



# inside EPA

LIBRARY, REGION I

## Safety Drive Slated for Pesticide Users

Pesticides that don't poison the environment may be very dangerous to the farmer who stores them in his barn and spreads them on his crops.

As EPA's cancellation order made DDT illegal for almost all crop uses after Dec. 31, the Office of Pesticide Programs launched a massive program to assure that farmers will use chemical substitutes safely.

Many of the replacement pesticides are organic phosphate compounds, which can be extremely hazardous to the user, although they degrade rapidly when applied to soil or crops and do not persist in the environment. The greatest danger is from poisoning, through inhalation or through skin contact from accidental spillage.

### Aimed at 14 States

In a key portion of the program, called "Project Safeguard," the Department of Agriculture, with financial backing from EPA, will zero in on farmers in 14 southern states with a direct training effort aimed particularly at growers of cotton, soybeans, and peanuts—crops for which DDT was used most heavily in the past.

Working through Agriculture's State Cooperative Extension Services, local farm leaders will be trained as safety aides. They will make face-to-face contact with their farm neighbors and offer advice on the use of the substitute pesticides that will be needed during the 1973 growing season.

EPA is transferring \$750,000 to Agriculture for "Project Safeguard,"

and the Department is contributing \$350,000. Both agencies have announced they will make additional funds available as needed, although they hope that a one-year intensive training effort will be sufficient.

The 14 States involved are Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Missouri, Mississippi, North and South Carolina, Oklahoma, Tennessee, Texas, and Virginia. All but two of these are in Regions IV (Atlanta) and VI (Dallas). Each State will have a director-coordinator to oversee the effort in that State. Special attention will be paid to reaching the small farmers—an estimated 170,000 of them—who are not normally in touch with Federal and State extension service workers.

### Three-Phase Program

Getting the word to the farmers via "Project Safeguard" is the first of three aspects of EPA's work to make a safe and effective transition from the use of DDT and other environmentally harmful pesticides.

The second aspect is enlisting the cooperation and assistance of the medical profession, hospitals, and local health authorities in dealing with accidental pesticide poisoning. This is the responsibility of the Office of Pesticide Programs' Division of Technical Services, centered at EPA's laboratory in Chamblee, Ga.

The third aspect is publicity through newspapers, TV, and radio to inform people everywhere about pesticide problems and hazards and the effectiveness of safe practices. This is the responsibility of EPA's

Public Affairs offices in headquarters and in all Regions.

A hard-hitting safety handbook titled "Don't Poison Your Family, Yourself, or Your Livestock" is being printed for use in "Project Safeguard" and for wide public distribution. The handbook and an instructor's manual are to be sent to regional offices this month.

New methods of pest control that do not involve user hazards are under intensive study in EPA and other government agencies and by outside research groups under EPA grants. These involve biological controls, or crop management techniques, or combinations of both. Such programs are not expected to be ready for practical application during the 1973 growing season.

## Technical Seminar Draws Full House

A Technology Transfer Seminar on reducing pollution in the metal finishing industry was held in New York last month for 130 representatives of electroplating factories and state regulatory personnel in Regions I, II, and III.

The demand for the sessions was so great that many applicants had to be turned away, and another seminar for metal finishers will be held in Philadelphia Jan. 30 and 31.

The meetings are aimed at acquainting certain industries, particularly those involving many smaller manufacturers, with the latest developments in environmental control, said Paul Minor of the Office of Research and Monitoring's Technology Transfer program.

# Extinction Seen For Yellowstone Grizzlies

Grizzly bears will become extinct in the Yellowstone Park area in another 20 years unless Federal and State wildlife management policies are changed, a biologist told an EPA-sponsored lecture audience in Denver last month.

Dr. Frank C. Craighead Jr. said the actions of the National Park Service in recent years were decimating the population of grizzlies in the Yellowstone ecosystem, the last refuge of the big animals that once dominated the Northwest.

Craighead spoke at the third of a series of monthly lectures sponsored by the Technology Transfer Committee of EPA's Region VIII. Russell W. Fitch is committee chairman. The lectures are designed to expand the environmental awareness of the EPA staff and are open to the public also.

