmental improvement.

The firefly story helps to illustrate Japanese love of the beautiful, as well as the seriousness of the urban pollution problems in Japan.

An article in this issue of EPA Journal reports on some of the steps Japan is taking to curb the pollution associated with its extraordinary economic development.

Japan's experience is one facet of the global battle against pollution that is reviewed in the Journal.

The magazine includes articles by Administrator Russell E. Train and Fitzhugh Green, Associate Administrator for International Activities, on worldwide efforts to protect the environment.

Another article reports on a massive oil spill in the St. Lawrence Seaway which involved both Canada and the U.S. in the cleanup.

Other subjects in this issue include:

A report on why EPA agreed to allow a limited use of the pesticide DDT to help prevent spread of the bubonic plague in the West.

An article about a newly developed air pollution index designed to permit uniform reporting of pollution conditions to the general public.

An account of a successful effort to curb bottle and can trash in Yosemite, one of our most beautiful national parks.

Another in our continuing series of regional reports—this time from our office in San Francisco—Region IX on Parade.

A review of a new film jointly produced by Environment Canada and EPA on the effort to clean up the Great Lakes.

U.S.
ENVIRONMENTAL
PROTECTION
AGENCY
Russell E. Train, Administrator

Patricia L. Cahn, Director of Public Affairs

Charles D. Pierce, Editor

Staff: Van Trumbull, Ruth Hussey, David Cohen

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ARTICLES

DEPARTMENTS

SAFEGUARDING THE GLOBE

By Russell E. Train

From my vantage as head of the Environmental Protection Agency, I appreciate this opportunity to offer some thoughts with regard to foreign policy development in the years ahead.

The need for this discussion is critical, although the hour is very late. Mankind stands at the threshold of quantum jumps in world population totals and in the need for food, energy, and other resources, for housing, jobs, and technology, as well as for health and other services to meet even the barest minimum requirements for life of additional billions of human beings.

Enrique Penalosa, Secretary-General of the UN's Habitat Conference in Vancouver, says that by the end of this century we must build a new civilization on top of the present one, and of equal size.

I find little cause for optimism today about the ability of human society to meet these needs. There is precious little evidence beyond wishful thinking that even a minimum level of subsistence—let alone any decent quality of life—can be provided a world population that is expected to double by the year 2000. Already, over much of the world, political instability, social stress, economic breakdown, malnutrition, and disease are commonplace. I think we must expect these problems to become very much worse over the foreseeable future. A worldwide trend toward a cooler climate is being widely forecast by expert climatologists, apparently the result of both natural and man-made forces (including pollution), and such a trend would have drastic adverse impacts on the ability of the world to produce foods. Moreover, the sheer physical fact of the growing imbalance between human numbers and available resources is only part of the picture. Along with it, we must also accept the fact of rapidly rising expectations in all parts of our human society and in all parts of the world. Thus, just as we begin to face a future of growing scarcity, we are also learning to want more. Increasing stress and conflict are an inevitable concomitant of this situation. Finally, to complete this pessimistic assessment, we should be aware that the very magnitude and complexity of the institutions and technologies that we must develop to help deal with the problems makes them at the same time particularly vulnerable to disruption from those same forces of stress and conflict.

It is not a promising picture.

Whatever the prospects for the future, one central fact of crucial significance for U.S. policy emerges: Our nation will not remain immune to the stresses that afflict the rest of the world. Those stresses will not stop at our borders. We cannot maintain our well-being at home if the world abroad is in disarray. We are part of an increasingly interdependent and interrelated world. The problems of food and energy supply are obvious cases in point. There can be no thought of a retreat into isolationism. Even if it were possible, which it is not, isolationism in today's interdependent world is the road to disaster. The United States has an overriding self-interest in helping find acceptable solutions to the world's problems. Failure to find those solutions will exact an enormous price, not just from others, but in terms of the ultimate security and well-being of our own country. The need to recognize this plain truth comes at just the time that the American people are experiencing frustration and disillusion over their participation in world events. Yet never in history has the opportunity and the need for U.S. leadership in world affairs been more critical.

How to provide the necessities of life for billions of more human beings, how to provide an equitable allocation of the world's limited resources, and how to accomplish all of this while at the same time assuring the long-term health of the natural systems of the earth—the biosphere—upon which all human life and activity ultimately depend, these must be the overriding concerns of all international relations for the rest of this century.

The need to ensure the long-term protection of the global environment is the aspect of these interrelated problems which is of particular concern to EPA. We are already confronted both in the developed countries and in the less developed countries with progressive degradation of the environment—a trend which will, if permitted to continue unreversed, spell disaster for mankind.

We are all familiar with the pollution of air, water, and land that has become a major by-product of technologically advanced societies. The developed nations have recognized this problem and are taking major steps to deal with pollution, although the effectiveness of these national efforts varies considerably. The strong, domestic environmental programs of the United States have given it a position of world leadership in this regard, a leadership which is widely recognized abroad. I have viewed international environmental cooperation as representing an international extension, a global dimension, of our own domestic priorities. And it has been the reality of our domestic concern and the effectiveness of our efforts to address that concern (although we still have a long way to go) which have given our international environmental efforts both credibility and force. For this reason, the continued strong commitment of the United States to clean air and water and other environmental programs is of crucial significance to similar efforts around the world.

The fact is, of course, that environmental problems are not limited to economically advanced societies. The migration of rural populations to urban centers in less developed areas has created overwhelming problems all over the world. These growing human concentrations, living in many cases under appalling conditions of human degradation, are accompanied for the most part by few, if any, effective programs of waste management. Pollution of rivers, ground water, and coastal waters is common and worsening. Fishery resources suffer badly from such pollution

Excerpted from testimony by EPA Administrator Russell E. Train May 5, 1976, before the U.S. Senate Committee on Foreign Relations.

around the world. Perhaps even more important for the long-term future is the loss of soils and forests in many areas. Cut-and-burn cultivation in Latin America to open up new land for growing human numbers usually leads to only temporary utilization and then permanent loss of fertility. Laterization of soils eventually makes cultivation impossible in many tropical regions. As cultivation moves onto ever steeper slopes, under the pressures of human population growth, erosion and loss of soils is commonplace. For example, as the steep slopes of Nepal are progressively denuded for firewood, the soils erode, the rivers become choked with silt, flooding increases, and the land suffers a permanent loss of productivity and utility. Around the world, wildlife populations are decimated and the very continued existence of species threatened as habitats are altered or destroyed by human activity. All across Africa the Sahara marches relentlessly southward, a process sometimes called "desertification." While the causes of this tragic phenomenon are not fully understood, they probably include the effects of a changing climate and also the pressures of human settlement, including overgrazing. The concept of an international program as proposed by Secretary Kissinger recently at Dakar, Senegal, to seek long-term solutions to this problem of desertification in Africa provides a welcome initiative for dealing with this problem and the human tragedy which accompanies it. I congratulate the Secretary on his proposal. The concept represents the kind of imaginative leadership that the United States can and should provide in dealing with this and similar problems.

The evidence is plain all around us that human numbers and human activities are *already* seriously stressing the natural environment upon which our future depends. We can expect these stresses to become far worse as additional billions fight for survival. To the extent that increased industrialization is sought as a solution in the developing countries, we can expect a rapid increase in the pressures on our planetary raw materials, including energy supplies, and major increases in pollution. Modern agriculture is highly dependent upon massive infusions of energy (almost entirely derived from fossil fuels) to drive its machines and to produce its fertilizers and pesticides. Thus, world agriculture, no less than industry, faces a critical energy problem. Moreover, as the pressure for increased food production grows, as it inevitably will, we can expect at the same time serious long-term environmental consequences as marginal lands are brought into production.

We can take pride in the leadership that the United States has shown in all of these activities. It is a record which provides a bright chapter in international cooperation. Yet the fact remains that we have only scratched the surface. Enormous challenges still lie ahead.

While we have begun to address ocean pollution problems, we have made little or no comparable effort with respect to the global atmosphere. We continue to deal with air pollution as simply a national matter. However, we have recently come to realize in dealing with the potential problem of fluorocarbon destruction of the protective ozone belt that unilateral efforts at control would be relatively ineffectual and that an international effort would be required. Similarly, if we should find that particulate matter from fossil fuel combustion is contributing to global climatic changes with major implications for world food production, international agreements to regulate such pollution may be unavoidable.

Foreign policy development must include environmental considerations at every stage. I would recommend assignment of a few environmental attaches to U.S. embassies in areas where environmental problems have major importance. At present there are economic, agricultural, and military attaches, but not a single environmental attache.

We have learned here at home that it costs far more to depollute an industrialized country *after* it has become one than to install pollution controls in the beginning.

Our policy should be to encourage emerging nations to build their new industrial systems with environmental sanity as an integral part, and we should urge the World Bank, the United Nations Development Program, the Export/Import Bank and other multilateral lending agencies to provide assistance where necessary. Our own assistance programs should also reflect the spirit of the National Environmental Policy Act of 1970. Indeed, EPA has been working with AID in establishing NEPA-type guidelines for its overseas programs. I would also add that realistic economic development assistance by the United States would go a long way in helping develop effective partnerships for dealing with the kinds of critical world problems which I have described.

The period since World War II has been one of tremendous technological change. Whole new industries have grown up that did not even exist before the war: the aerospace industry, nuclear power plants, and computerized information systems are a few. With these developments have come a whole new generation of problems. Among the most difficult and, in my opinion, the most urgent of these is the need for effective international control over the development of nuclear power to avoid diversion of weapons-grade materials.

We need to develop new institutions capable of addressing the problems of a rapidly changing world. Most of our existing international institutions were developed in response to problems which arose out of World War II and its aftermath. Enormous change has come about since most of these institutions were created. Many new nations have come into being. There has been a tremendous growth of international trade, as well as of economic development. New scarcities of natural resources, such as energy, press upon all nations.

As the old structure appears increasingly incapable of addressing the problems and needs of the new order which is coming into being, it is imperative that we take a fresh look both at existing institutions and the need for new institutions.

As we develop new institutions, we must recognize and accept the fact that they must have decision-making authority. The international system is already filled with agencies whose activities are largely discursive and whose authorities are entirely advisory. We desperately need international institutions, particularly with regard to the oceans and the upper atmosphere, which can set standards and enforce them. This may seem a radical proposal, but I have reached the conclusion that the world community can no longer duck this issue. If international regulatory agencies are established, it is important that they not be constituted to set standards at the lowest common denominator of national achievement.

We need not only international regulatory mechanisms—and those should only be established with great care—but also institutions for global monitoring and assessment, institutions that can weigh apparent short-term gains against long-term costs. I might add that in this area the need is not only international but also domestic, insofar as the United States is concerned. The Office of Technology Assessment of the Congress represents a limited beginning. However, I continue to urge that our government as a whole develop and maintain a comprehensive, long-range planning and assessment capability. Such a capability would provide an essential resource for an effective foreign policy geared to a rapidly changing world.

I shall close by repeating what I said at the outset: Increasing international cooperation on safeguarding our life support systems is an urgent necessity. The alternative is to sit back and wait for global disaster to overtake us. ■

SPOTLIGHT ON JAPAN

Japan will take the unprecedented step of making a broad-scale presentation of its environmental program next month to a visiting group of high-ranking officials from some of the other leading industrial countries of the world.

Among those who will make this review are John R. Quarles, Jr., EPA Deputy Administrator.

The meeting Nov. 16-20 in Tokyo is being sponsored, at Japan's invitation, by the Environment Committee of the Organization for Economic Cooperation and Development (OECD) an international organization of 24 of the major industrialized nations, including the U.S., Canada, Japan, and several Western European nations.

Most of the OECD members are expected to be represented at the Japan review.

One of the reasons for selecting Japan for the review is that this leading industrial power is succeeding in finding unique answers to many of its serious pollution problems.

Both the Japanese and the countries represented at the review are expected to benefit from the analysis of information developed at the conference.

The extraordinary industrial development in the relatively small island-nation of Japan has been accompanied by severe pollution problems.

From smoggy Tokyo, venerated Mt. Fuji frequently is obscured from view. Fumes from rush hour traffic require traffic policemen to use a waiting oxygen tank periodically so they can continue their work.

An electronic sign in Tokyo's Ginza district gives air-pollution readings for sulfur dioxide and carbon monoxide in parts per million and also shows the noise level in decibels.

In recent years many industrial enterprises have been brought to court in Japan for causing damage by air and water pollution. The judicial decisions arising from four major trials had great impact in affirming the responsibility of industrial enterprises for pollution control and in asserting that, with the technology now available, there is no reason that the Japanese should have to suffer from pollution ills.

One of these trials involved the discharge of cadmium which caused what the Japanese call the Itai-itai (ouch-ouch) disease, two of the trials centered around the consumption of fish poisoned by industrial mercury, and the fourth involved respiratory illness caused by air pollution emissions. In all these cases, the plaintiffs were awarded compensation after the court ruled that the defendant companies were negligent in failing to recognize the harmful effects of their activities on human health.

Pollution Victims

The compensation system for pollution-related health damage is based on civil liability. As of January, 1976, about 30,000 persons were recognized as the victims of diseases related to air pollution.

As of December, 1975, about 1,500 patients were designated as victims of the Minamata mercury disease, Itai-itai cadmium disease, or chronic arsenic poisoning all stemming from the discharge of toxic substances into waterways.

These water pollution victims were compensated directly by the responsible industries under the OECD "polluter pays" principle.

The air pollution victims were paid from a fund, 80 percent of which is financed by a pollution levy borne by a total of about 7,000 factories and business establishments and 20 percent provided from automobile tonnage tax revenues.

The 1974 OECD recommendation on the "polluter pays" principle discourages financial assistance to industries by member governments for pollution control. Pollution control costs are to be borne by the polluters, with certain specific exceptions.

Hearings in the five-year trial of the "Kanemi Oil Case," one of Japan's worst instances of chemical pollution, were conducted recently, and a final judgment was expected shortly as EPA Journal went to press.

