

Reducing Waste and Emissions *and* Saving Money: Pollution Prevention at BNL

When American industries and laboratories like BNL tackle their environmental problems, from lingering contamination to current emissions and hazardous waste, they can choose from an arsenal of technologies.

But now, in addition to high-tech groundwater and soil purification techniques, sophisticated instruments for air and water monitoring, and thorough waste characterization and packaging procedures, these institutions have a new strategy at their disposal.

It's called Pollution Prevention, or P2.

First championed by the U.S. Environmental Protection Agency in the early 1980s, P2 emphasizes the three Rs of waste management: reduce, reuse and recycle.

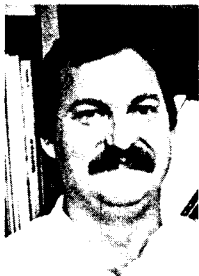
So, instead of managing waste after it's produced, BNL and other environmentally responsible institutions also seek ways to avoid producing waste.

After several years, both emissions and waste production at BNL have decreased markedly.

Economics and eco-mindedness, as well as regulation, have spurred the Lab to encourage P2 through a program in the Safety & Environmental Protection (SEP) Division.

This is because the benefits of an effective P2 program are many, including safer workplaces, lower purchasing and disposal costs, and increased environmental protection.

"It comes down to looking at the way you're doing things and asking, 'Why are we doing it this way?' and 'Is there a better way?'," considered George Goode, SEP, BNL's Pollution Prevention Coordinator. "It's a



George Goode

proactive approach to environmental management that reduces risks *and* costs."

An All-Out Effort

Even after five years of all-out P2 action, BNL isn't about to stop and rest on its laurels: Goode is working with departments and divisions to identify P2 opportunities, and seeking full engineering studies of priority waste streams.

On their own or with Goode's help, more and more BNL organizations and employees are finding ways to cut waste, and reduce costs, at the same time. Department and division environment, safety & health (ES&H) coordinators play a large part in this activity.

P2 strategies that are implemented are incorporated into the Lab's Hazardous Waste Reduction Plan, required by the New York State Department of Environmental Conservation (NYSDEC) every year since 1991, and the Waste Minimization Plan, which covers all wastes and is required by the U.S. Department of Energy (DOE).

Substituting and Reusing

P2 emphasizes creative strategies for replacing materials and methods that produce hazardous waste or emissions. Some BNL operations have greatly reduced the amount of hazardous chemicals they use by substituting new, ecologically safer materials for old ones or altering work practices to cut back on waste.

The use of a once-common solvent is one example. Labwide, the use of the degreasing solvent 1,1,1-trichloroethane, or TCA, has dropped 86 percent since 1992, largely due to new cleaning processes and the substitution of less-toxic solvents (see chart at right).

"BNL has eliminated all of its large TCA degreasers and is now focusing



At a brand-new digital imaging station in the Technical Photography Group of the Information Services Division, (from left) Howie Jones, Michael Herbert, supervisor William Marin and Joe Rubino print photographs from negatives electronically — without any of the hazardous chemicals normally used in photographic processing. The imaging station, as well as new equipment that is still arriving, was purchased through a grant from a U.S. Department of Energy Return on Investment pollution prevention program. It will save time, money and disposal costs for chemicals and allow direct interface with electronic publishing. This image is the group's first digital photo to be featured in the Brookhaven Bulletin. — Photos on this page by Roger Stoutenburgh

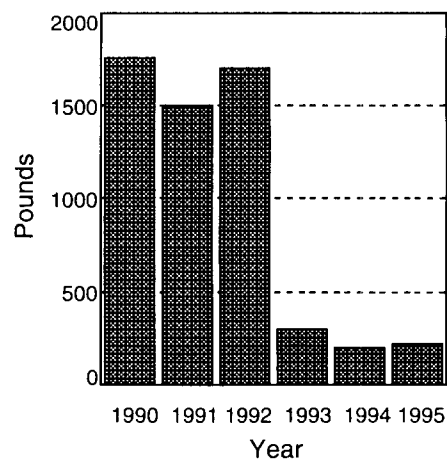
on small-scale TCA uses around the site," said Goode. "Our goal is its complete elimination." With a TCA production ban now in effect, the cost of the hazardous solvent is skyrocketing, so BNL's efforts come just in time.