Craighead and his twin brother, John, also a wildlife biologist, have been studying the species, *Ursus horribilis*, for 12 years. Their articles on grizzlies' feeding habits, movements, reproduction, and population changes have been published in scientific journals and popular magazines.

## How To Tail a Bear

The brothers' research has involved tagging the animals and using collar-mounted miniature radios to monitor their movements as well as careful tracking, observation, and photography. They have formed the Environmental Research Institute based at Moose, Wyo., and are pursuing their studies outside Yellowstone Park, since the Park Service no longer permits them to work within the park, Craighead said.

Specifically, the Craigheads object to the Park Service's sudden closing of garbage landfills that the grizzlies had come to use as food sources. These closures should have been gradual, Craighead said, to give time for the bears to return slowly to their natural foods.

The sudden closures caused bears in the park—an estimated 250—to



—National Parks photo

**A grizzly bear mother and two cubs roam over Yellowstone grassland.**

seek garbage or other food nearer to campgrounds and inhabited areas, he said. Man-bear encounters increased, sometimes with tragic consequences. Campers have been maimed or killed, and the marauding bears promptly shot.

The Park Service also tries to trap all grizzlies found in peopled areas and take them to remote sections outside of the park, in the hope that they will stay far from the campgrounds and learn to fend for themselves. This tactic seldom works, Craighead said, because the bears soon make their way back, and then they get killed.

Of 19 grizzlies moved outside the park last year all but one are known to have died, he said, and hunting pressure outside park boundaries has further reduced the Yellowstone grizzly population.

## 'Planted' Food

The Craigheads have demonstrated that grizzlies will congregate around animal carcasses to feed, and they suggest that elk carcasses

be "planted" in wilderness areas to entice the bears away from the campgrounds and tourist centers. Park rangers regularly kill many elk to limit the herd size to numbers the range will support.

Carcass planting is one of the brothers' recommendations for improved grizzly management. Others include a moratorium on bear hunting in the Yellowstone ecosystem, reduction of bear deaths caused by predator poisoning programs, and continued improvements in campground sanitation.

In the long run, Craighead said, the Park Service must seek to limit man-bear encounters by managing people rather than bears. And this requires the resumption of independent research within the park.

Craighead concluded his talk with a plea for greater efforts to preserve the Nation's wild and scenic rivers, particularly Clark's Fork of the Yellowstone and the Teton in the West and the Potomac in the East. Rivers need protection as much as forests and wildlife, he said.

## EPA Co-Sponsors Atlanta Conference On Urban Noise

An EPA-sponsored Environmental Noise Conference attracted more than 150 persons to Atlanta last month for two days of intensive study on the problems of noise in the urban environment.

Dr. Clifford R. Bragdon of Georgia Institute of Technology, noise consultant to EPA's Office of Noise Abatement and Control, was conference administrator and head of a nine-member faculty for the sessions held Dec. 19 and 20 at the Georgia Tech campus.

The conference was co-sponsored by the University and the Region IV office of the Department of Housing and Urban Development, as well as EPA.

The faculty included Dr. Joan O'Dell, EPA regional counsel; Charles R. Foster and Harvey S. Safeer, Department of Transportation; James H. Botsford, Ralph K. Hillquist, and Richard K. Miller, industrial noise control engineers; Kent C. William, Georgia Tech; and Robert A. Baron, co-chairman of the New York City Council's noise control committee and author of "The Tyranny of Noise."

Continuing education credits were given to conference participants by the University. The sessions covered the physics of sound, measurement procedures and instrumentation, and control applications for transportation, construction, and other industries. Existing Federal, State, and local noise control legislation was discussed, including environmental impact analysis, and the potential role of citizens' groups in noise abatement.

Attendees include public officials and administrators, city planners, architects, consulting engineers, educators, and other interested in noise control problems.

## Louisville's 'Ecology Court' Meets Twice Each Week

Every Tuesday and Friday afternoon in Louisville, Ky., Judge Brian Schaeffer presides over "Ecology Court," a special tribunal for hearing cases involving air and water pollution, trash dumping, and other violations of local environmental laws.