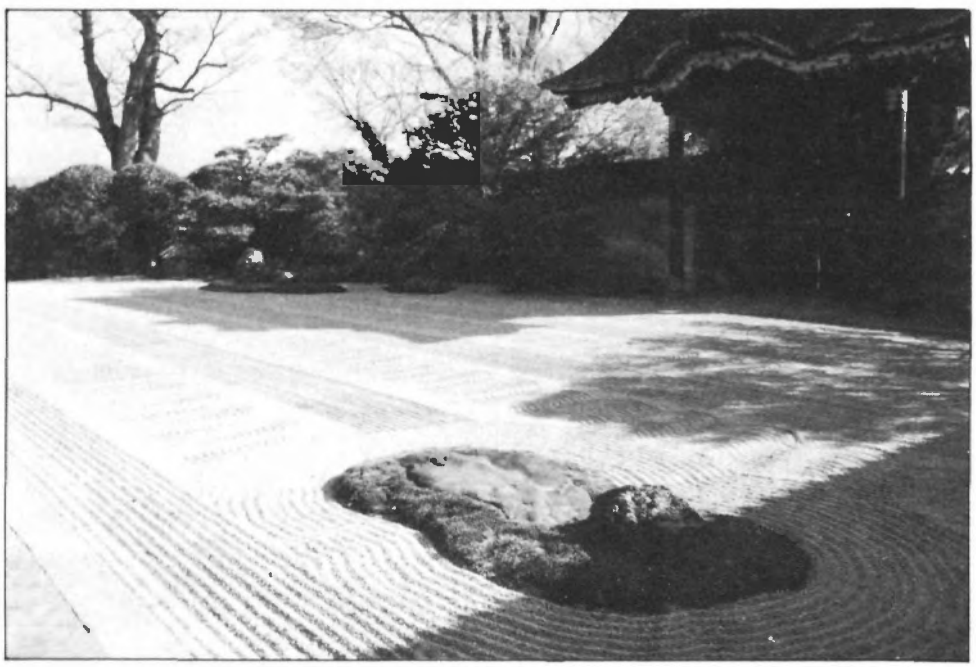
The case stemmed from charges that rice-bran oil containing polychlorinated biphenyl (PCB) has caused either injury or death to persons in the western section of Japan, beginning in the autumn of 1968. Symptoms of the disease ranged from skin eruptions to numbing of the limbs.

A group of 729 alleged victims and the families of those who died brought the case to a District Court in Kyushu five and a half years ago. They are seeking a total of $38.5 million in damages. The suit was filed against both the producers of the PCB and the bran oil and governmental units involved.

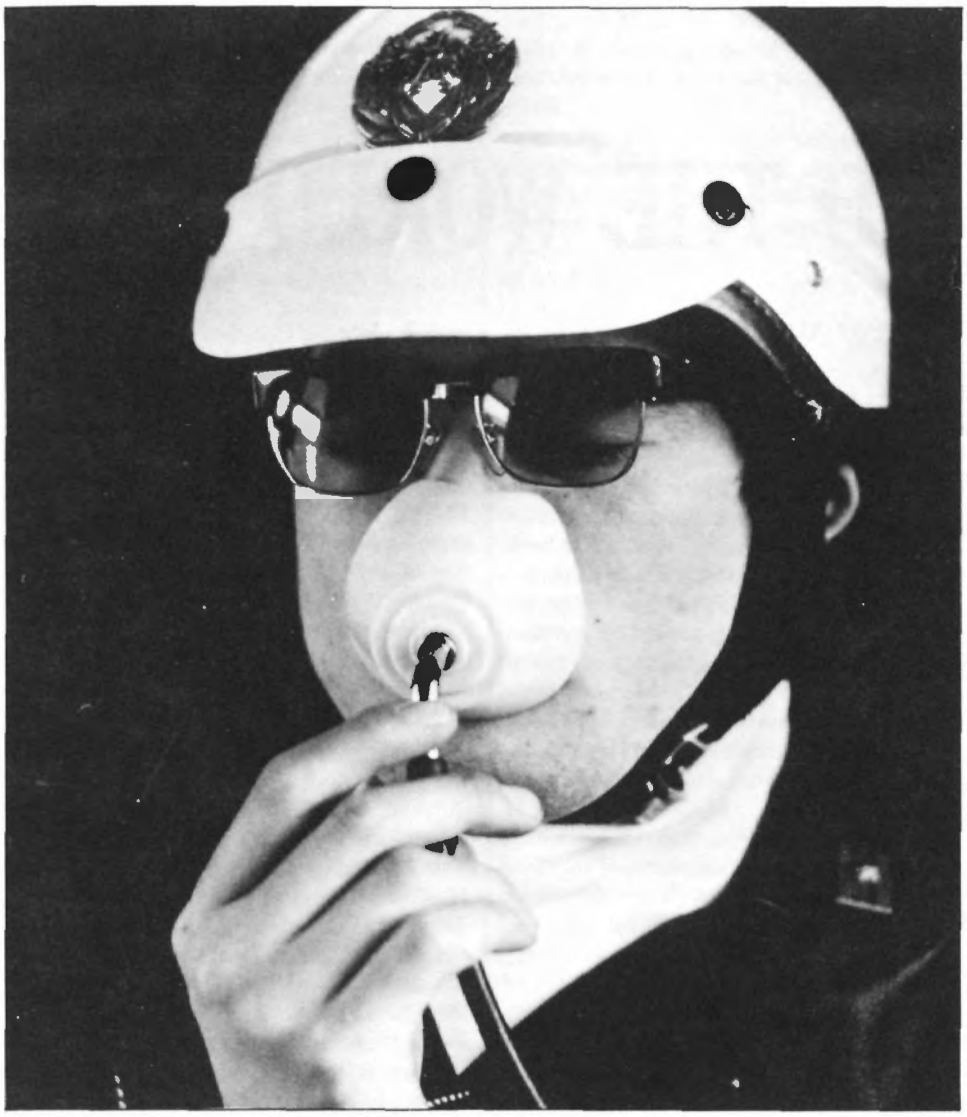
The ratio of pollution control investments in all industrial sectors in Japan is now estimated at about 10 percent of total capital investment, considerably higher than that in most other countries. The ratio of pollution control investments by large private companies in such fields as mining, manufacturing, and power generation was nearly 20 percent in 1975.

Japan is developing a vigorous attack on its pollution problems to protect the health of its people and the celebrated beauty of its parks and countryside.

The Japanese strategy for curbing pollution will be analyzed carefully at the OECD-sponsored meeting in Tokyo. This meeting is expected to produce materials which will be useful for the official review meeting of the OECD Environment Committee in March 1977.



The garden in this Zen Buddhist temple in Kyoto is an example of the "dry landscape" style in Japan. In this symbolic landscape the white sand symbolizes the sea and the trimmed trees at the corners represent mountains.



Tokyo policeman inhales oxygen from a nearby tank to help him direct traffic in the fumes from rush-hour traffic in the Japanese capital.

Electronic sign near the Ginza in Tokyo's entertainment district gives air-pollution readings from sulfur dioxide and carbon monoxide in parts per million. The bottom figure registers the sound level in decibels.

Four Areas

The November session will concentrate on four major areas:

Setting of pollution control standards, payment of compensation to pollution victims, location of industrial and other developments, and the economic costs and consequences of pollution.

In addition, a number of general questions will be considered at the Tokyo session such as:

What lessons should be drawn from the Japanese experience? Are there conflicts between environmental policies and industrial policies? If so, how are they solved? Are environmental controls enforced by a central governmental body or by local authorities? What is the attitude of industry toward pollution controls?

How, and by whom, are emissions standards set? What percentage of the gross national product in Japan is devoted to pollution control expenditures? Who bears the burden of pollution control in Japan? What has been the impact of pollution abatement policies on prices, on production, on employment, on balance of payments? How important is the anti-pollution industry that has developed in Japan? What role does land use planning play in Japan?

Japan and the United States have been working together for several years, trying to find solutions to global environmental problems. The U.S.-Japan Environmental Agreement was signed on Aug. 5, 1975.

Prior to the formal signing of the bilateral Agreement, three ministerial-level meetings were held to discuss environmental problems common to both countries. The topics of these meetings have grown to become the initial projects under the Agreement. Nine project areas have been identified and serve as the focus for cooperative activities. These nine projects are in the areas of:

Sewage treatment technology, management of bottom sediments containing toxic pollutants, air pollution-related meteorology, solid waste management, photochemical oxidants, automobile pollution control, health effects of pollutants, environmental impact assessments, and identification and control of toxic substances. Additional projects may be included at any time upon agreement of the two sides.

A Joint Planning and Coordination Committee was established under Article 2 of the Agreement to discuss major environmental policy issues, to coordinate and review activities and accomplishments and to make necessary recommendations to the two governments with regard to the implementation of this agreement. The first meeting of this Committee was held last February in Washington. ■

EPA AND THE WORLD

An interview with Fitzhugh Green, Associate Administrator for International Activities

Q: *How is the staff of your office organized? I think you have, for example, one division for multilateral affairs and one for bilateral. What is the distinction?*

A: EPA's activities with individual nations, which we call bilateral, range all the way from formal agreements with countries like Canada, the Soviet Union, Japan, and Germany, with whom we have many ongoing joint projects, down to informal arrangements with other nations. The Bilateral Programs Division is headed by John P. Blane, who is a Foreign Service Officer on loan from the State Department.

The Multilateral Division deals with international organizations like the UN and its specialized agencies, such as the United Nations Environment Program. This division is headed by Dr. Jack Thompson.

We work very closely with NATO countries, under what we call the Committee on Challenges of Modern Society. Administrator Train for many years has been the U.S. representative to that group. He also is the U.S. chairman of our exchange program with the Russians.

Other multilateral organization activities involve EPA experts working with the Organization for Economic Cooperation and Development (OECD) representing 24 industrialized nations. We also serve as a collaborating center on health effects of pollution for the World Health Organization (WHO), as well as providing many experts for specific jobs in other nations.

Our Visitors and Information Exchange Division, headed by Dolores Gregory, transfers EPA-produced information to our counterpart agencies throughout the world and collects foreign environmental reports for use by EPA staff. They also handle about 500 foreign visitors to EPA each year.

We also have a division, led by Dr. Don Oakley, which manages our work with countries where we have special foreign currency credits, such as Poland, Yugoslavia, Egypt, India, and Pakistan. We are now funding 55 projects with this money which results from U.S. loans and sales abroad.

The Oceans Division, headed by Bob McManus, coordinates the Agency's participation in international efforts to protect the global marine environment. For the past few years, a lot of our time in this area has been devoted to the Third UN Conference on the Law of the Sea, which is attempting to devise international legal obligations and jurisdictional principles applicable to virtually every source of marine pollution. The Oceans Division also coordinates EPA's ongoing efforts through IMCO—the UN agency which develops pollution control standards for international shipping—and the implementation of the 1972 Ocean Dumping Convention, which entered into force last summer.

Q: *What would you identify as the major global issues facing us now?*

A: Air and water pollution basically. Each has the potential of destroying the capacity of these two media for supporting life. There are a growing number of cities that are at times almost impossible to live in. Cities like Mexico City, Seoul, Tehran, and Tokyo have enormous pollution problems. Tokyo is getting better because the Japanese are working hard at it.

Q: *Are we collaborating with other industrialized nations to harmonize standards for pollution control?*

A: Yes. One guiding principle of the OECD is the harmonizing of standards. Other international organizations, such as WHO, recommend environmental quality criteria. Progress is slow except in the Common Market countries where a vigorous program is setting standards applicable in all nine countries. These have the force of law. We are working through ICAO (International Civil Aviation Organization) toward common standards for air and noise pollution from aircraft and through IAEA (International Atomic Energy Agency) for common controls on radioactive materials. We also participate in the Economic Commission for Europe and the International Standards Organization to reach agreed common measuring techniques.

The Canadians have a new law on toxic substances. We are watching the Canadians closely to see how they implement this new legislation.

The exchange of ideas works both ways. For example, the Japanese adopted, almost word for word, the automobile control section of our Clean Air Act.

Q: *Isn't "environmental protection" a rich nation's concept, one that can be afforded only by those nations that are not plagued by regular food deficits, catastrophic weather, lack of technical development, and population growths out of control?*

A: This kind of objection was raised in the early days and I remember speaking in Brasilia in the summer of 1971, when Brazil's spokesmen were saying, "we'll develop now and depollute later".

Brazil has now changed its policy to "We will develop, but in an environmentally sane fashion."

The best time to set environmental standards and to install pollution controls is when you are in the process of developing. It's cheaper to do it then, than to go back and try to correct mistakes after industrialization. In the U.S. it may cost us nearly $200 billion to implement our new environment laws for the first ten years.

Robert McNamara, President of the World Bank, said at Stockholm in 1972 that the World Bank provides loans for capital intensive projects only if they are going to be environmentally sound. The Bank, he added, had studied the difference between the cost of an environmentally sound project and one that is not and found the difference was negligible.

I talked to Mr. McNamara two years later and he told me that the data increasingly supports what he had said at Stockholm.

Another point is that pollution impacts the poor before the rich. The rich can build air conditioned houses and travel to clean suburban surroundings. The poor live in the middle of the cities where the rats feast on uncollected garbage or chew babies' feet. Air pollution is always worse in the middle of a big city than anywhere else. So are problems of sewage disposal and clean drinking water.

The fact that the Third World insisted on the UN Environment Program being headquar-

tered in a developing nation, Kenya, shows a couple of things:

First, of course, that poor nations hope that they are going to get development funds because they went along with the principles that were suggested in Stockholm.

Second, it suggests that the Third World is willing to accept the growing movement for a better environment.

Q: *Is there a degree of unity in the environmental concern among the industrialized nations?*

A: Yes, there is pretty good cooperation, although philosophies on the subject vary.

For example, the British sometimes remark that they invented industrialization and also the means for controlling its noxious emissions. There is something to this claim although we disagree with some of their practices, like using tall stacks. They use the tall stacks for their big industrial region in the Midlands with the idea that the prevailing breezes will carry the emissions over the North Sea, which is usually a turbulent, stormy area, and the pollution will be dispersed.

