

FROM POLLUTER TO PROTECTOR: THE CHALLENGES OF CHANGING CULTURE, OPERATIONS AND IMAGE

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ABSTRACT: Brookhaven National Laboratory is a U. S. Department of Energy (DOE) multi-program research facility, located in Suffolk County in Long Island, New York. In 1997, groundwater monitoring revealed significant levels of tritium contamination from a reactor fuel pool. The public reaction was immediate and intense. In an unprecedented move, DOE terminated the contractor and rebid the Laboratory management contract. Brookhaven Science Associates (BSA), a partnership between Battelle and the State University of New York at Stony Brook, won the contract.

BSA faced enormous challenges in the environmental area. One was changing the culture and mindset of staff and management with regard to environmental protection. Another was changing operations to fully integrate environmental stewardship into all facets of the Laboratory's missions. And finally, BSA needed to change the Laboratory's public image.

This paper describes how BSA faced those challenges. DOE and BSA entered into a voluntary agreement with the U.S. Environmental Protection Agency to conduct an in-depth evaluation of the environmental aspects and impacts of all activities onsite. A project was initiated to explore and disposition environmental problems associated with historical activities. BSA also has made significant investments in developing and implementing an Environmental Management System that is consistent with the ISO 14001 standard, with enhancements in the area of compliance assurance. Finally, BSA improved its community involvement program to develop and maintain a positive, proactive and constructive relationship with stakeholders. This paper discusses the approach and results of these efforts. For example, one of major facilities at Brookhaven National Laboratory was recently certified to the ISO 14001 standard, becoming the first Long Island-based organization and the first DOE Office of Science facility to achieve registration.

The Laboratory Setting

Brookhaven National Laboratory (BNL) is a U. S. Department of Energy (DOE) multi-program research facility. BNL was founded in 1947 on the site of the U. S. Army's former Camp Upton. The facility is situated on 5,265 acres in the Pine Barrens of Suffolk County in Long Island, New York. The marshy areas onsite are part of the headwaters of the Peconic River. BNL is located over a sole source aquifer system¹ that is the source of drinking water for all of Long Island. Land use in the surrounding area is BNL is primarily residential.

¹ Designated by the U.S. Environmental Protection Agency

BNL has over 3,000 employees, and an annual budget of more than \$400 million. Each year thousands of visiting researchers from academia and industry come to conduct research at BNL's large and unique facilities. BNL's main mission is basic and applied research in a multitude of scientific fields, from high-energy experimental and theoretical physics, chemistry and materials science, to biology and medicine. BNL researchers have won four Nobel Prizes. However, the Laboratory's treatment of the environment has not measured up to its world class status in science.

The Problems

As a result of historical chemical and waste management practices, soil and groundwater onsite had become contaminated. In 1989, BNL joined approximately 30 other sites on Long Island that are on the National Priorities List (NPL) and began working with federal, state and local regulatory agencies on cleanup plans. The historical contamination was already a substantial environmental and community relations issue. Then in 1997, a new plume of highly contaminated groundwater was discovered.

The source was a leaking spent fuel pool at the High Flux Beam Reactor (HFBR). The HFBR, which was constructed in 1965, was one of the premier neutron physics research facilities in the world. Neutron beams produced at the HFBR were used to investigate the molecular structure of materials, aiding in pharmaceutical design and materials development. The reactor was also used to expand the knowledge base of physics, chemistry and biology.

Spent nuclear fuel elements were stored underwater in a 68,000-gallon capacity 'pool' within the HFBR facility. The transfer of spent fuel elements from the Reactor to the pool contaminated the pool water with tritium, a radioactive isotope of hydrogen. The pool did not have secondary containment or an automatic leak detection system, and the walls, which were constructed of concrete and tile, were apparently somewhat permeable. As early as 1989, Suffolk County Department of Health (the County) officials had expressed concern that the spent fuel pool did not meet County storage tank standards. BNL assured the County that they were monitoring water levels within the pool and there were no leaks. They also indicated that they were installing a monitoring well to verify groundwater quality. In fact, the \$15,000 required for installation of the wells was not actually funded until 1996.² The delay resulted from internal disagreement about which organization should pay for the wells (the Reactor Division, Environment, Safety and Health [ES&H], or Plant Engineering), the monitoring wells scored too low during the Laboratory's funding prioritization process, and there were budgetary shortfalls.

In late 1996, the two new groundwater monitoring wells revealed tritium contamination associated with the reactor fuel pool. The highest levels seen to date are over 5 million pCi/L of tritium (the New York State (NYS) drinking water standard for tritium is 20,000 pCi/L). Subsequent facility and groundwater investigations revealed that the tritium had been leaking for as long as 12 years without DOE or BNL's knowledge.

In 1997, the Attorney General of New York State conducted an investigation and concluded that "BNL's failure to discover the tritium leak until early this year is attributable to environmental management practices that at best can be described as sloppy and unprofessional." (Vacco, 1997) In the Attorney General's opinion, BNL demonstrated an "entrenched institutional aversion to full cooperation with, and openness toward, responsible regulatory authorities. The BNL workplace culture clearly had not acclimated to the modern regulatory environment." (GAO, 1997)

² There were other existing wells in the vicinity of the HFBR, but they were not properly situated to adequately or directly monitor the facility.