The Plant Engineering (PE) Division has taken a lot of pollution-preventing measures on its own, said Goode, including substituting latex-based paints for oil-based paints, and recovering freon from air conditioners.

The Chemistry Department uses distillation to recover methanol for reuse in the department. Pollution prevention has also been practiced

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TCA Waste Generation at BNL



You've Got Questions, We've Got Answers — Live!

First Employee Forum Series Draws 300 Staff, 26 Questions

Questions and comments on the magnitude of BNL's environmental releases and their impact on drinking water, involving the surrounding community in the Lab's environmental problem-solving, and handling Brookhaven's recent bad press dominated "You've Got Questions, We've Got Answers," a new employee-question, management-answer forum that was initiated Monday and Tuesday, February 5 & 6.

Of the approximately 100 BNlers who attended the Monday session and 200 who came to the forum on Tuesday, 26 addressed a question or comment to the panel assembled, which included: Bob Casey, Head of the Safety & Environmental Protection Division; Sue Davis, Associate Director for Reactor, Safety & Security; Kathy Geiger, Community Relations Coordinator in the Office of Environmental Restoration (OER); Bill Gunther, OER Manager; and Mona Rowe, Supervisor of External Communications in the Public Affairs Office.

Laboratory Director Nicholas Samios opened the first day of the



forum with a brief state-of-the-Laboratory address. "We're a research laboratory, but, since our inception, we have had to obey rules and regulations concerning the environment, safety and health, and these have gotten more stringent over time," he stated. "Because we sit over a sole-source aquifer, we must be more care-

ful, so we are constantly looking at our impact on the environment, especially on the groundwater. Not only do we work here, but we live around here, so it is also in our enlightened self-interest to do all that we can to protect the environment."

Sue Davis explained that the community has focused on Brookhaven due to several recent events, including: a proposed Sewage Treatment Plant upgrade: the WPIX Channel 11 coverage of an employee's environ-

ment, safety and health complaints: and the Lab's January 16th public meeting, at which the Lab and the U.S. Department of Energy presented information on contamination along the site's southern boundary.

Following management's opening remarks, some 26 employees made inquiries or statements. Of these, approximately 40 percent had to do with the environment, about 30 percent were on community outreach; and another 30 percent dealt with press relations.

Addressing BNL's pollution resulting from past acceptable practices, Bill Gunther described OER's general mission to clean up the site under the Superfund act and the specific projects now under way to remediate groundwater contamination.

As Davis pointed out, BNL's current operations do result in the radioactive and nonradioactive releases into the air and water. However, these releases are permitted by local, state and federal law, and the Lab has all the necessary legal permits for these releases. BNL releases are monitored

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Pollution Prevention (cont'd.)

in Chemistry's stockroom for several years: A program begun there by Dave Comstock saves half-finished bottles of chemicals left over from one experiment for use by other scientists, instead of sending them for disposal.

On an even larger scale, SEP is now conducting a survey of all chemicals used on site, so that an electronic chemical management and inter-organizational chemical exchange program can be established to reduce the amount of chemicals purchased and disposed of.

Big P2 Projects, Big Savings

Other areas are gearing up for new technologies that will eliminate hazardous waste generation almost entirely.

For instance, digital photo processors will soon replace the majority of the chemical-dependent "wet" photo process in the Technical Photography Group of the Information Services Division.

Funding for the overhaul of the photo system comes from a \$144,000 award given to BNL by DOE's High Return on Investment (ROI) Program.

The ROI program allows DOE sites to compete for funding for pollution-prevention projects that could generate large cost savings. BNL's digital photography project was one of 33 selected for ROI funding out of a field of 119 proposals.