Acid rain in the Scandinavian countries raises the question whether tall stacks are effective.

Q: *I'm told that the Department of State and Treasury are pushing a new program to have the petroleum exporting countries buy U.S. goods and services, and that U.S. government experts are being retained as consultants by these countries. Can you tell me what part EPA personnel are playing in this program—where they are going, what they will be doing?*

A: The Foreign Assistance Act of 1961 authorizes U.S. agencies to be reimbursed by foreign governments for technical assistance.

Assistant Administrator Roger Strelow and Joel Horowitz, Office of Air and Waste Management, recently visited Iran at the invitation of its government to discuss air pollution caused by automobiles. The trip was funded by the U.S. Agency for International Development. Dr. Oakley of our office accompanied Mr. Strelow and visited several other countries in the Middle East to discuss reimbursable technical assistance. The Government of Kuwait has requested a short-term assignment of an EPA scientist to assist in developing an aquatic marine laboratory.

Q: *How do our people compare with people from other countries in technological competence and in general knowledgeability?*

A: With virtually no exceptions in the almost six years EPA has been operating in individual countries and with international organizations all over the world, our personnel have become popular and respected among their opposite numbers abroad. They are recognized for their knowledge and talent as environmental specialists, for their diplomatic touch in sharing U.S. know-how, and for arguing our point of view in international forums trying to hammer out policies and agreements.

Finally, I believe it is accurate to say that Administrator Train is the outstanding national and international leader in the opinion of the environmentalists of the world.

Q: *Do most nations now have government organizations like EPA?*

A: Yes. When we started EPA, the United States was the only country in the world that had a national environmental control organization. The British came along about the same time. Since then over 50 nations have followed suit.

To keep up with the Joneses internationally, you have to have an environment program. Most nations are joining the club, and we are working with many of them.

Since 1971 EPA has received over 500 foreign visitors each year, trying to find out how we conduct our environment programs. More have come from Japan than any other country, and they come from industry, universities, and government, at all levels.

Q: *I am told that two of the most urgent needs for both villages and large cities in the developing nations is for clean water and adequate but inexpensive sewage disposal systems. Are we exploiting our technology for clean water?*

A: After the UN Habitat Conference in Vancouver last June, we were asked to put together a task force to decide how the U.S. could contribute to the declaration adopted there. The hope is that by 1990 every country in the world can have clean drinking water. The interagency task force, set up at the request of the State Department and the Water Resources Council, is chaired by Vic Kimm, Deputy Assistant Administrator for Water Supply.

Q: *Why does EPA have an Office of International Activities?*

A: One reason is to be informed about the means being developed elsewhere for controlling pollution. Not only scientific and technical means, but also organizational, legislative, and political means.

Second, it is clear that pollution in one corner of the world can ultimately affect the rest of the globe. You can't ignore major pollution problems any more than you can ignore ink being poured in the bathtub. We see vivid examples of this in the oceans, where you have tankers from many nations pumping bilges and making messes at sea that spread all the way from Africa to South America as Thor Heyerdahl, the Norwegian explorer, reported after making his trip on a reed boat across the Atlantic.

This Government, largely through the efforts of EPA working with the State Department, is using technical exchange, personal contact and exchange of information of all kinds to persuade and work with and help other nations come to the same point of concern about the environment.

Q: *Jacques Cousteau, the noted oceanographer, says the ocean has deteriorated tremendously and that in the next 25 years, assuming nothing is done, it will die. Do you share his pessimism?*

A: Cousteau has a way of dramatizing his points of view and I don't think anybody has enough data to prove him right or wrong. His concern helps to get world attention focused on marine pollution.

We are taking part in the Law of the Sea Conference, as I mentioned earlier, and are participating on many fronts to make sure that everything possible is being done to keep the seas from dying.

I am talking about the inland seas, too. As you know, we have a multi-billion dollar cleanup effort going on in the Great Lakes, pursuant to an agreement we signed with Canada in 1972. Recently I accompanied Mr. Train and Mitchell Sharp of Canada on their public visit to some of the Lakes.

This dual appearance was made to indicate to the public of both countries how seriously the two nations are pursuing implementation of the Great Lakes agreement.

Q: *Is planetary management of the human and natural environment possible in the foreseeable future? Is the wisdom and technological expertise available and is there a consensus building towards the abrogation of national sovereignty in environmental areas?*

A: I think the answer is yes to the first question. I am not sure that abrogation of national sovereignty is moving ahead that fast. But I think the cooperative activity is a very good sign that we may be able to develop international mechanisms for controlling pollution, ultimately, that will be as good as the International Postal Union, or International Communications Union, for example.

Q: *In what area of environmental protection do you think international cooperation is likely to be most productive in the next five years?*

A: I think in air and water pollution problems. Particularly air pollution at a national level. Individual nations are going to be looking to us and to other developed nations to help them beat the problem in their own countries. This is obviously the first step toward agreement.

International agreement on what to do about toxic substances is the most important next step and it will be a lot easier to proceed after our own Toxic Substances Act is passed. ■

OIL SPILL ON THE ST. LAWRENCE SEAWAY

The cost of cleaning up an oil spill which occurred along the St. Lawrence Seaway last June has already exceeded $6.5 million. According to Kenneth Biglane, Director of EPA's Oil and Special Materials Control Division, that expenditure makes it the most expensive federally funded oil spill cleanup in U.S. history. Cleanup efforts, which will continue intermittently throughout this fall, have far surpassed the $5.8 million Federal dollars spent on cleaning up oil from flooded holding lagoons along Pennsylvania's Schuylkill River after Hurricane Agnes in 1972.

The St. Lawrence accident occurred on June 23, when an American oil barge containing over two million gallons of heavy #6 fuel oil scraped bottom on New York's Comfort Island shoal, rupturing three of its tanks and spilling over 300,000 gallons of oil. Due to an unusual combination of temperature, wind, and current conditions, the mass of oil flowed to mid-stream and drifted rapidly down-river rather than heading toward shore. By the second day the oil had covered over 30 miles of water and was still spreading.

On that day, the barge owner's insurance company announced that it would no longer assume liability for the damages pending an investigation to determine fault. Consequently, the Federal government was forced to assume full cleanup responsibility using a Revolving Fund set up by Congress to cover such oil spill emergency costs.

"Over 80 miles of river length have been directly affected by the spill. That amounts to several hundred miles of beaches and shoreline if you count all the inlets, coves, and waterfront variations," explained Paul Elliot, Chief of the Emergency Response Section of EPA's Region II Surveillance and Analysis Division.

The magnitude of the spill and the threat of possible damage to Canadian territory and waterways activated an emergency plan involving the Joint Regional Response Team from the U.S., the Canadian Coast Guard, and various environmental organizations from the Province of Ontario. This Joint U.S.-Canadian Response Team is one aspect of an agreement called the Joint International Contingency Plan providing for such cooperation in the event of a mutual emergency. The U.S. side of the Joint Team includes representatives from the U.S. Coast Guard, the EPA, the Department of Transportation, the Army Corps of Engineers, and the Council on Environmental Quality. This specially organized agency both coordinates and supervises the activities of professional contractors who perform the actual cleanup operations.

Because the spill occurred on a Great Lakes waterway, the U.S. Coast Guard took command of U.S. operations. In other circumstances EPA would assume complete control.

It was obvious from the start that the spill was of extraordinary proportions and that it would be impossible to save all beach areas and waterfronts from damage. Consequently, emergency teams in EPA's Region II were asked to determine which areas were the most valuable, which would be most seriously affected, and which were most accessible to the techniques, resources, and manpower available.

Marshlands

Highest priority was given to marshlands and high-use public areas. Secondary efforts focused on privately owned docks and waterfront areas. Remote rocky coastlines were left for later cleanup on a complaint basis.

EPA conducted two aerial photography missions shortly after the spill occurred. These photos were valuable in defining impacted areas and were also used to brief the Joint Response Team on the extent and movements of the spill.

More than 700 people have been involved in the cleanup in addition to 50 vessels, 14 vacuum trucks, and seven full-time surface skimmer machines. Damages to public beaches, private property, wetlands, and wildlife have been substantial.

EPA has proposed a study to assess the long-term environmental damage caused by oil contamination to both U.S. and Canadian territory. A report, prepared by a contractor under the supervision of a Joint U.S.-Canadian steering committee, would be used as an information source by government agencies or private organizations in both countries which are preparing urgently needed contingency plans for oil spill control.

Fortunately, since the oil spill did not beach itself immediately, emergency response teams had time to try to contain it. "We put out thousands of feet of boom (a floating fence to block the oil) across inlets, bays, and beach areas," Mr. Elliot said. "We employed skimmers 24 hours a day to remove oil from the surface of the water while our cleanup crews scoured the beaches and tried to save the damaged wetlands."

Beaches Closed

In the Alexandria Bay area of New York State, a majority of residents make their living solely from tourists and vacationers between the 4th of July and Labor Day. The spill closed many beaches, threatened others, and drove much of the tourist business elsewhere.

Oil from the spill penetrated over five feet into 16 and a half miles of wetlands along the St. Lawrence River. According to Region II analysts, these wetlands suffered extensive damage.

For centuries these wetlands have been teeming with wildlife and vegetation. Canadian geese, ducks, and blue heron abound on Ironside Island in the middle of the St. Lawrence, and the Wilson Hill area is a wildlife refuge. Marsh plants, vital to the ecological balance of these areas, were covered with heavy grade oil which adheres to anything it comes in contact with.

"Once the oil sticks to these plants there is no effective way to get it off. The only way to save the marsh vegetation is to cut the plants off near the water level. This is a very difficult and expensive operation because it must be done by hand from small boats. Even then we can't be sure the plants will survive, and we don't know the extent to which such drastic measures will affect the ecology of the marsh system," explained Mr. Elliot.

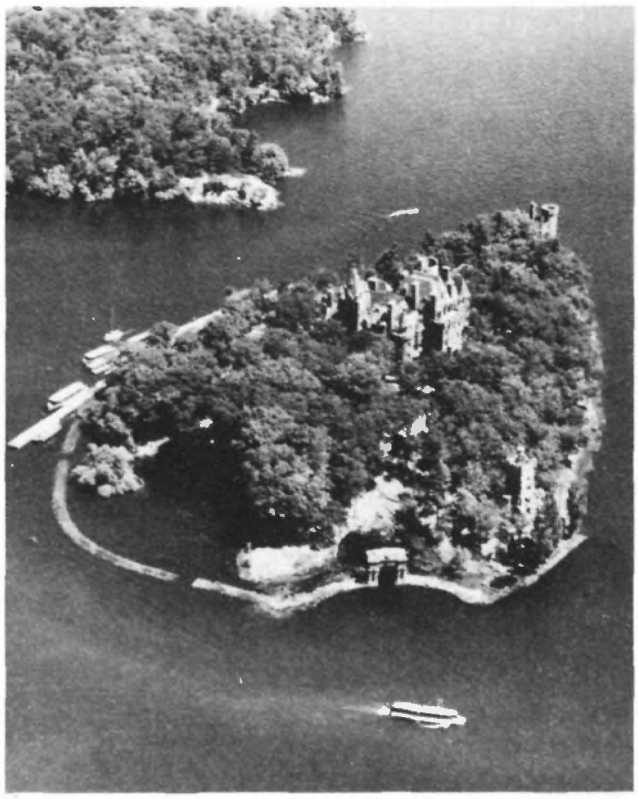
The spill came during the molting season when many birds were developing new feathers and could not fly. "Fortunately, the fact that they couldn't fly helped us to capture them so they could be cleaned. However, many have already died. Although we don't have any reliable figures as yet we have found many muskrats, ducks, turtles, snakes, and blue herons killed by the oil," Mr. Elliot said.

There have been scattered reports of recontamination caused by oil from the spill which became trapped under piers or in rocky areas and drifted back into the river.

As a result, manual cleanup efforts will continue through this fall until all damaged areas have been restored to an environmentally acceptable condition. ■

Oil from St. Lawrence Seaway spill smears water near dock in Alexandria Bay, N.Y.

The 1000 Islands Bridge over the St. Lawrence linking New York State and the Province of Ontario, Canada.



Aerial view of Boldt Castle on Heart Island in the St. Lawrence River.

NEW BEACH COATING METHODS

When an oil spill occurs, usually the foremost concern of environmentalists, local property owners, and tourists, is the threat of damage to shoreline areas. Recently, scientists have developed new methods which may not only protect waterfront areas from contamination but also may dramatically improve the effectiveness of oil spill cleanup while reducing the cost. A laboratory study of the problem, now approaching the point of field testing, is part of a one-year $130,000 contract funded by the EPA and the American Petroleum Institute.

Specifically, researchers have developed and tested several chemical compounds which appear to be capable of protecting beaches and wetland vegetation from becoming covered by oil. All involve treatment of the shoreline surface with chemical agents that block direct contact of oil with the area to be protected.

Among the most promising of these compounds is a glue-like chemical resin which, when sprayed on the beaches or marsh plants, forms a protective coating which repels the oil. Ideally, this film would not be harmful to plant life and could be rinsed off with low-pressure hoses after the danger period has passed. Other techniques to be tested include surface-active protective agents and microbial preparations which decompose oil.

"These products are still in the experimental stages and until we test them in actual field situations, it is impossible to gauge their effectiveness accurately," said Leo McCarthy, of EPA's Industrial Environmental Research Laboratory in Edison, N.J. "There are just too many restrictions in laboratory testing. The only way to be really certain is to treat an actual beach area with the products, spill some oil on the water a short distance off-shore and then observe how it works when all the natural variables of wind, tide, and temperature are in play."