Other cities have special courts for police cases, traffic violations, domestic relations, and so on, but Jefferson County (Louisville) is believed to be the first to have an Ecology Court.

It was established a year ago by County Judge L. J. Hollenbach 3rd, who is chief administrative officer of the county as well as head of its judiciary.

The court has heard more than 800 cases in its first year, and only a handful have been dismissed, according to Robert T. Offutt, secretary-treasurer of the Jefferson County Air Pollution Control District, whose complaints are responsible for a sizable portion of the twice-weekly docket.

Judge William H. Walden presided over Ecology Court until three months ago, when he became ill, and Judge Schaeffer was named to replace him.

Fines range from \$10 to as high as \$500 a day, plus court costs of \$19.50, recently raised from \$18. The average fine is about \$37. Defendants range from householders accused of burning leaves to industrial and commercial establishments. The City of Louisville was fined for faulty operation of an incinerator. Several public schools and the Southern Baptist Theological Seminary have also been fined. About three-fourths of the defendants are industries, who usually "plead guilty and get out of court as quickly and quietly as possible," as one court official put it.

The APC district has five deputized, badge-carrying peace officers who are empowered to make formal complaints hauling accused air polluters to Ecology Court, Offutt said.

Other cases come from the county Board of Health, from the police, from the zoning commission (involving improper uses of land), and from private citizens.

Citizens whose complaints lead to convictions may claim rewards of from \$10 to \$25. Such rewards were authorized when the Ecology Court was established, but so far no one has come forward to collect.

Have other cities followed Louisville's example? Local officials don't know, but they think so. Visitors from "25 or 30 U.S. cities and several foreign countries" have come to watch the court in operation and to talk to local officials about how it is organized, Offutt said.

### Don't Forget EPA Scholarship Fund

Payments to EPA officials for speeches or articles should be turned over promptly to the EPA Scholarship Fund, Robert F. McDonald, fund manager, has announced.

Busy officials may forget that the fund exists, or forget to ask that proffered payments be made in the form of voluntary charitable contributions to the fund, that was created to provide a useful outlet for such honoraria and fees. Federal regulations forbid agency officials from accepting for their own benefit any payments for speaking or writing in their official capacities.

The fund supplies scholarships for sons and daughters of EPA employees, in amounts up to \$500 per year according to need. Sixteen students have been awarded scholarships for the current school year.

Fund monies are deposited in the EPA Employees Federal Credit Union and are dispersed each summer to scholarship winners chosen by a five-man board of trustees.



—Phila. Inquirer, Charles James

**EPA Attorney Ann Joseph enjoys her two-mile walk to work each day.**

## Walkers in Philadelphia Relish Exercise, Variety

Three young EPA employees in the Region III office in Philadelphia do their bit for the environment by walking to work each day. They were among four pedestrians buttonholed at random by reporter Dominic A. Sama of the Philadelphia Inquirer and interviewed for a feature story last month.

Ann Joseph, 26, an attorney in the office of the regional EPA counsel, told Sama she walks the two miles from her home to her office and lets her sister-in-law in the country use her car on weekdays.

"Walking to work wakes you up and calms you down," she said. It takes half an hour but saves 70 cents in bus fare and provides a lot of window-shopping and people-watching time.

"Just recently I met a girl I haven't seen since my freshman year in college seven years ago. Now we have renewed our friendship. She walks to work too."

Lucille Paris, 28, a secretary in the deputy regional administrator's office, said her mile-long, 20-minute walk is "the best exercise you can get when you're sitting behind a desk all day."

### Stopping for Soup

"I will detour my route sometimes for a change in scenery and to stop in my favorite restaurant for some onion soup," she said. "I never take the bus unless the weather is really bad. The tempers are so short on the bus or subway. Everybody is in a hurry."

Some people are afraid of walking the streets, she said, "but if more would walk and get out, the streets would be safer. I've never had any trouble."

Tim Kent, 25, who works in the regional public affairs office, doesn't even have a driver's license and seldom regrets it.