"The ROI program is an excellent opportunity to obtain funding for P2 ideas," said Goode. "I encourage any BNL employee with good ideas in this area to contact me."

BNL Recycles!

Recycling is part of P2, too. With the help of PE's extensive recycling program, BNLers sent 342 tons of paper, cardboard, aluminum, glass and tires to recycling plants instead of landfills in 1995 alone.

Another waste-collection program at the Lab is designed to keep everyday hazardous items out of landfills —

Employee Forum (cont'd.)

and reported by the Lab to the authorities, and Brookhaven is constantly working to decrease the magnitude of its releases.

However, "People in the community are concerned and fearful of our releases, especially radioactive releases, even though they now all fall at or below standards. People are worried that, in the future, current standards may be found not to have been protective of public health," Davis remarked. "So, rightfully, they are concerned, primarily, with their families' health, and, secondarily, with the values of their homes."

How to help their friends and neighbors understand the Lab's mission, accomplishments and operation was the subject of the second greatest number of inquiries and suggestions. As Davis explained, "The message we are trying to get out is this: 'Brookhaven is committed to cleaning up its environmental problems and reducing its releases: We take responsibility for our past practices and are trying to be responsive to our neighbors regarding our present operations. We conduct our operations with respect for the environment and for the health and safety of our employees and neighbors.'"

Through next week, a videotape of the February 5 & 6 forums will continue playing on the kiosk in Berkner Hall. In stories in future issues, the Brookhaven Bulletin will continue to address the environment, safety and health issues facing the Laboratory.

Spreading the Word to the Community Through Workshops and Free P2 Audits

The message of lower costs and less pollution isn't being limited to the Laboratory community. Soon, BNL will begin sharing its knowledge and experience in pollution prevention with others, including environmental science students, local businesses, and local government officials.

On February 27, small business owners and local government officials from all over Suffolk County will converge on Berkner Hall for a day-long workshop on preventing pollution in their operations, which range from photo labs to dry cleaners to town vehicle-maintenance yards.

Cosponsored by the New York State Department of Environmental Conservation (NYSDEC), the free workshop will feature a case study of BNL's pollution-prevention efforts. It will also equip business owners and town planners to audit their operations for pollution prevention possibilities. For information on how to participate, call Goode at Ext. 4549.

In another effort to work with the community, BNL is participating in a program, called "Students and Industries for Pollution Prevention," which will train

local environmental engineering graduate students to audit local businesses for pollution sources and suggest alternatives. The service will be free, nonregulatory, and offered to small and medium-sized businesses in Suffolk County.

The program is managed by the Suffolk County Water Authority's P2 program, and is jointly sponsored by BNL, NYSDEC's Bureau of Pollution Prevention, the State University of New York (SUNY) at Stony Brook, the New York Institute of Technology (NYIT) at Old Westbury, and SUNY's Polytechnic University at Farmingdale, in collaboration with the Rhode Island Center for Pollution Prevention.

Professors at the two SUNY schools and NYIT are now selecting environmental engineering students to participate in the program, set to begin in May. After the students are trained, both in the classroom settings and in "real-life" settings around the Lab, they'll work with any small businesses that request an audit, and formulate pollution-prevention strategies and a cost-benefit analysis.

To find out more, call 563-0306. — Kara Villamil

items that are thrown in the trash in many households.

The mercury in common fluorescent light bulbs and the lead and acids in car batteries make both these items potential toxic pollution sources in landfills. Many local towns now collect these and other "household hazards" from homeowners at town waste-management sites. But many still wind up in the dump.

BNL, however, collects the Lab's old bulbs, batteries and other items, then sends them off site for recycling. And, says Goode, based on an employee suggestion, PE is investigating a new kind of fluorescent bulb that uses far less mercury than traditional ones and won't become hazardous waste.

Works for One, Works for All

All around the Lab, P2 strategies developed in one department are being implemented in others, with the same pollution-reducing result. Many of these strategies come from employee suggestions.