EPA, in conjunction with the American Petroleum Institute, is seeking a permit from the State of California to perform such a test on a beach site in the San Francisco Bay area. Through these tests, scientists will determine shelf life of the products, toxicity, and the most appropriate circumstances for using each product. Other tests are scheduled for later this fall or next year on the east coast to determine the best application techniques, rates, and costs of use. "Also, we are on the lookout for 'spills of opportunity,' that is, real-world oil spills that will allow us to put these products into actual practice," said Mr. McCarthy. ■

BATTLING BUBONIC PLAGUE

". . . when you see the misery it brings, you'd need to be a madman, or a coward, or stone blind, to give in tamely to the plague."
—Albert Camus, *The Plague*

Last February, a young Navajo happened across a motionless cottontail rabbit near his home in Moenave, Arizona. The 15-year-old dismembered the small animal and fed the carcass to his pet dog. Three days later he suffered an onset of fever accompanied by pain under his left arm. Three days after that he was admitted to the Tuba City Indian Hospital. His fever had reached 104°F and the lymph glands in his armpits were badly swollen. Hours later he would begin to cough up blood.

Having determined that the boy had the dread bubonic plague, hospital personnel began streptomycin therapy within an hour after his admission. The youngster fully recovered.

But a 45-year-old man living just southeast of Bakersfield, California, was not as fortunate. On April 13, he had developed similar symptoms, but the illness was too far advanced by the time he requested treatment. He died on April 20. An investigation revealed the bodies of dead ground squirrels around the patient's home.

On May 11, a 63-year-old woman from Santo Domingo Pueblo, New Mexico, died after suffering similar symptoms. Again plague was suspected, and it was discovered that five days before the onset of the ailment she had skinned a rabbit and a pack rat. Numerous dead pack rats were found in the area where she lived.

Although none of these cases is related to another, they are among thirteen cases of plague already reported this year, according to the Plague Branch of the Center for Disease Control (CDC), Department of Health, Education, and Welfare.

The bubonic plague is primarily a disease of rodents and is transmitted by their fleas. After the host animal contracts the disease and dies, its fleas become hungry and search for a new source of food. Unfortunately, human beings are occasionally selected. The presence of infected rodent carcasses is important evidence showing that plague-carrying fleas are in the area.

To help stem the spread of this ancient disease, EPA has granted emergency requests for use of DDT to kill the fleas on wild rodents in some western areas.

Officials of the Center for Disease Control have said they are concerned about several unusual factors in the current outbreak of the plague.

First, the number of reported human plague cases per year has gradually been increasing. Plague seems to be a cyclical disease. For instance, in 1965 eight cases were reported. In the next four years, about four cases were reported each year. Then in 1970 there were 13 cases reported. In the next four years about seven cases were reported yearly. Last year 20 cases were discovered, the largest number recorded for one year since 1924.

It was expected that 1976 would begin the next five-year slack period, but so far the count of 13 cases (two fatal) constitutes four more cases than had been reported at this time in 1975.

The most common explanation given for the rise in plague cases over the years is that more people than ever before are involved in camping and outdoor activities; therefore the opportunity for carrier fleas to find human hosts has been enhanced.

A second reason for the current concern over plague is that more pneumonic cases are being reported. Invasion of the lungs by plague organisms may occur as a complication of the bubonic form or as a primary infection. When this happens, the plague germs can be transmitted through droplets in human breath. Of the 20 cases of plague which occurred last year, only three patients developed pneumonia. Of the 13 cases reported this year, five patients have developed pneumonia.

Also, more plague-infected dead rodent bodies have been found this year than ever before.

Dr. Allan Barnes, chief of the Center for Disease Control Plague Branch Laboratory, Ft. Collins, Colo., cited the case of a boy who caught the plague while visiting in New Mexico, to illustrate why the Center for Disease Control is so anxious to halt the spread of the plague.

Pumping DDT into a rodent hole

This boy, he related, became ill on Aug. 24, 1975. The parents took the youngster to a doctor in San Rafael, Calif., who gave the patient an antibiotic but was not suspicious of plague.

The antibiotic did not halt the advance of the plague and the boy grew progressively more ill. The parents then took their son to a local hospital which did not diagnose the disease. On the following day the boy's condition became critical and he was taken to a hospital in San Francisco where he died about two and a half hours after admission. When it was discovered after death that the patient had the extremely contagious pneumonic form of the plague, medical authorities began tracing all of the people in his family and the hospitals who might have had contact with him.

"A couple of hundred people were either given therapy or placed under close observation to prevent the spread of the disease," Dr. Barnes said. "So you can see what the problem is.

"The pneumonic form is unquestionably very dangerous and could lead to epidemics. A person could catch it in the Southwest and easily carry it anywhere in the United States."

The plague was first discovered in the United States in San Francisco in 1900. The disease then slowly advanced as far eastward as Kansas, Oklahoma and Texas. Thus far this year, one case has been reported in Colorado, two in California, four in Arizona, and six in New Mexico.

A great variety of animals have been known to serve as carriers for the plague. In America, the infection has been discovered in 38 species of wild rodents.

In untreated cases of plague the mortality rate can be as high as 90 percent. Modern antibiotics are effective against it, however, and with proper care, most plague victims do recover. The key to effective treatment is early diagnosis.

Because of both living conditions and life styles, the American Indian has been disproportionately hard hit by the plague strains which persist in the West. Of last year's 20 cases, five occurred among the Indian population; of this year's, at least five plague patients have been Indians.

Since fleas carry the disease, one ob-

vious solution is to go after the flea population in areas where the disease has been found. Carbaryl, a pesticide, has been the chemical used for a number of years for killing the fleas. Recently, however, attempts to use this pesticide have not always been effective, and because it is not a very persistent pesticide (it breaks down relatively quickly in the environment), more frequent applications are necessary, resulting in higher costs.

Therefore some States have considered DDT. EPA canceled most uses of this pesticide in 1972 due to its persistence, mobility, and buildup in the food chain. However, the DDT cancellation order noted the value of this pesticide in public health situations, and specified that it could be used when found to be necessary by the Public Health Service. In the absence of a registration of DDT, however, State or Federal agencies have to come to EPA to request an emergency exemption under the pesticides regulation law in order to be able to apply DDT legally. These requests are not taken lightly by the Agency, and a *bona fide* emergency must exist; in fact, EPA in the past four years has turned down most special requests for DDT.

But the plague is another matter.

On May 28, Don J. Womeldorf, Supervising Biologist of the Vector Control Section (VCS) of the California Department of Health, stated in a letter to EPA that "there is a strong probability that situations will arise in California during 1976 necessitating the use of DDT to control flea vectors of plague. . . . This letter constitutes a request for a specific exemption allowing the VCS to apply DDT. . ."

Similar views were expressed by others. On June 21, for example, Administrator Train received the following telegram from Governor Richard D. Lamm of Colorado:

"Unusually large and early incidence of plague-infected rodents are in the State . . . Center for Disease Control, Fort Collins, estimates this year will be a record year for plague in Colorado . . . (and) recommends limited DDT use in the high risk areas . . . in which rock squirrels are known to live in close proximity to the human population."

Thus, in the face of the evidence being collected by the Center for Disease Control regarding this year's potentially record plague outbreak, EPA authorized use of DDT, under strict conditions.

For instance, in the Colorado case, EPA approved Governor Lamm's full request for 400 pounds of DDT (4,000 pounds pesticide dust including ten percent DDT.) The treatment itself was restricted to high risk areas and applied directly into rodent burrows. The program was supervised by experts from the Center for Disease Control and Colorado's State Health Department. The State actually used only approximately 40 pounds of DDT, indicating the State's concern for the environment.

EPA has granted a similar request for use of DDT made by the Indian Health Service of Albuquerque, N.M. (Although approval has been granted to the Indian Health Service, the Service is apparently taking a cautious, wait-and-see approach, and as of Aug. 2 no DDT had yet been used there.)

Some persons have expressed concern that permitting use of DDT to control the plague could establish an alarming precedent in view of the dangers of this chemical.

Edwin L. Johnson, Deputy Assistant Administrator for EPA's Pesticide Programs, attempted to answer that concern in a letter of August 13, explaining the Agency's position: "As of June 28, 1976, eight cases of human . . . plague had occurred in the United States, which represents the greatest number of . . . plague cases to have occurred in a year by that date in United States plague history. . . . Moreover, survey data from CDC in Fort Collins, Colo., indicate that widespread but localized plague epizootics are presently sweeping through wild rodent populations in Arizona, California, Colorado, New Mexico, Nevada and Utah. . . . The final cancellation order for DDT specifically exempted uses by 'public health officials in disease control programs . . .' Our decision to issue this specific emergency exemption . . . is certainly in accord with the cancellation order and thus I cannot agree that an alarming precedent has been set for allowing the use of DDT in an indiscriminate fashion."

Since Mr. Johnson's citing of eight cases on June 28, five more cases as previously noted, have been confirmed. ■

PLAGUE OVER THE YEARS

The earliest reports of the bubonic plague are biblical, but other accounts of outbreaks in ancient times can be found. There were reports of the disease in Athens in 430 B.C. and also in third-century Rome. But the first well-documented plague episode did not occur until the reign of Byzantine Emperor Justinian I (527-565 A.D.) in Constantinople. Justinian's plague, as it is called, is also referred to as the First Pandemic (epidemic over a large region), and it was to be followed by two more widespread outbreaks.

The second great epidemic is thought to have begun among infected rodents in the hinterlands of Central Asia. It was spread to Constantinople, and by 1346 ocean-going vessels, as well as the returning Crusaders, had carried it to many seaports. Before the disease subsided, over one-fourth of the European population of the Middle Ages had succumbed.

Plague outbreaks still sprang up from time to time after that. One of the worst 17th century outbreaks occurred in London in 1665. About 70,000 deaths were reported out of a total population of 460,000. "The plague compasseth the walls of the city like a flood, and poureth in upon it," noted Daniel Defoe in his chronicle of the period.

The Third Pandemic began in China at the mouth of the Canton River in 1894, and quickly spread to Hong Kong and from there to many points on the rest of the globe, including the Pacific coasts of the Americas.

Today, when plague outbreaks are discovered, international regulations require that the World Health Organization and adjacent countries be notified by the involved government.

The illness is commonly marked by approximately 104°F fever, chills, severe prostration, vomiting, pains in limbs and of the back, and most notably by swollen lymph nodes in the groin or the underarms. The enlarged nodes are often called buboes, from the Greek *boubon* meaning groin (ergo, "bubonic" plague). The swellings can attain the size of an orange and may discharge pus. Plague can also cause hemorrhages, called plague spots when they occur on the skin. The dark color of these spots, as well as the high mortality rate for untreated plague, gained it the medieval title "Black Death."

The germ which causes the disease, *Yersinia pestis*, was independently discovered in 1894 by researchers Alexandre Yersin and Shibasaburo Kitasato during a large plague epidemic in Hong Kong. Three years later, Mesanori Ogata of the Hygiene Institute of Tokyo put forward the theory that the fleas of rodents transmit the illness. In 1898, Paul Louis Simond, a French epidemiologist, concluded that the plague was a disease of rats, spread by their fleas.

Since that time, pest control measures and antibiotic treatment have vastly diminished the incidences of human plague cases in the U.S. and the world. ■

UNTRASHING YOSEMITE PARK

A year ago a visitor to California's Yosemite National Park wouldn't have to look far or long to find an empty beer or soft drink can lying on the ground, under a bush, or floating down the Merced River. For years, litter, in the form of used beverage cans and bottles, has been defacing the scenic wilderness of many American parks and recreation areas like Yosemite. The cost of cleaning up this trash has been substantial.

Today however, "you would have to look awfully hard to find a used beverage container in all of Yosemite's 700,000 acres," according to Marion Thompson, an environmental protection specialist in the Resource Recovery Branch of EPA's Office of Solid Waste Management Programs. "Either the buyer is returning the used container himself or else there is somebody following behind him with a bag to pick it up when he throws it on the ground or into the garbage."

This dramatic reduction in the amount of cans and bottles cluttering Yosemite's landscape is a direct result of a program sponsored by the Park's concessioner (Yosemite Park and Curry Co.) and monitored by the EPA. The program, which began in May and continued through September, encouraged the reuse and recycling of beverage containers by adding a five cent refundable deposit charge to the price of all beer and soft drinks sold in the Park. This deposit can be refunded by returning the used containers to various collection points throughout the Park.

"So far, the public's response has been extremely favorable. After the first six weeks of operation, the rate of return has been consistently over 70 percent," according to Mrs. Thompson.

Last year, over one ton of aluminum in used beverage containers was collected at voluntary recycling centers in Yosemite Park. Since May 17, 1976, when this project began, the Yosemite Park collection centers have received over one ton of aluminum soft drink and beer cans each *week*.

The reason for EPA's interest in the Yosemite Park experiment is that the EPA is in the midst of promulgating regulations under the Solid Waste Disposal Act which would make it mandatory for all Federal facilities to require a deposit on all beverage containers sold on their premises. This would include all national parks, Federal buildings, and Department of Defense installations. Since these regulations are expected some time this fall, barring any legislative or executive action to the contrary, it is helpful to have a model reuse and recycling system available for other parks to study in setting up their own programs.