"I walk about a mile, and I take 10 or 12 different routes," Kent said. "I never walk the same way two days in a row."

"Walking is handy. I can pick up my dry cleaning or stop at the grocery store. And sometimes I beat the bus home," he said.

### One Drawback

Kent said he misses not having a car only when he's taking a girl out on a date. "Then I take the bus or trolley, but normally I try to find a girl with a car."

About 72,000 people walk to work in Philadelphia, according to the 1970 Census, Sama reported, compared to 274,000 who use public transit and 309,000 who drive. The walkers have their reasons, he wrote: "It's good exercise; it offers the pleasure of window-shopping; the cool, early morning stroll wakes them up; it's cheap; and it avoids the misery of bumper-to-bumper driving, parking, and the uncertainty of the scheduled public transit carriers."

## Car Pool Tried to Be Bus Line

The car pool had a dream, but it turned out to be the impossible dream.

When Region II's Water Pollution Branch was moved last spring from Edison, N.J., to the regional office in downtown New York, Daniel Kraft had an inspiration.

Why not get together and buy a small bus or an airport limousine, and ride to work in style, saving money and reducing traffic jams and air pollution?

Out of about 40 people moved, Kraft reasoned, 10 or 15 lived quite close to the place where they used to work, and all were traveling the same route (about 30 miles each way) at the same time each day. They could incorporate themselves, insure the vehicle, and take turns driving. The capital cost, he figured,

would be about \$200 each if 15 people joined.

Five others in Kraft's car pool—Charles Durfor, Barbara Metzger, Roland Hemmett, and Joanne Brennan—agreed. But there was only one other recruit, and she was soon transferred back to Edison.

Human individualism and legal doubts prevailed. Most people he approached, Kraft said, didn't want to make an investment that they might not be able to "sell" to someone else if they had to drop out. And lawyers advised that the individual driver, as well as the corporation, could be sued if the bus was in an accident.

So Kraft and his co-workers are still just a car pool, albeit a full one; two members who own VWs drive only when someone is sick or on leave.



# Great Lakes Cleanup Gets Under Way

International and multi-state efforts to halt pollution of the Great Lakes were outlined by Francis T. Mayo, regional administrator for EPA's Region V, at a recent meeting in Chicago.

A key factor in the Great Lakes cleanup, Mayo told a two-day Technology Transfer Design Seminar attended by 130 engineers from government and industry, is the drastic shift in policy contained in the Federal Water Pollution Control Act Amendments that became law in October.

The new law authorizes control of pollutant discharges wherever they are, he said, rather than basing all controls on the capacity of a river or lake to absorb pollutants.

## Keeping It Out

"The philosophy now is no longer 'how much we can put into the water,' but rather 'how much we can keep out of the water.' No longer do we operate on the assumption that a discharger may put whatever he wishes except to the extent regulated. Instead, we start from the opposite end—the very right to discharge at all is conditioned by compliance with requirements.

"Because this requirement will be imposed throughout the Nation, no longer can a discharger threaten to leave a State to avoid pollution control requirements, because wherever he goes he will encounter similar requirements."

States will no longer be subject to

"economic blackmail" or forced to choose between "clean water and jobs," Mayo declared.

Application of the new philosophy will take a decade or more, according to stages specified in the law. The first phase, to be attained in three to five years, will require effluent limitations "based upon the best practicable control technology currently available," Mayo said. "In addition, where tighter controls are necessary to protect water quality standards, then tighter controls will be imposed . . . national minimum controls (to be) met everywhere in the Nation."

## Goals for the '80s

The second phase is working toward the goal of "best available technology" by 1983, and the national goal of "no discharge" by 1985. "These are goals to be considered in the setting of requirements," Mayo said. "They are to be weighed in the balancing of costs and benefits; they are not themselves requirements."

The upgrading of waste water treatment, and especially the control of nitrogen and phosphorus discharges, are particularly important to protecting the quality of the Great Lakes, that drain the heartlands of the United States and Canada, Mayo said. Both nations are cooperating more closely than ever before, and on many technical and administrative fronts, to carry out and implement the Joint Canadian-U.S. Agreement on the Great Lakes Water Quality signed by President Nixon and Prime Minister Elliot Trudeau last April.