In the Biology Department, for example, ES&H Coordinator Neal Tempel found that scientific glassware was washed using chromic acid, a hazardous cleaning agent. So, he searched for alternatives and found one — a new cleaner that does as good a job, costs less and doesn't generate hazardous waste. The method is being used in other areas of the Lab and has been made available to other DOE sites as well.

Goode encourages all BNLers to look around their work areas for potential ways to prevent pollution and cut costs and waste. He also stressed the need for BNLers to share their pollution prevention suggestions with their ES&H coordinators.

Already, BNL's Waste Minimization Policy, signed by Laboratory Director Nicholas Samios, states in part, "Waste minimization must be seen as the responsibility of all employees, rather than just the responsibility of those who deal with pollution control and compliance."

"BNL is almost like a small city,"

Goode explained. "There are a lot of 'small businesses' — machine shops, vehicle maintenance shops, printing, photography, a medical facility — plus a lot of big specialized operations, like the National Synchrotron Light Source and the Alternating Gradient Synchrotron.

"Each of these areas has to look within itself for ways to prevent pollution and cut costs," he continued. "I see my role as facilitating that effort. Since I have access to many P2 resources across DOE, industry and government, I often find that another institution has already solved the kinds of problems we also face, which really speeds the process along.

"BNL's made some great strides in pollution prevention," he concluded. "But, there's always more to do."

— Kara Villamil

Money Talks

Keeping More Of What You Earn

[I]n this world nothing is certain but death and taxes.

— Benjamin Franklin, 1789

To be certain that you don't pay more taxes than you absolutely have to, attend the next Money Talks seminar sponsored by the Human Resources Division.

Entitled "Tax Planning: Keeping More of What You Earn," the lecture will be presented by representatives from American Express Financial Advisors, Inc., on Thursday, February 29, from noon to 1 p.m. in Berkner Hall. All are invited.

As the speakers will emphasize, having a strategy can save you taxes. After describing how tax laws affect household finances, retirement planning and the distribution of estates, the American Express representatives will discuss various tax-deferred and/or tax-exempt investments that may minimize income-tax liability. In addition, situations when it is and isn't beneficial to reduce taxable income will be discussed.

To register, return the completed bottom portion of the Money Talks flyer recently sent to all employees to Denise DiMeglio, Bldg. 185, by Friday, February 23.

Note to Employees:

Attendance at lectures, meetings and other special programs held during normal working hours is subject to supervisory concurrence.

50 YEARS AGO THIS WEEK

This series, which recounts the earliest days of Associated Universities, Inc. (AUI), and BNL, will run as appropriate throughout 1996 and 1997, the 50th anniversary years of AUI and BNL, respectively.

• **February 16, 1946** — Having agreed that they should meet together, representatives of the two regional groups seeking a research laboratory in their respective areas — New York City and Cambridge, Massachusetts — gathered in an informal conference. The Cambridge group included representatives from Harvard University and the Massachusetts Institute of Technology, while The Johns Hopkins University had joined the New York group.

In his BNL Lecture number 55 on "The Early History of Associated Universities and Brookhaven National Laboratory," Norman Ramsey called the meeting "a remarkable one in many ways. Not only did the two groups with divergent desires agree that they should work together for a single laboratory but they also agreed on the dominant nature of the laboratory. Most of the ideas agreed upon at that meeting have continued to the present with modest modifications."

Here are some excerpts from the summary of that meeting, at which Ramsey took the minutes:

"2. It was agreed by all present that every effort should be made to obtain a chain reacting pile in an accessible location in the northeastern United States. . . .

4. The problem of joint action [to obtain] very high energy particles was discussed. It was agreed that such action would probably soon be required but further discussion . . . was deferred . . .