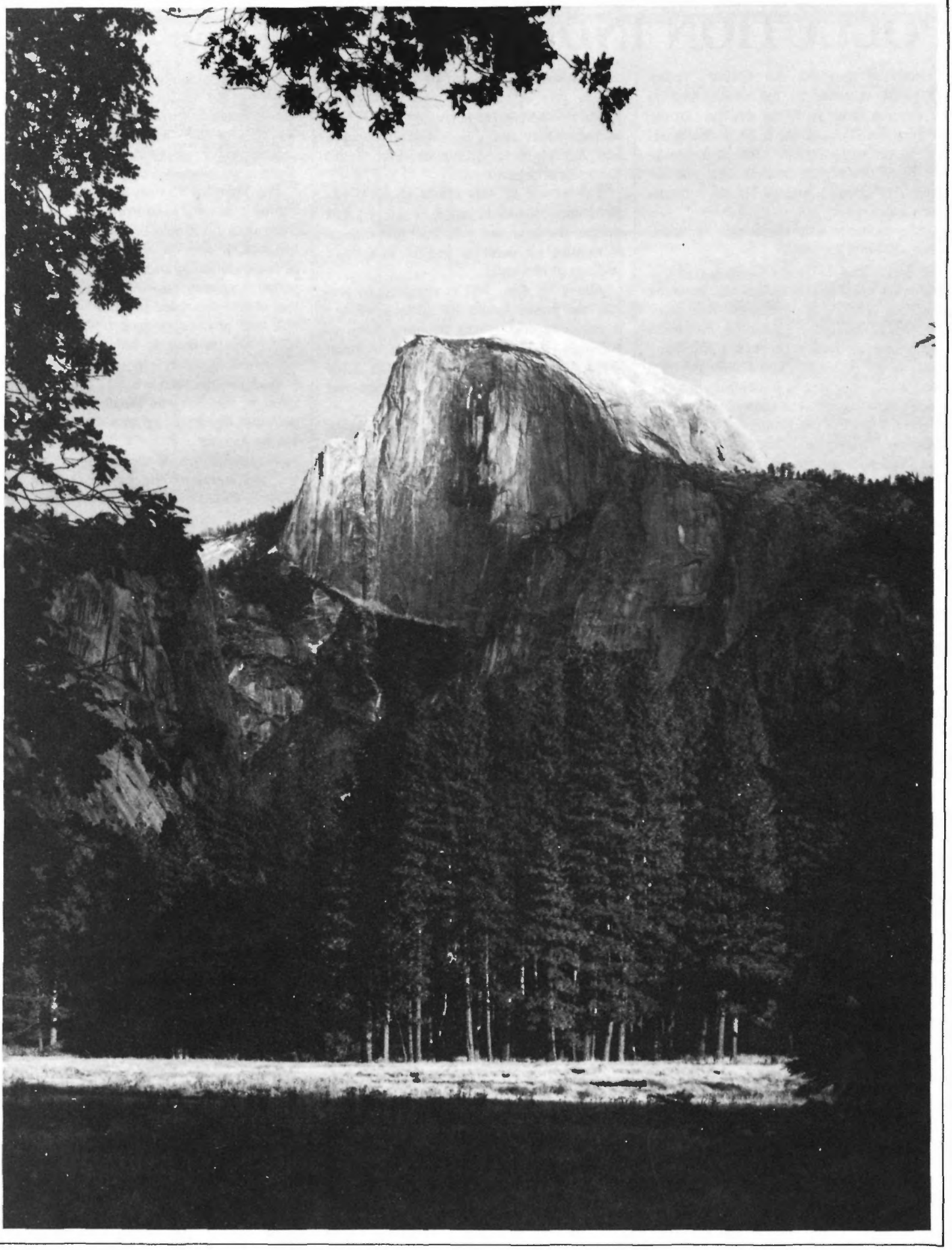
As a result, EPA's Region IX has been actively involved in monitoring the progress of the Yosemite Park experiment. A final report will be prepared at the end of the summer describing, in detail, the organization of the project, its goals, the problems encountered, and recommendations for future applications in other Federal parks.

"There is a considerable controversy surrounding these proposed deposit regulations for all Federal facilities," Mrs. Thompson said. "It centers around the beverage industry's concern that if such regulations are passed, they will represent an official administration policy favoring mandatory deposit laws nationwide. EPA has indicated that it supports such a program.

"Although it is estimated that the Federal government accounts for less than four percent of the total beverage container market (160 million out of four billion cases sold), there is no question that Federal approval of any deposit legislation would lend substantial support to the reuse and recycling cause in the States where some initiative in this area has already been taken," according to Mrs. Thompson.

Oregon and Vermont currently have laws on the books requiring the retailer to charge a deposit on all beer and soft drink containers sold. South Dakota has passed a similar measure which will go into effect in 1978. Furthermore, the deposit issue has been placed on the ballot in four other States (Minnesota, Michigan, Massachusetts, and Colorado) for the November election.

According to Mrs. Thompson, an effective reuse and recycling program "reduces the volume of solid wastes thereby cutting disposal and collection costs. It can save substantial amounts of energy and materials needed to manufacture the containers, and esthetically, it will unquestionably reduce the amount of visible litter cluttering our Nation's landscape."



POLLUTION INDEX

Suppose that the Air Quality Index (AQI) reported by the weatherman on the evening news is 50 for the day. In the Washington, D.C. area, a 50 is characterized by the word "poor." But in Indianapolis the same figure means that the air quality is "good." And in Toledo it means "very good."

Discrepancies like these are common. What accounts for them?

In December 1975, the Council on Environmental Quality (CEQ) and EPA jointly conducted a study of 33 metropolitan areas, five States and two Canadian Provinces which use an index to report the daily status of air pollution. The results revealed that, with only minor exception, no two indices were exactly the same.

The CEQ/EPA compendium, entitled *Air Pollution Indices,* underscored the need to minimize the serious problem of public confusion stemming from the lack of a standardized index. Responding to recommendations made in the joint report, a Federal Task Force chaired by CEQ asked that guidance be prepared by EPA. Assisting in this effort were the Offices of Research and Development; Air and Waste Management; and the National Oceanic and Atmospheric Administration of the Commerce Department.

The result of this effort is PSI—the Pollutants Standards Index (Page 15). PSI utilizes the best and most common aspects of existing air pollution indices to form a uniform model index.

Above all else, PSI is designed to protect the public health by advising of any possible adverse effects resulting from air pollution. Its emphasis, therefore, is upon acute health effects (those likely to occur as a result of exposure to air pollution over a time period of 24 hours or less.)

The new index reports on five pollutants: carbon monoxide, sulfur dioxide, total suspended particulates, photochemical oxidants, and nitrogen dioxide. The data used to establish PSI's five descriptive categories ("good" through "hazardous") for varying degrees of air pollution are the criteria documents used to set the National Ambient Air Quality Standards, the Federal Episode Criteria, and Significant Harm levels. The index can immediately accommodate any new pollutant for which such Federal guidance has been established.

PSI provides its own guidance by establishing rules for uniformity in collecting daily data on levels of air pollution. For instance, it stresses reporting on the basis of the monitoring stations with the highest pollution concentrations, on the assumption that other unsampled portions of a community will also experience high concentrations. This is done in order to err on the side of public safety.

Additionally, with weather forecasts provided by the National Weather Service, air pollution trends for up to a day in advance can be forecast.

The guidelines of the index advise that the media report the pollutant with the highest PSI value for that day, although values for all five pollutants can be included for completeness. It is desirable to report any pollutant for which the index value exceeds 100 since this means the standard is exceeded.

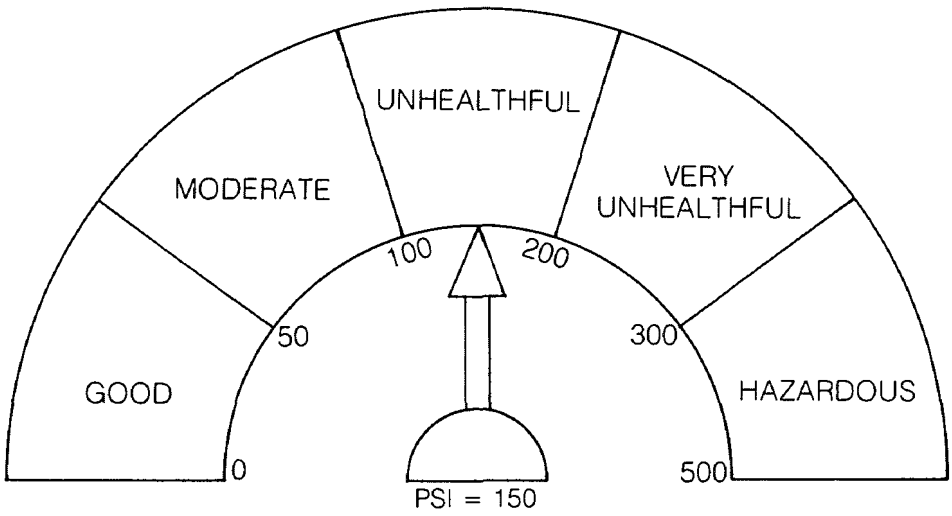
An average news broadcast might sound like this: "The PSI for today is 150, which falls into the 'unhealthful' category. The pollutant causing this condition is oxidants. Respiratory ailment and heart disease patients should reduce exertion and outdoor activity. The forecast calls for no change."

The PSI value, the descriptive term, the name of the pollutant, the health implications and the forecast are all standard parts of the PSI format. It is hoped that uniform reporting will alleviate the problems which led to the creation of PSI.

However, the index is, by the admission of its creators, not the perfect system. It should not be used to rank relative healthfulness of communities due to differing population characteristics, transportation patterns, locations of monitoring stations and other factors. Furthermore, it cannot relate levels of air pollution to the non-health effects, such as reduced visibility, soiling of materials, and corrosion of buildings. Additional research will be required before PSI can take into account health effects caused by synergism—the combination of different pollutants. The remedy to these shortcomings lies in the acquisition of more sophisticated data.

For these reasons, PSI is clearly an interim solution. But it is a beginning toward achieving consistent and reliable reporting of the daily health effects associated with the quality of the air we breathe. ■

EXAMPLE OF POSSIBLE REPORT FOR NEWSPAPER



POLLUTANT: Oxidants
TODAY'S HEALTH IMPLICATIONS: Respiratory ailment and heart disease patients should reduce exertion and outdoor activity.
FORECAST: No change.

HOW IT WORKS

I	II	III					IV	V	VI
		POLLUTANT LEVELS micrograms per cubic meter							
INDEX VALUE	AIR QUALITY LEVEL	Total suspended particulates (24-hour),	Sulfur Dioxide (24-hour),	Carbon Monoxide (8-hour), milligrams per cubic meter	Oxidants (1-hour),	Nitrogen dioxide (1-hour),	HEALTH EFFECT DESCRIPTOR	GENERAL HEALTH EFFECTS	CAUTIONARY STATEMENTS
500	SIGNIFICANT HARM	1000	2620	57.5	1200	3750	HAZARDOUS	Premature death of ill and elderly. Healthy people will experience adverse symptoms that affect their normal activity.	All persons should remain indoors, keeping windows and doors closed. All persons should minimize physical exertion and avoid traffic.
400	EMERGENCY	875	2100	46.0	1000	3000		Premature onset of certain diseases in addition to significant aggravation of symptoms and decreased exercise tolerance in healthy persons.	Elderly and persons with existing diseases should stay indoors and avoid physical exertion. General population should avoid outdoor activity.
300	WARNING	625	1600	34.0	800	2260	VERY UNHEALTHFUL	Significant aggravation of symptoms and decreased exercise tolerance in persons with heart or lung disease, with widespread symptoms in the healthy population.	Elderly and persons with existing heart or lung disease should stay indoors and reduce physical activity.
200	ALERT	375	800	17.0	400	1130	UNHEALTHFUL	Mild aggravation of symptoms in susceptible persons, with irritation symptoms in the healthy population.	Persons with existing heart or respiratory ailments should reduce physical exertion and outdoor activity.
100	National Ambient Air Quality Standards	260	365	10.0	160		MODERATE		
50	50% of National Ambient Air Quality Standards	75	80	5.0	80		GOOD		

The table demonstrates how PSI is organized.

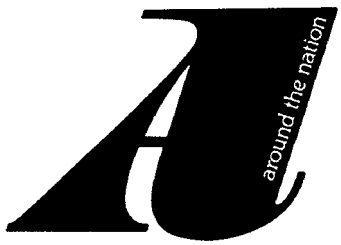
Column 1 gives the PSI values for the categories. The index runs from 0 (good) to 500 (hazardous). It is a scale which allows the level of any air pollutant to be reported by one rating system, rather than by using individual concentration figures. For example, the highest "hazardous" concentration for sulfur dioxide is 2620 micrograms per cubic meter and for photochemical oxidants the equivalent concentration would be 1200 micrograms per cubic meter. Both pollutants, however, have a PSI figure of 500 since they are regarded as being equally dangerous to health at those concentrations.

Column 2 gives the Federal health measures used as the rationale in establishing the five categories—the National Ambient Air Quality Standards, the Federal Episode Criteria (Alert, Warning and Emergency levels), and the Significant Harm Level.

Column 3 shows how varying concentrations of the five pollutants that PSI reports fall into the five categories.

Column 4 notes the descriptive terms applied to five categories of progressively worsening air pollution levels, "good" through "hazardous".

Column 5 reports the general health effects associated with each category, and Column 6 adds cautionary statements that inform the public as to the best way to respond to various air pollution levels.



nominations sought

Region I is seeking nominations for the annual Environmental Merit Awards to be presented at its New England Citizens' Briefing in December. The awards honor persons who have made significant contributions to environmental betterment. In the last four years the winners have included a New Hampshire sewage treatment plant operator, a Maine weekly newspaper writer, a Massachusetts educator, a Connecticut telephone company official, a Rhode Island environmental group leader, and a Vermont State official. Nominations close Oct. 29.

emissions conference

New England's fifth annual Conference on Motor Vehicle Emissions Control will be held Oct. 26-9 at Hyannis, Mass., with the Massachusetts Division of Air Quality Control as host. Although the conference will include some formal papers, most of the time will be devoted to informal, workshop sessions on such questions as making inspection and maintenance programs effective, improving auto engines, and critiquing Federal test procedures. Further information may be obtained from Merril S. Hohman, director of Region I's Air and Hazardous Materials Division.

soot violations

Formal violation notices have been issued to five glass manufacturing plants in New Jersey for excessive soot emissions. Meyer Scolnick, Regional Enforcement Director, said the companies have been given 30 days to clean up, after which EPA may issue administrative orders or take the violators to court.