An international board has appointed study groups to investigate and make recommendations on pollution of the "upper lakes," Superior and Huron; dredging practices and regulations; pollution from land drainage; and over-all research coordination.

## \$2 Million in Grants

EPA has issued five grants totaling nearly \$2 million for water pollution control planning and man-

agement work by States and cities in the Great Lakes area, Mayo said. These include:

- \$227,500 to the Michigan Water Resources commission to help develop a water quality management plan for southeastern Michigan to be completed next month.

- \$328,000 to the City of Cleveland for a detailed pollution assessment of rivers and lake waters within a 30-mile radius of the city scheduled for completion in March.

- \$275,000 to Pennsylvania's Department of Environmental Resources for a management plan for the Erie, Pa., area; this will also be a vehicle by which construction grants will be funded there by the State and EPA.

- \$33,000 to Allen County, Indiana, for a detailed work plan to control pollution of the Maumee River Basin by sediment and agricultural runoff. This may lead to a demonstration project, Mayo said, and also provide "a sociological study . . . of problems encountered in selling water pollution abatement techniques to landowners." The report on the study is due in April.

## Spray Irrigation

- \$466,000 to the Michigan Water Resources Commission to evaluate the disposal of sewage waste water by spray irrigation on land in Muskegon County, Michigan. This is a five-year program ending in June, 1977.

- \$570,000 to East Lansing, Michigan, incorporating construction and research as well as planning and management. A spray irrigation field and four small lakes on the Michigan State University campus will be used to demonstrate tertiary treatment by biological processes, and water recycling. This is a two-year project due to end in October, 1974.

Mayo's talk entitled "New Directions for Clean Water" led off the seminar.

Other EPA speakers included Albert C. Printz, Office of Refuse Act Programs, and Charles H. Swanson, Office of Water Programs.

**Inside EPA, published monthly for all employees of the U.S. Environmental Protection Agency, welcomes contributed articles, photos, and letters of general interest.**

**Such contributions will be printed and credited, but they may be edited to fit space limits.**

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—photo by Ernest Bucci

Study carrels and periodical racks fill the smaller leg of the L-shaped library. Window wall is at left, open stacks at right, out of picture.

## New Headquarters Library To Serve Management Needs

EPA's Headquarters Library was opened this month on the second floor of the Waterside Mall building in southwest Washington.

The library has all-new, birch-veneered furniture: open stacks, study carrels, chairs, tables, and periodical racks. It is carpeted throughout its 11,000 square feet of space. One wall includes floor-to-ceiling windows overlooking the mall plaza to the east.

Sarah M. Thomas, chief of the Library Systems Branch, Management and Organization Division, said the library's collection totals about 45,000 books, periodicals, and microfiche cards, not all of which are yet catalogued.

### Nucleus from Crystal Mall

Most of the items have been transferred from the former Water Quality Office library in Crystal Mall, Arlington, Va., so the collection is predominantly concerned with documents on water pollution control.

Miss Thomas said she hopes to correct this imbalance as rapidly as budget and staff limitations permit, and to increase the library's collec-

tion in other aspects of environmental protection.

"Our chief aim at the Headquarters Library," she said, "is to serve the headquarters staff, particularly in the areas of environmental law, economics, management, and social impacts."

Scientific and technical aspects of the Agency's work will continue to rely on other EPA libraries, she said. There are 37 EPA libraries altogether, including one in each of the 10 Regional Offices, the four National Environmental Research Centers, and more than a score of specialized collections at satellite laboratories and field stations.

EPA's largest library and central point for scientific and technical information is at NERC-Cincinnati, Miss Thomas said. Through the Cincinnati library, EPA people have access to more than 30 different computerized scientific data files and search services maintained by other government agencies, universities, and private research organizations.

Other, smaller EPA libraries are strong in such areas as radiation, pesticides, toxicology, air pollution,

## New Ecology Lab Being Established At NERC-Corvallis

A National Ecological Research Laboratory is being established at the National Environmental Research Center in Corvallis, Dr. A. F. Bartsch, NERC-Corvallis director, announced last month.