5. The conditions which must be met by any location for a chain reacting pile in this area were discussed. These include:

a. The site should be accessible in an overnight trip from all major laboratories between Washington and Boston and it should be as accessible from Ithaca, Schenectady, Rochester, and Pittsburgh.

b. A large area will be required — 10 square miles is a reasonable estimate.

c. Power and water must be available.

d. Access to the sea may be helpful.

e. Housing must be considered.

f. The site must be near to a satisfactory community with associated schools and medical facilities.

g. Climate and general conditions must be satisfactory.

h. Procurement of labor and materials must be satisfactory.

i. A good institution of higher education must be nearby so that members of the laboratory may also study for degrees."

In his lecture, Ramsey added after item i, "Was this in anticipation of the establishment of [the State University of New York at Stony Brook]?"

The meeting concluded with the intent to draft a letter to Leslie Groves, Commanding General of the Manhattan District stating the two groups' unanimity of purpose. (To be continued on March 1.)

*The Stony Brook campus opened in 1962.

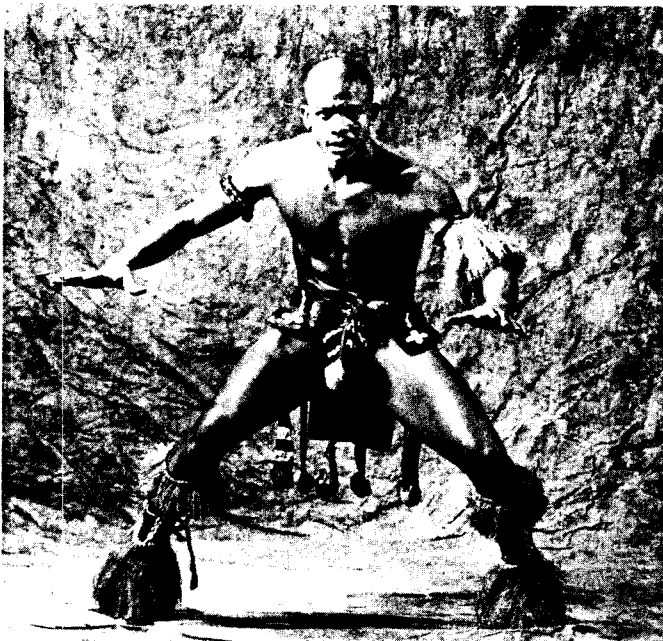
Bowman's Art Makes Front Cover of *Dance & The Arts*

Throbbing right off the front cover of the January/February issue of *Dance & the Arts*, the power and excitement of African drums and dance are captured in a split-second photograph by Ripp Bowman, long-time member of the BERA Camera Club. Already, enough people have called up about the photo, shown here at right, for the publisher to consider making a poster of it.

Inside the magazine, more of Bowman's photos express the personality of dancer Djoniba: the stunning artiste (below); the entrepreneur who started as a busboy and now has his own dance school; the enthusiastic leader of a successful not-for-profit dance and drum program for children of all ethnic backgrounds.

"He's a great guy," says Bowman, who got the assignment to help illustrate the magazine's "The Call of the Drums" article through the recommendation of a friend. "Not only for his dancing, but for his work with the kids — I saw that each age group really got something out of it." Bowman's photo of the class of the "little guys," aged about six, not only picks up their enjoyment and concentration on learning the steps, but also, Djoniba's approachability in his role as teacher.

Djoniba by Ripp Bowman, as seen on the front cover of *Dance & the Arts* magazine. The contrast of the dancer's smooth, gleaming muscle with the textured "rockface" was the inspiration of Bowman, who hand-crafted the backdrop from canvas and paint.



that, I was always drawing," he recalls. "But once I got started with a camera, I went on from there." He does not long to be a fulltime photographer. "They have to keep banging on too many doors. It's a tough profession to make a living in," he reflects. "The way I work now, I can choose the pictures I take."

Many BNLers enjoy Bowman's work, which is regularly seen in the BERA Camera Club's exhibit in Berkner Hall where the Djoniba series is now on view. Often included are his eye-catching still-lives, many of which are done for advertisements.