The companies are Anchor Hocking Corp., Salem; Certain-Teed, Berlin; Kerr Glass Co., Millville; and Owens-Illinois plants at Bridgeton and Vineland.

antietam survey

No significant levels of polychlorinated biphenyls (PCB's) have been found in Antietam Creek near Hagerstown, Md. The creek and its sediments were intensively studied by Region III and Maryland officials after a recent Congressional hearing revealed that the U.S. Geological Survey had found the industrial chemicals in the creek in 1972. The problem no longer exists, said Regional Administrator Daniel J. Snyder III.

west virginia coal

Region III air pollution experts are working with West Virginia officials to evaluate the effect of possible changes in the State's plans for controlling sulfur oxide emissions.

Governor Arch A. Moore Jr. has alleged that the State's emission standards are so high that mining of West Virginia's high-sulfur coal has been curtailed, throwing miners out of work. The joint evaluation seeks to determine if more high-sulfur coal can be burned in certain power plants without harm to public health.

spill site tested

Soil contaminated by polychlorinated biphenyls (PCB's) spilled three years ago is still contaminated, a recent EPA study found. The rural area near Kingston, Tenn., was given a massive cleanup after 1,500 gallons of the oily liquid spilled from an electrical transformer. PCB's are similar to DDT in toxicity and resistance to biological decay.

The study found that PCB residue levels were unchanged since the cleanup and that a benzine solvent which also spilled was continuing to leach into the groundwater. There is no danger, however, according to George Moein, EPA project officer.

Nearly 12,000 drums of contaminated soil were removed and the excavated areas were sealed and refilled with clean soil. Then the whole spill area was covered with topsoil, seeded with grass, and landscaped.

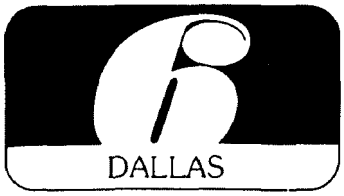
"The study will be helpful in determining the amounts of soil removal required in future spills," Mr. Moein said, "although each spill will have to be individually evaluated."

steel firm permit

Inland Steel Co.'s Indiana Harbor Works at East Chicago, Ind., has agreed to reduce the pollution it pours into Lake Michigan. Under a new discharge permit the company will reduce its maximum discharge of ammonia by 80 per cent, phenol by 50 percent, and cyanide by 90 percent. These three pollutants are the principal deterrents to improved water quality in Indiana Harbor, according to Region V officials.

The permit also restricts Inland's discharge of suspended solids, oil, and grease and requires the company to monitor its wastewater and report results. Enforcement Director James Mc Donald said the permit is a "significant step toward clean water in the southern area of Lake Michigan."

The permit was issued after many months of negotiation among the company, EPA, the State of Indiana, the City of Chicago, Businessmen for the Public Interest, and the Lake Michigan Federation.



spill inspections

Region VI officials are conducting approximately 650 inspections of oil spill prevention and control measures in the five States of the Region, including checks of Louisiana and Texas offshore facilities.
Specific written plans are required for all non-transportation facilities where there is the possibility of discharging harmful quantities of oil into waterways or on shorelines.
Since the regulations took effect a year ago, EPA officials estimate, about four million gallons of oil have been saved in the Region.

forestry meeting

Administrator Russell E. Train was scheduled to address the annual meeting of the Society of American Foresters in New Orleans Oct. 6. His topic: "Forestry for America's Future—Beyond the Bicentennial."

model feedlot

Lewis Feedlot, Inc., Kearney, Neb., recently won that State's J. L. Higgins Award for its work in controlling wastes.
Four years ago the firm, in cooperation with State and local agencies, built three waste control systems costing more than $150,000. Each system contains basins to collect solid wastes and holding ponds for the biological treatment of liquid wastes and runoff water. The solid wastes are applied to cropland as fertilizer, and the liquids are used for irrigation.
Dwayne Lewis, owner of the 12,000-head feedlot, says his crop production has improved and he has had to use less commercial fertilizer. The control systems have also reduced pollution of the Wood River, improved feedlot drainage, and decreased odor problems.
The Higgins Award is given annually in memory of the first director of the Nebraska Department of Environmental Control.

information officers

The second annual Conference of Federal and State Environmental Information Officers was held in Denver in August.
Governor Richard Lamm of Colorado opened the week-long session attended by public information officers from EPA, State pollution control agencies, and other organizations.
Workshop sessions were held for newcomers in the fields of radio and television presentations, public hearing techniques, exhibits and displays, publications, photojournalism, and opinion polls.
EPA regional, laboratory, and headquarters public affairs officers held their quarterly meeting concurrently.

information center

The Region's Energy Information Center, which contains a comprehensive collection of documents relating to energy problems, was inaugurated in August at the library in Region IX's offices. The Center is supported by the Energy Research and Development Administration and by the Federal Energy Administration as well as EPA.
The Center has more than 5,000 documents on microfilm and expects to add about 1,000 new titles each year. Hard copies of important documents are also available, including both Federal and privately-published reports and studies. All items are available to users throughout the Region via interlibrary loans.
The Center staff will, if necessary, direct inquirers to other sources of information, including ERDA's computer retrieval system, or refer questions to Federal specialists.
Pamphlets of general interest—on such subjects as home insulation, geothermal energy, and new car gas mileage—published by the three agencies, will be available free to the public.

saving the lentils

Lentil growers in 12 counties in eastern Washington and northern Idaho were given permission this summer to use ethyl parathion—a highly toxic pesticide—to control an aphid infestation.
Region X Administrator Donald P. Dubois said agriculture officials of both States sought the permission after the normal use of malathion had had little effect on the pests, either because the aphids were becoming resistant to malathion or because unseasonably cool weather reduced its efficacy. Strict limits were set on the amount of parathion used and the methods of application. The State officials estimated that without the stronger pesticide, $3 million worth of lentils would have been lost.

first aid session

To help migrant farm workers and other potential victims of pesticide poisoning get prompt and proper treatment, a two-day training program was held in Yakima, Wash., in August, sponsored by EPA and the Office of Migrant Health, a component of the Department of Health, Education, and Welfare.
The program was set up for persons most likely to be the first to see pesticide victims, that is: rural physicians and nurses, ambulance drivers, and emergency room attendants.
Such special training is needed, according to EPA officials, because pesticide poisoning symptoms are often similar to those of other illnesses. Correct diagnosis permits early treatment with the proper antidotes. Most pesticide poisonings can be cured if treated promptly.

PEOPLE

Delbert S. Barth, Director of the Environmental Monitoring and Support Laboratory, Las Vegas, Nev., has been appointed Deputy Assistant Administrator for Health and Ecological Effects in the Office of Research and Development, Washington, D.C. He succeeds **Roy E. Albert,** who has returned to the Institute of Environmental Medicine at New York University as Deputy Director, although he will continue as a consultant to Administrator Russell E. Train. Dr. Barth has headed the Las Vegas laboratory for four years. He previously served in Research Triangle Park, N.C., as Director of EPA's Bureau of Air Pollution Science and as head of the Bureau of Criteria and Standards for the National Air Pollution Control Administration. For six years, ending in 1969, he was Chief of Bioenvironmental Research at the Department of Health, Education, and Welfare's Southwestern Radiological Health Laboratory at Las Vegas.

Walter Andrews, former Chief of Region II's Surveillance Section at Edison, N.J., has been named Chief of the Region's Programs Support Branch at Rochester, N.Y. He received EPA's Bronze Medal for Commendable Service in 1972 and was selected for the Agency's Executive Management and Development Program in 1974.

George Lawton, a career employee, has been selected by **Stan Williams,** Director of EPA's Personnel Management Division, as the new deputy for the division. Mr. Lawton, who had been serving as the Personnel Officer in EPA's Region IX Office in San Francisco, has spent the last year at Stanford University under the Education for Public Management Program. Mr. Lawton, has been with EPA since it was first organized and previously had served with the Federal Water Pollution Control Administration in the U.S. Department of the Interior. Other new or recent appointments in the Personnel Division include:

Matthew Sims, appointed as Chief of the Personnel Operations Branch. Mr. Sims has been with EPA since 1970, coordinating the full range of personnel management services from position classification, recruitment and placement, to training and employee-management relations. He has 20 years of government service.
Laron Hyde Jr., Chief of Executive Manpower and Career Systems Branch. Mr. Hyde has been with the EPA since it was established,in 1970 serving in a variety of management positions. **Robert Pavlik,** Chief, Planning and Evaluation. Prior to this assignment he was an operation's team leader, Information Systems Staff Chief, and served as an employment and special programs officer.

John B. Clements, Chief of the Quality Assurance Branch of the Environmental Monitoring and Support Laboratory, Research Triangle Park, N.C., will be honored this month by the American Society for Testing and Materials. Dr. Clements will receive a gold medal from the Society for his work in developing standards for atmospheric measurements. The medal will be presented by ASTM President John S. Wheeler at a meeting in Houston, Texas, Oct. 19.

Harry F. Smith, Jr. has been appointed Chief of Region II's Water Supply Branch, replacing Everett MacLeman, who has retired. Mr. Smith, a commissioned officer in the Public Health Service, was formerly an engineer in the Branch. He is a civil engineering graduate of the University of Florida and earned a master's degree at Johns Hopkins University, Baltimore, Md.

George R. Alexander Jr., Region V Administrator, rides a bicycle to work in Chicago. Mr. Alexander, who lives on the Near North Side about two miles from his office, explains: "I bike to work every day I'm in town and it doesn't rain. It gives me a chance to get my exercise and it's a good way to get to work. It saves money and helps me to cut down on the pollution in downtown Chicago."

George B. Morgan has been appointed acting director of the Environmental Monitoring and Support Laboratory at Las Vegas, Nev., succeeding Dr. Barth. Mr. Morgan has directed the laboratory's Monitoring Systems Research and Development Division for the last three years.

Deputy Administrator **John R. Quarles, Jr.,** congratulates Michael Goins, son of **Margaret Boswell,** secretary to the Director of EPA's Personnel Management Division, upon receiving an award from the EPA Scholarship Fund. Mr. Goins, who was accompanied at the ceremony by his mother, is a senior at Towson State College majoring in health sciences. He is one of 26 children of EPA employees attending colleges across the Nation. They received a total of $5,070 from the scholarship fund in individual awards ranging from $100 to $500.
Money for the fund comes from honorariums given to EPA officials for making speeches to different groups and writing articles for various magazines.

REGION IX ON PARADE

Region IX includes Arizona, California, Hawaii, Nevada, Samoa and Guam, and the Trust Territories of the Pacific Islands. It encompasses over ten percent of the total land area, 18 percent of all federally owned land, 28 percent of all Indian-owned lands in the United States, and contains 11 percent of the Nation's population.

The deserts of Nevada, Arizona, and California stand in marked contrast to the High Sierra which can be buried under 30 feet of snow in winter. On many Pacific islands, one finds lush paradises watered by rain captured from trade winds by high mountains. Kauai, for example, boasts of the "wettest spot on earth" with over 400 inches of rain per year. On the other hand, lack of mountains creates critical water supply problems on some Pacific atolls. Many of the Region's environmental problems trace to population growth, urbanization, geography, and climate.

Region IX contains areas both at the cutting edge and in the wake of civilization. With some justification, we have been called the innovators.

The major theme underlying Region IX's environmental strategy is a continuing emphasis on delegating programs to State and local agencies.

The Region has developed cooperative pilot programs with its States in air, water, drinking water, solid wastes, and pesticides management. These include arrangements for planning, program development, program administration, and enforcement.

As an example, a cooperative pesticide-use enforcement program has been established in California through successful negotiations with 53 county governments and the State Department of Food and Agriculture. The agreement allows for prompt, on-the-spot enforcement action by County Agricultural Commissions, and was the result of 18 months of discussions with officials throughout the State by representatives of three of the Region's divisions—Air and Hazardous Materials, Surveillance and Analysis, and Enforcement.

We have delegated the wastewater discharge permit program to three of our four States—California, Hawaii, and Nevada. California was the Nation's first State to receive such delegation.

Also in California, we are well along in a program which provides for virtually full assumption of the responsibility for administration of the construction grants program by the State Water Resources Control Board.

Air quality maintenance planning has been delegated wherever possible and merged with areawide water quality planning and solid waste planning in an integrated attack on environmental problems.

In San Diego the air quality planning team, originally organized to develop local alternatives to an area transportation control plan, has completed a regional air quality strategy.

The San Francisco Bay Area had formulated a Policy Task Force, under the guidance of the State Air Resources Board, to perform Air Quality Maintenance planning functions. But, recognizing possible duplication of effort in some areas with the wastewater planning effort, the task force merged with the water group into an Environmental Management Task Force under the Association of Bay Area Governments. These 45 local decision makers and citizens are addressing problems of air, water, and solid waste as a whole.

Regional Administrator Paul De Falco, Jr., was looking to this kind of planning group when, in a recent speech to a water planning seminar, he said: "Over the past several years I have struggled to reconcile two statutory mandates. One, the Federal Water Pollution Control Act, requires upgrading municipal treatment of wastewater, while at the same time allowing adequate provision for growth. The other, the Clean Air Act, requires land use and transportation controls to reduce growth in auto emission to levels that attain and maintain health protective air quality standards.

"It has become clear to even the casual observer that in some of our metropolitan areas, such as Los Angeles or the Bay Area, the long-term solutions to the air quality problem must be solutions to the area's land use and mass transit problems. There are also areawide water quality problems, but they are beyond the reach of any present

Continued on page 20

Downtown San Francisco with San Francisco-Oakland Bay Bridge in background.

Continued from page 19

environmental agency. Thus, answers to environmental problems are areawide in character. And it is only through areawide balancing of all the forces at work shaping our urbanizing areas—both environmental *and* others—that we can arrive at sensible answers without imposition of Federal controls."

Cooperative effort is the key. But making the programs work sometimes requires something more.

When Congress passed the Safe Drinking Water Act in late 1974, few resources were provided. Mr. De Falco suggested, and the Agency adopted, an approach to implementation characterized by "building upon what's there." This approach involved establishing *minimum* requirements in the law, identifying deficiencies, and working to overcome those deficiencies in accordance with a mutually agreed upon set of priorities. As minimums are met, the program has been strengthened in accordance with State-negotiated priorities. The principle of this approach has worked well, and has been the basis of the Region's approach to implementation of all environmental law.