Dr. Norman Glass will be acting director of the new laboratory.

It will investigate the effects of air pollutants and toxic substances on terrestrial ecosystems—interdependent plant-and-animal communities living on land.

The new laboratory will be the ninth operating unit in the NERC-Corvallis complex and the first to deal with air pollution; research at the eight others—both in Corvallis and in seven other cities throughout the country—centers on water pollution.

Much of the research to be assumed by the new laboratory is now being done at Research Triangle Park. About 25 persons now working there will be moved to Corvallis. The moving of people and equipment is scheduled to be complete by the end of January.

Dr. Bartsch said the National Ecological Research Laboratory would have three branches—for studies in plant ecology, animal ecology, and ecosystems analysis. The latter will integrate data from the first two branches and provide statistical and computer skills needed for the design of experiments, analysis of results, and simulation modeling.

and meteorology. The Headquarters Library is in close touch with all collections in the EPA library system and can refer users with special needs to the center most likely to have the information they want, and arrange for literature searches and interlibrary loans.

Miss Thomas and her staff of four are using a computer terminal, linking the library to the National Institutes of Health in Bethesda, Md., to maintain an instantly available record of all book and journal holdings.

# Spanish-Americans Learn To Use Pesticides Safely

Spanish-speaking farm workers in Colorado will be trained in the safe use of pesticides under a program launched last month by the EPA's Region VIII Office in Denver, Regional Administrator John Green has announced.

Training sessions will be held over the next nine months at four farming centers in the State for about

150 workers, Green said.

Textbooks and other materials will be translated into Spanish, and Spanish-speaking instructors and consultants will be used. The Rupert J. Hernandez Research Foundation of Denver will conduct the classes, under a \$40,000 contract with EPA.

Another 78 trainees will receive instruction to qualify as State-certified pesticide applicators, equipped to handle pesticides too dangerous for use by farm owners and workers. Such certification could lead to better paying jobs with government agencies or farm cooperatives or as self-employed exterminators.

"Instructions on pesticide containers are usually in English, and Spanish-speaking farm workers may be unaware of the dangers," said Green. "Cautions from English-speaking employers can be misunderstood, resulting in accidents. We are hopeful that this training program will reduce those dangers."

A similar training program under a \$23,750 EPA contract, is already under way at El Paso Community College in Colorado Springs. Its aim is to train Spanish-Americans as waste water treatment plant operators. As sewage treatment becomes more widespread and complex, the importance of having well trained operators increases.

The 20 Spanish-speaking trainees in the El Paso College program are also seeking State certification and eligibility for higher job ratings and pay.

## Eye on Chattanooga

An EPA aerial photography team from the National Environmental Research Center at Las Vegas, Nev., recently made a reconnaissance survey over the Chattanooga, Tenn., area to evaluate the use of photography and infrared scanning in the recording of industrial waste discharges, drainage patterns, and land use.



Asa B. Foster Jr.

## Civil Engineers Elect EPA Official From Region IV

Asa B. Foster Jr., director of Categorical Programs for EPA's Region IV in Atlanta, was recently elected president of the Georgia Section of the American Society of Civil Engineers.

Foster has been in the Federal service for more than 11 years, starting as a staff engineer for the Federal Water Pollution Control Administration.

He is a graduate of Georgia Institute of Technology and is a registered professional engineer in Alabama, Georgia, Tennessee, Kentucky, and North and South Carolina.

## Cywin Appointed To RPI Committee

Allen Cywin, director of the Effluent Guidelines Division, Office of Air and Water Programs, has been named to the Trustees' Visiting Committee for the Engineering School at Rensselaer Polytechnic Institute, Troy, N.Y.

Cywin is a civil engineering graduate of RPI in the class of 1948. Before being named to his present post last May, Cywin was with EPA's Office of Research and Monitoring.



## EPA Yule Tree Is Made Entirely Of Reusable Stuff

This ecological Christmas tree—made entirely of reusable materials—was created to decorate the Computer Center at the National Environmental Research Center at Corvallis, last month.