A member of the club for about 20 years, Bowman is keen to expand its membership. "Everybody's welcome," he says. "You don't have to be an expert: In fact we give classes in developing, black & white and color if people want help. I get a lot of help myself



This view of Djoniba by Bowman also appeared in *Dance & the Arts*.

It's vital to Bowman that his subject be of special interest to him. "I look around and then, suddenly, I see something or someone I want to photograph," he said. "I like doing por-

ing focus is on the emotion of a particular moment that he senses through his lens. Perhaps reflecting his own preference for concentrating on the positive, his work evokes an atmosphere that might range from sensitive reflection to wild excitement, but it is rarely depressing.

"I like to take pictures people can enjoy living with, that they want to hang on their wall," he says.

Bowman, who



Bowman photographed these musicians: The men sing background for Tony Terry; the woman sings with Sweet Sensation.



The unexpected momentum stirring the "static" objects in this self-portrait by Ripp Bowman is not necessarily due to a passing tornado — digital computer photography techniques play a certain role.

works in the Alternating Gradient Synchrotron Department, first became interested in photography as part of the curriculum in school. "Before

from Richard Witkover, the club's expert in digital computer photography. The club has its own darkroom, and we also go on field trips."

Bowman also stresses the need for more photos to exhibit in Berkner Hall. "Remember, you don't have to be a member to hang a photo," he says.

— Liz Seubert

Black History Month

The idea of honoring the history and achievements of Afro-Americans during the month of February, when both black author, orator and abolitionist Frederick Douglass and President Abraham Lincoln were born, was originated by historian Carter Woodson in 1926. Dedicated in 1976 as Black History Month, February has become a time not only to commemorate the past, but also to focus on the many ways in which black Americans are contributing to the richness of life in the world today.

traits, which I often do now because someone asked me to — but I have to have this feeling of what I want to say with the picture."

What Bowman wants to say, generally, is upbeat. Many of his portraits are of black subjects, but his underly-

Inside Info

BNL Director Nicholas Samios was among the invited speakers at the American Association for the Advancement of Science's Annual Meeting and Science Innovation Exposition held in Baltimore, Maryland, February 8-13. Joining the directors of several national labs in a discussion held February 12 to examine the role of the U.S. Department of Energy research labs in maintaining a healthy basic science capability, Samios spoke on "Nuclear Physics."

Outreach at Noon

"Caring for Aging Parents: Relatives, Relationships and Community Resources" will be addressed during an Outreach workshop today, Friday, February 16, at noon in Berkner Hall. Sponsored by the Employee Assistance Program (EAP) of the Occupational Medicine Clinic, the talk will be given by psychotherapist Linda Costanza, and all are invited.

Proclamation:

Whereas: Barney McAlary, formally BNL's Business Manager, retired on January 31, having served 30 years at the Lab and having contributed time, talent and love to the Brookhaven Town community as a member of the Town's INTERFACE Steering Committee, Town Supervisor Felix Gucci Jr. did proclaim February 8, 1996, as Barney McAlary Day; and

Whereas: under McAlary's direction and encouragement, BNL employees have donated hundreds of pounds of food monthly to the INTERFACE Food Drive; and

Whereas: the BNL Food Drive initiated under McAlary and now being continued by Rita Kito, Director's Office, and Donna Wadman, Safety & Environmental Health Division, is vitally needed by the community and is collecting contributions all next week;

Now, therefore, tie knots in your handkerchiefs, write yourselves e-mail — whatever it takes to remember to bring in your donation and commemorate McAlary's work with the biggest February food collection ever! If you prefer, send personal checks made out to BNL Food Drive to Kito, Bldg. 360, and Wadman, Bldg. 599. Above all, give to the



Barney McAlary

BNL Food Drive

BROOKHAVEN BULLETIN

Published weekly by the Public Affairs Office for the employees of BROOKHAVEN NATIONAL LABORATORY

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Upton NY 11973-5000
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The Brookhaven Bulletin is printed on paper containing at least 50 percent recycled materials with 10 percent post-consumer waste. It can be recycled.