In general, the Region's water management strategy views water as a total resource. The assurance of quality of water at the consumer's tap and the protection of underground sources, the control and abatement of point and nonpoint sources of pollution, the reclamation and reuse of waste waters, and the multiple purpose development of water resources by Federal, State, and local agencies are all part of the larger perspective of total water management. Here, as elsewhere, the Region's program is establishment of genuine State-Federal partnerships. The States of Region IX have been brought into the process, and have expressed an earnest intent to assume primary enforcement responsibility under the Safe Drinking Water Act and to coordinate that program with State water pollution control activities.

Although the Federal Water Pollution Control Act Amendments of 1972 authorized a major expansion of the existing construction grants program, the effort continued to depend upon State agencies for much of the administrative effort. Staffing at the State level was generally not adequate to handle the major increase in responsibility and complexity. As a result, Region IX and the State of California cooperatively developed an approach involving charging a fee for each Federal contract processed by the State. For a fractional percentage of the program's cost, the State is able to maintain a qualified staff to manage the program.

To resolve delays in construction projects, Region IX developed a "piggy back" process whereby an environmental assessment report is written by a separate team at the same time that a project plan is being formulated. The technical plan and the environmental impact statement are both available simultaneously, and a decision can quickly be reached on funding. Approximately one year per project has been saved through this process, resulting in a savings to the government of about 15 percent of the project cost. Region IX's current budget authority for the program totals approximately one billion dollars. Other Regions have been briefed on this process, and indications are that similar savings can be achieved nationwide.

In the negotiation of grant awards, several years ago the Region adopted an approach based on performance of specific objectives, with funding tied to each objective. This is a major innovation, since national environmental laws intend that States bear principal responsibility for their implementation. The approach has been adopted by the Agency nationwide. Subsequently, Region IX adopted a joint Agency-State planning process, with a single State-Federal plan for each State, another approach now advocated by the Agency's program management staff.

As a result of EPA disapproval of portions of the Arizona, California, and Nevada implementation plans for air pollution control in 1972, Region IX has been implementing new source reviews since May, 1973. During the past year, both regional and national emphasis on this program has increased. To develop a workable program in the non-attainment areas, the Region developed a "trade-off policy" to effectively meet the growing competition between the environment and the economy. At the same time the Region has been working with California on a model regulation which would place new source review authority at the local level.

California is particularly involved in new source reviews because of expected air quality impacts from a variety of energy-related issues: Alaskan oil imports, development of the Elk Hills Naval Petroleum Reserve, mandatory natural gas curtailments and mandatory switches to fuel oil, outer continental shelf production development, and refinery and petro-chemical plant expansion. Most of our permit-to-construct requests have involved storage and refining facilities for petroleum products.

Region IX has received national recognition for water pollution control programs at Santee, Lake Tahoe, San Diego, and Los Angeles Harbor in California; the Colorado River; and for Pearl Harbor in Hawaii.

California has required emission controls on cars sold in the State since 1966. Since 1970, control requirements have been made increasingly stringent, and, despite an almost impossible situation, substantial reductions in carbon monoxide and smog have resulted. Over the last five years, the average daily maximum-hour carbon monoxide concentrations dropped 21 percent in the Los Angeles area, 13 percent in the San Francisco Bay Area, and 55 percent in the San Diego area. Oxidants have dropped in both Los Angeles and San Diego. Unfortunately, these reductions are not sufficient to achieve national ambient air quality stand-

Exposure to the winds and the sea have shaped this gnarled tree at Lobos State Park, Calif.

ards by 1977.

Enforcement action has led to commitments by the five sugar companies on the northeast coast of the island of Hawaii to cease discharges of trash and bagasse (cane material left after juice extraction) and to reduce suspended solids discharges from all mills. The first enforcement action to be taken under both the Clean Air Act and the Federal Water Pollution Control Act was taken against the Lapahoehoe sugar refining mill. Lapahoehoe was ordered to cease discharges into the water, and to bring its boiler for burning trash into compliance with air standards. The company complied early this year.

Region IX has eight copper smelters—half the Nation's copper production capacity. Arizona's seven smelters are the largest sources of sulfur dioxide pollution in that State. Many were built decades ago with no pollution controls.

Arizona has had varying regulations to control sulfur. In 1971 the State considered a requirement for 90 percent emissions reductions from smelters, but this was not implemented. Provisions for sulfur control submitted with the State Implementation Plan in 1972 were disapproved. EPA is now drawing up final regulations for Arizona copper smelters.

Despite this, one copper company—Inspiration—did not wait for final regulations to recognize that they had a pollution problem and to do something about it. In 1971 they decided to replace their aging fuel-fired reverberatory furnace with an electric furnace and new converters. This permitted Inspiration to take its process gases to a double contact sulfuric acid plant. Operation of the new smelter began in May, 1974. Emission reductions in excess of 90 percent have been achieved.

Nevada's Las Vegas/Clark County area has long suffered from high particulate concentrations. In addition to dust and unpaved roads, several large industrial sources have contributed to high ambient readings. The Clark County Air Pollution Control District began enforcement and abatement orders over five years ago. Through administrative procedures and industry cooperation major reductions in particulate emissions have been achieved.

In another area, action by the Region's Enforcement Division has resulted in installation of some $60 million worth of air pollution control equipment at Kaiser Steel's Fontana, Calif., plant.

In several areas it has been possible to implement programs to meet air quality standards without massive social and economic disruptions. Rapid growth complicates situations already made difficult by topography and population patterns. The problem has been to find socially acceptable means of controlling pollution caused by growth, technology, land use, and transportation patterns. The problems of cities having heavy concentrations of smog and carbon monoxide result from the dominance of the auto in life styles and existing transportation needs.

As in other Regions, we initiated transportation control plans that were curtailed at every corner by administrative and court decisions. Some believe that in the end the answer will be found on the auto assembly lines. Meanwhile, the Region remains on the cutting edge, dealing daily with threats to the public health involving traditions, habits, and ways of life that cannot be boiled down to regulations or simplistic "technical fix" solutions.

We are seeking dynamic local processes rather than deterministic solutions. We are using regulatory authority and administration of grant funds to involve locally elected officials and local citizens' groups in environmental decisions.

In the final analysis, decisions about the environment are decisions about lifestyle. The baton should pass from the technician to the elected official whose decisions are regularly reviewed by the public. ■

REGION IX'S LEADERSHIP TEAM

Paul DeFalco Jr.,
Regional Administrator

L. Russell Freeman,
Deputy
Regional Administrator

B. David Clark,
Director,
Management Division

Sheila Prindiville,
Director,
Water Division

Frank Covington,
Director, Air and Hazardous
Materials Division

Richard O'Connell,
Director,
Enforcement Division

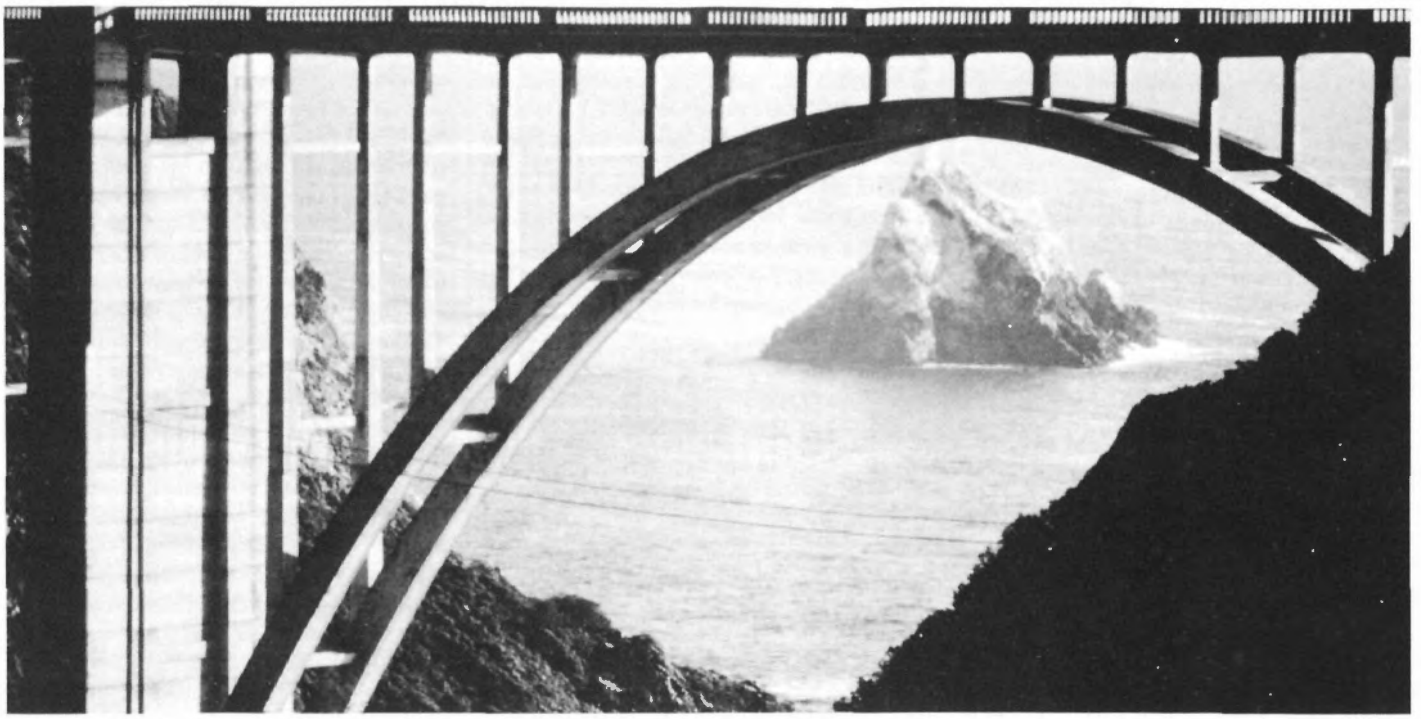
David L. Calkins,
Director,
Office of External
Relations

Clyde Eller,
Director,
Surveillance and
Analysis Division

David Andrews,
Regional Counsel

TOMORROW'S AND YESTERDAY'S PROBLEMS

By Louis Jefferson



Bridge at Rocky Point, Calif.

Region IX contains areas forced to face tomorrow's problems today, and areas where yesterday's problems are just now being recognized. Many of its inhabitants set styles for the Nation, and much of the world. Some of its inhabitants still live by tribal custom.

Los Angeles is having difficulties with a sludge outfall extending out into the sea, while American Samoa has a problem with outhouses extending out over the sea. We deal with governmental structures which vary from the most sophisticated institutions ever devised to tribal councils. Our maps show nearly empty islands and vast population centers.

California is like somebody's idea of America. Warm, tall, and lucky, it has plenty of orange juice and vaccines. Innocent, terrible, and beautiful, it is something that has never been before. Colors are sharper, and more sudden. Life's very texture is different.

Hawaii rises up out of a distant and lonely sea. Wooded mountains and white beaches in a universe of water. Paradise. Arizona and Nevada—dreams brought to life in a dry land.

Region IX is an area that people go to, rather than come from. It has 11 percent of the Nation's population. The rate of growth is double the national average. Over half of the people are concentrated in the metropolitan areas of San Diego, San Francisco, and Los Angeles.

Los Angeles! The Land of Oz brought to life, and the smog laboratory of the world, containing what someone has cynically described as "ten million little test tubes running up and down freeways that connect one desire with another." They are not test tubes, but they are in danger from more than the traffic.

Los Angeles—Inconceivable anywhere else! An uneasy merger of separate settlements. Eighty different municipalities sprawling, district by district, over a central plain and into smog-shrouded foothills. Freeways and streets forever probing and nibbling in canyons and passes and bursting out into the deserts beyond like some organic phenomenon. A land of the forties and fifties that finds the seventies somehow alien, and somehow frightening. Yet almost every new development of Western thought finds its place in Los Angeles.

Fly into Los Angeles on a summer morning. You will find yourself entering something resembling a great, yellow nuclear cloud, filled with carbon monoxide, hydrocarbons, nitrogen oxides, soot, pollen, and dust.

Ten million little test tubes, running up and down freeways . . .

I asked a San Franciscan what he thought about this description of Los Angeles. He looked at me somewhat contemptuously, and replied with another question: "What about Freud?"

Very San Francisco.

I told him that he hadn't answered the question, and he said that he didn't have time to "fool around with *that* question."

Very California.

Just this morning, a friend said of California: "I sometimes have the feeling that I got here *almost* too late."

That has been termed the "California feeling." It applies equally to much of the rest of Region IX.

In Hawaii, people are pouring into paradise, with pollution following close behind.

Louis Jefferson is a Region IX Public Affairs officer

This famous black sand beach in Hawaii, created by lava runoff, is threatened by land development.

Shock waves erupt in the tourist industry's inner sanctums with every toilet paper sighting off the beach at Waikiki, while the air takes on a yellow hue. Yet Hawaii is the crossroads of the Pacific, and perhaps no other place is as important as a window through which others of the world catch a glimpse of the United States.

Arizona, for years a magnet for those with respiratory diseases, is now losing population because of respiratory problems. The best that some of the citizens of Phoenix can say about their air is that, "Well, at least it's not as bad as Los Angeles," as they gaze at a sky that used to be a backdrop for breathtaking beauty, but now is just a place—a yellow place. Actually, the backdrop is still here—you just don't see much any more.

Even fabled Tahoe is now threatened by air as well as water pollution—ugliness brought into being by beauty. A hundred years ago Mark Twain wrote about Lake Tahoe, "So singularly clear was the water that where it was only twenty or thirty feet deep the bottom was so perfectly distinct that the boat seemed floating in the air!" The lake still looks good, thanks to one of the most advanced treatment systems in the world, and the hills around it are fine, but, down from the hills, and around the lake, the dealers deal in more than cards, as greed continues its work, and a limited environment becomes overloaded. In California, trees are always coming down, and "things" are always going up. Everywhere, attitudes differ, and people have strong opinions. Old traditions die hard, and new traditions grow fast, simultaneously.