The three-foot, wire-and-plastic "tree" was decked with hand-made felt versions of the EPA logotype and topped with a circular art nouveau monogram.

Mrs. Jean Fernald, a card punch operator at the computer center, made the tree with some help from her 20-year-old daughter Linda.

# Land Use Controls Called Ineffective

In spite of strong new legislation to preserve air and water quality, the Nation's environmental priorities are out of balance because no matching efforts have been made to preserve the land, according to John R. Quarles Jr., EPA General Counsel and assistant administrator for Enforcement.

There is a "striking contrast," Quarles told an industry conference in New York recently, "between the comprehensive, well-developed programs established by Congress (in air and water pollution) and our almost total ineffectiveness at any level of government in dealing with the protection of our land."

"Our shorelines are being gobbled up, our wetlands dredged and filled, our mountain valleys dammed and flooded, our streams drastically altered by channelization, our wilderness areas cut with highways and blotched with development," he said. "All this damage to environmental values and the quality of life results from the lack of effective mechanisms to control development."

## Government To Blame

"The culprit is the total institutional structure of . . . government, as well as those who develop the land for industrial, commercial, or residential use."

"The solution of land use and development problems now stands out, I believe, as the number one priority crisis confronting the environmental movement today."

Quarles called the new Coastal Zone Management Act a "partial response" to the problem, but urged passage of broader legislation to help States manage the use of land in many "areas of critical environmental concern."

Quarles was keynote speaker at a one-day conference on "The Environment and Public Policy," sponsored by the Conference Board, a nonprofit organization for research in economics and business management.

EPA's enforcement program will continue and become stiffer as the regulatory framework laid out in the new air and water pollution control laws becomes effective, Quarles told his audience of 300 persons, mostly from industry. He defended the emotionalism and fervor of the environmental movement as rooted in the American traditions of reform and "tough crusading zeal."

## Other Changes Cited

The environmental crusade, he said, is one protest movement among many "currents of social and political change that have moved through American society."

"Predominant in recent years has been the long struggle to provide equal opportunity and social justice to blacks and other racial minorities."

# Better Method Developed For Measuring Mercury

A new and more accurate method for measuring the amount of mercury in plant and animal tissues has been developed by workers at the National Environmental Research Center at Las Vegas.

The method is accurate and repeatable for amounts less than a microgram (millionth of a gram), according to Dr. Alan Moghissi, head of the Center's Radiological Research Program.

Unique feature of the new technique, he said, is that it is now possible to correct for portions of mercury that may be lost in the process of preparing the sample for measurement by atomic absorption spectrometry.

To measure heavy metals in any biological sample, he explained, the sample is first de-watered and then "digested"—or burned—by exploding it in a sealed stainless steel "bomb" filled with oxygen under pressure. Mercury in the residual ash is then measured by the spectrometer, but great care must be

One also thinks of the continuing drive to achieve equality of status for women. Stretching our memory just a bit, we recall years of controversy before labor achieved elementary rights at the bargaining table."

He also cited economic and political reforms going back through the 19th century to origin of the Nation in a war of revolt.

"In all these cases the existing structure of society was brought under sharp attack," said Quarles. "Long struggle and bitter divisiveness accompanied efforts to correct a weakness or abuse in the . . . institutions of the day. Difficult though the turmoil was for all concerned, however, in the end these protest movements brought improvement to our society and new strength to our country."

taken to see that no combustion products escape when the "bomb" is opened.

In spite of all precautions, some mercury will be lost, Moghissi said, and the loss can be as high as 90 percent. "With our new method, we don't care how much we lose, we can still measure it."

The key step is the addition of radioactive "tracer" mercury to the sample before placing it in the bomb. The amount of the tracer is measured by a radiation detection instrument before and after the explosion. Then when the spectrometer measures the total mercury left in the ash, the amount lost in the processing can be inferred from the decline in radioactivity.

Erich Bretthauer, principal researcher for the new technique, and Dr. Moghissi are writing a technical paper about it, showing their evidence that the "tracer" mercury mixes completely in the combustion process with the sample's natural mercury.