One night in Tucson, after a long day in the hearing room, an "off-duty" reporter—*his* description—got into a well-lubricated monologue on the "Arizona attitude" which, he said, was not "sufficiently understood by whoever those people are in Washington.

"The thing is," he went on, "most Arizonians don't like to be messed with. It's not that they *like* pollution. But there's a lot of Wyatt Earp around here, and you guys are like the gunfighters come in from out of town to throw down the challenge. You know, you're not just threatenin' to test their authority—you're testin' their MANhood!"

When it was observed that all EPA was trying to do was to see that the law was carried out, the reporter came back with, "This is a land of individualists, and they think you're robbin' them of their heritage. Even people who've only been here a little while get to feelin' that way."

"What about the public health?" the reporter was asked.

"Well, they figure that if there's a mess, they didn't create it, so they shouldn't have to pay the price."

"Doesn't that sound too individualistic?"

"Yeah, I know. It's a problem, isn't it?"

In Hawaii, we find another attitude, or psychology—a psychology dictated in part by distance. A Honolulu broadcaster once described it as a "no-sweat psychology" and summed it up by saying of Federal representatives: "They always go home again, and home is always a long ways away."

Some observers have claimed that anger over their diminution by mountains and sea led Californians to deface their environment in envy and revenge. Little was sacred that could not be successfully attacked. After all, wasn't that what "progress" was all about? And wasn't "progress" what America was all about?

But the bill is coming due. ■

INQUIRY
What did you do abroad?

Kenneth Biglane, Director, Oil and Special Materials Control Division, Office of Water Programs Operations, Headquarters: "Last fall I was Chairman of a Technical Group, made up of specialists from EPA, the Coast Guard, and the U.S. Geological Survey, who went to the United Kingdom and Norway to look at offshore production and landside reception facilities for oil and gas. The purpose of the mission was to assess the techniques used there for the control and prevention of oil spills. We visited and inspected offshore platforms in both the United Kingdom and Norway.

"Both are very concerned about the hazards of oil spills and have active programs to control spills on the high seas and at the terminal facilities. They are copying the national contingency plan for oil spills that the U.S. developed in 1968. However, the British are depending upon the use of chemical dispersants as the first line of defense to combat spills on the high seas, while our emphasis is upon physical containment by booms and recovery of oil by skimmers. Norway is very worried about the use of chemicals, but has not precluded their use."

Dr. Walter Sanders, Associate Director for Water Quality, Environmental Research Laboratory, Athens, Georgia: "I am serving as EPA's Project Officer for 'Water Studies on the River Nile and Lake Nasser," a research program to assess the impact of the Aswan Dam on Egypt's water quality. The project began in January 1975 and is designed to cover five years; we are working in collaboration with the Academy of Scientific Research and Technology at Cairo and the University of Michigan. It is financed largely by counterpart funds in Egyptian pounds that can be used for staff, equipment, supplies, etc., available in Egypt, but with some hard currency from the Ford Foundation to pay for travel and equipment in this country.

"The Nile's water is so central to Egyptian life—the economy, agriculture and irrigation, fish harvesting, and public health—that whatever affects the river affects the nation as well . . . To date there has been considerable speculation about the consequences, good and bad, of building the Aswan Dam but little hard scientific data."

Dr. Andrew Breidenbach, Assistant Administrator for Water and Hazardous Materials, Headquarters: "I've had a close and continuing relationship with a Polish city, Katowice. I've made six trips there, beginning with an international conference on environmental information in 1973, sponsored by the Polish Government, and I returned from my latest visit in May 1976. Most of my work has been with the Katowice Project which is implemented at the Environmental Pollution Abatement Center there.

"This Project is supported by the Polish Government and the World Health Organization (WHO). WHO invited me to head up a four-man international advisory panel to visit the Katowice Project at regular intervals to review progress and make recommendations for mid-course corrections.

"In Katowice the intent is to do an integrated study of a metropolitan area that has broad environmental problems."

George Ray, Staff Engineer, Office of Energy, Minerals and Industry, Research and Development Headquarters: "I spent 13 days in Russia in mid-June studying their methods for particulate abatement for air pollution from stationary sources. The focus of my study was the cement industry. I visited Moscow, Volgograd, and Novgorod, and then went to the Black Sea region, which is a major raw material processing center and contains the Soviets' largest cement making complex. This was a reciprocal, exploratory visit, since Russians from the Ministries of Building Materials and the Chemical and Petroleum Industries visited this country last March.

"I went through factories and research institutes, and I don't think Russian technologies for abatement are as advanced as ours. They rely primarily on electrostatic precipitators and baghouse filters. Their problems are greater than ours, because their cement plants are larger and it is a rapidly growing industry. They will need tighter standards to meet ambient air standards equivalent to ours."

Dr. Richard Swartz, Supervisory Research Oceanographer, Newport Field Station for Marine and Freshwater Ecology, Environmental Research Laboratory, Corvallis, Oregon: "In April I visited the Strait of Magellan, off the south coast of Chile, with other scientists from EPA and the University of Concepcion and the Institute of Patagonia of Chile, on the National Science Foundation's ship 'Hero.' Purpose of the cruise was to investigate the effects of the massive oil spill that resulted when the supertanker 'Metula' ran aground on the Satellite Patch Shoal, in the Strait in August 1974.

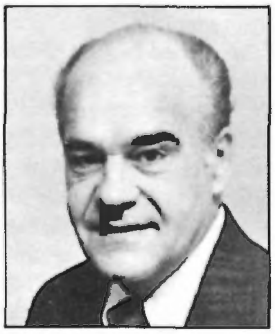
"Biological and sediment samples were collected by the ship and specimen analyses are going on at our laboratories and at the University of Concepcion.

"The Metula incident provides an unique opportunity to study the effects of a major oil spill on cold water marine life. Findings or conclusions that may be derived from analyses of contamination in the Strait of Magellan could be useful in projecting what might face us if there were oil spills in the waters off Alaska."

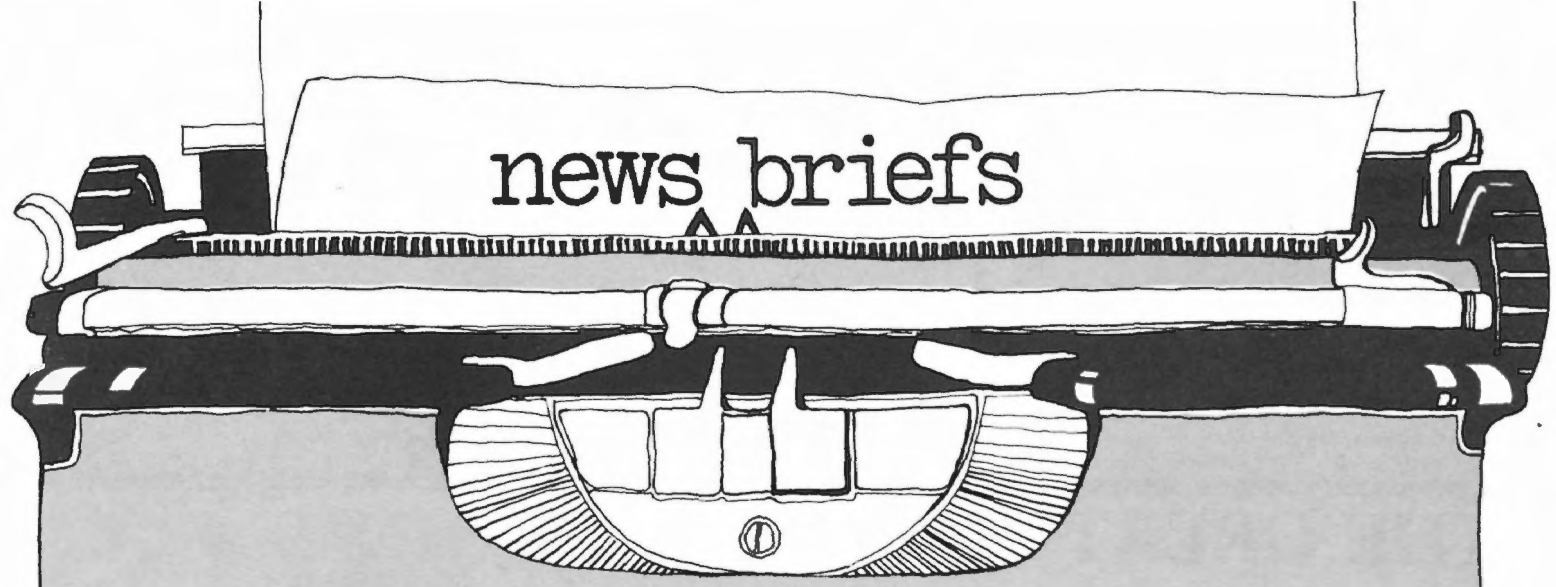

Kenneth Biglane


Dr. Walter Sanders


Dr. Andrew Breidenbach


George Ray


Dr. Richard Swartz



$4-MILLION OZONE-CANCER STUDY LAUNCHED

A major interagency study has been started to determine if fluorocarbon chemicals used in spray cans and refrigerator equipment are reducing the high-altitude ozone shield that protects the earth from most of the sun's ultraviolet rays. This $4-million study was initiated and will be managed by EPA. It will attempt to obtain better information on the impact of increased ultraviolet radiation in causing human skin cancer.

RETURNABLE CANS, BOTTLES SOUGHT AT FEDERAL FACILITIES

Guidelines for requiring five-cent deposits on all bottles and cans of soft drinks or beer sold at Federal facilities have been issued by EPA. They will take effect by September 1977. The rules would apply to military installations, government buildings, National Parks and recreation areas. The refundable deposits will give consumers an incentive to return containers for reuse or recycling, reducing waste and litter and saving energy and materials. The guidelines are required by the Solid Waste Disposal Act and are similar to State laws in Oregon and Vermont.

PCB'S FOUND IN MOTHERS' MILK IN 10 STATES

Detectable levels of polychlorinated biphenyls (PCB's) -- industrial compounds -- have been found in milk from nursing mothers in 10 States. The EPA-funded study by Colorado State University found PCB's in 65 out of 67 samples, the first of about 1,000 samples to be analyzed. The average level was 1.7 parts per million in the milk fat.

OIL FIRM PAYS $100,000 POLLUTION PENALTY

A fine of $100,000 has been paid by the Exxon Corporation for discharging some 500,000 gallons of polluted wastewater from drilling operations off Alaska's north coast in the summer of 1975. The penalty is part of a consent order entered in the U.S. District Court for Alaska. In the consent order the company also agreed to keep EPA fully informed of its operations and pollution control measures in the area for the next five years.

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'THE GREAT CLEANUP'

EPA and its northern counterpart, Environment Canada, in cooperation with the National Film Board of Canada have produced a new film about a commonly cherished possession, the Great Lakes. "The Great Clean-Up," as it is entitled, is scheduled for release in the United States by the end of the year.

Ontario, Erie, Huron, Michigan, and Superior constitute the largest collective body of fresh water in the world and one of the hardest hit by severe pollution. Formed 15 to 20 thousand years ago as the last ice age retreated, the area around the 300,000 square-mile lake chain contains one third of Canada's population and one seventh of America's.

Commercial activities in the Canadian portion of the Great Lakes watershed contribute 50 percent of that Nation's gross national product. Approximately 20 percent of the gross national product in the United States comes from its Great Lakes region.

The growth of the industrial activities which greatly strained the ecological balance of these waters is not likely to diminish. By the year 2000, about 45 million people are expected to reside in the basin and engage in enterprises which will produce $300 billion worth of goods and services. However, this activity, if conducted without regard for the environment, could finally destroy many uses of the lakes.

The 54-minute color film carefully examines the major damages to and damagers of the Great Lakes: The oil spills; fertilizer runoff and the resulting algal blooms; the activities of Reserve Mining, U.S. Steel, the pulp and paper industries and the nickel mining operations; the double crisis of 1970 when mercury was discovered in fish, and layers of lifeless water were found near the bottom of Lake Erie; thermal pollution from nuclear reactors; the Cuyahoga River, which filled up with so much greasy waste it actually caught fire; disposal of improperly treated wastewater and sewage; the beleaguered but beautiful Indiana Dunes; and build-ups of silt deposits which destroy once-rich farmlands.

"To early European explorers," the film's narrator states, "these waters seemed endless—an endless path into the heart of a continent, an endless supply of food. It would never have occurred to them that these living waters . . . could one day become sick.

"(Is) it too late or . . . even possible to restore the lower lakes to health? This remained a profound concern of both Canada and the United States.

"But it was people themselves who were creating a climate of public opinion that would force political action. . . . On April 15 (1972) in Ottawa the President of the United States and the Canadian Prime Minister signed an epoch-making agreement to clean up the Great Lakes."

As depicted by the film, the Canadian-American pact resulted in an unprecedented, multimillion-dollar cleanup effort. Vast amounts of funds were allocated for the construction of sewage treatment plants in the eight Great Lake States. Permit discharge systems were developed and are being enforced to control what substances can or cannot be dumped into the lakes. Federally-funded research is being conducted by the Canada Centre for Inland Waters, EPA Region V laboratories, and countless numbers of college students. At the University of Guelph in Ontario, experimenters are attempting to convert algae into animal feed. Elsewhere, sludge is being turned into fertilizer. Actions are being brought in the courts against such interests as Reserve Mining.

Citizens are also doing their part. An interesting example of this are the Amish, who graze their cattle away from the banks of the lakes' tributaries to protect the grass which helps in reducing soil erosion.

"As of the moment the lakes aren't getting worse, but the battle hasn't been won by any means," the narrator concludes.

Although the new movie will be widely distributed nationally, a special effort will be made to insure its broad availability to the people of the Great Lakes area. A free loan of the new film can be obtained after its release by writing Modern Talking Picture Service, New Hyde Park Road, New Hyde Park, New York 11040. Copies of the film will be sent to all Regional Offices and major EPA laboratories. ■