The public outcry about the contamination was immediate and intense. The incident "raised serious concerns in the Long Island community about the laboratory's ability to take its ESH responsibilities seriously, and DOE's competence as an overseer in the laboratory's activities" (GAO, 1997). In the opinion of DOE, the NYS Attorney General, and the U.S. Government Accounting Office, the Laboratory operator at the time, Associated Universities, Inc. (AUI), was unresponsive. However, AUI's management complained that since February 1997, "...senior management of DOE was responsible for decisions made at BNL, not the BNL staff and certainly not AUI." AUI also vigorously protested against the stakeholder's reaction to the contamination, because "there is no public risk associated with the tritium plume." (GAO, 1997) AUI failed to recognize the "social risk," and underestimated the public's reaction to any level of radioactive contamination in a sole source aquifer.

In February 1997, BNL detected another groundwater plume of strontium-90 emanating from a sump at the inactive Brookhaven Graphite Research Reactor. Then the U.S. EPA conducted a multi-media inspection in May 1997. They identified significant weaknesses and/or potential violations in BNL's RCRA, NPDES, TSCA and spill prevention control and countermeasures programs. (EPA, 1998) To further compound matters, in July 1997, a tritium spike that was 4.5 times the NYS drinking water standard was detected at the outfall that discharges from BNL's Sewage Treatment Plant to the Peconic River. The NYS Attorney General charged that BNL failed to react appropriately to the spike. Effluent flows to the Peconic were not stopped, and an unknown quantity of tritium-contaminated water was discharged to the river.

This chain of events seriously eroded the public's trust of BNL. According to a survey conducted by BNL in December of 1998, 60 percent of respondents associated "BNL" with environmental concerns (e.g., groundwater contamination). Only 2 percent were aware that the Laboratory was conducting world-renowned research. While 43 percent thought the Laboratory was now devoting the appropriate resources to environmental protection, 60 percent thought the Lab did not provide timely information, and 49 percent did not trust BNL management to do the right thing.

The expectation on the part of the public and the regulators was that "government must perform consistent with the highest level of protection of the safety and health of our citizenry....recent events at BNL strongly suggest that BNL has still not yet made, and is incapable of making, the managerial changes which will ensure that BNL in fact can satisfy even the most basic requirement for proper operations, to wit, obeying the law and implementing orders and regulations governing operations." (Vacco, 1997) BNL's "blithe indifference" to concerns raised by the Attorney General and the public suggested "a lack of appreciation on the part of BNL in gauging the public's concern for environmental and public safety matters." (GAO, 1997)

DOE's Reaction

In May 1997, in an unprecedented move, DOE terminated the operating contract with AUI. "The Secretary of Energy's decision to terminate Associated Universities' 50 years as the Laboratory's contractor was based, according to DOE's official statements, on the laboratory's loss of the public trust and DOE's own investigation, which concluded that the laboratory had not kept pace with contemporary expectations for the protection of the environment...." (GAO, 1997).

DOE put the contract out for rebid. They viewed this as an "historic opportunity and unavoidable requirement to break from the lax environmental management practices of the past." (GAO, 1997). One contract requirement was implementation of an ISO 14001 Environmental Management System. DOE also included an "off-ramp" provision in the contract, which specified that if the new contractor did not

make dramatic improvements in systems and performance within a three year period, the contract could be terminated.

It was evident that a culture change needed to reach worker attitudes from top management down. "BNL personnel must develop a proactive commitment to ES&H on par with their proven commitment to world class science. It is now clear that the ability of the Lab to remain on the forefront of science is inextricably linked to radical improvement of its ES&H record." (Vacco, 1997) DOE emphasized this in the new contract provisions. In Fiscal Year 1998, only 50 percent of the DOE contract fee and performance evaluation was based on science. The remaining 50 percent was divided between ES&H and Environmental Restoration Program performance (30 percent), and communications and trust (20 percent). This was a significant change from the 1996 contract, in which ES&H accounted for 7.5 percent of the evaluation and environmental restoration accounted for 5 percent.

Only two contractor teams competed for the contract. Brookhaven Science Associates (BSA), a limited liability partnership between Battelle and State University of New York at Stony Brook (SUNY), was awarded the contract. BSA assumed responsibility for managing the Laboratory in March of 1998.

The Challenges

Several assessments concluded that the root causes of BNL's "dismal environmental record" included:

- Lack of an effective management system,
- Unclear management accountability,
- Unclear roles and responsibilities, and
- Inadequate and weak oversight of ES&H activities by DOE and BNL. (Vacco, 1997; GAO, 1997)

The new contractor now faced enormous challenges in the environmental area. One was changing the culture and mindset of staff and management with regard to environmental protection. Another was changing operations to fully integrate environmental stewardship into all facets of the Laboratory's missions. And finally, BSA needed to change the Laboratory's public image.

Some experts in organizational change management suggest that the only major changes that will succeed are those where a "burning platform" exists. That is, the price of maintaining the status quo must be higher than the price of transition. The term "burning platform" refers to a true story about a man working on an oil rig in the North Sea. One night, he was awakened suddenly by an explosion. Amidst the chaos, he made his way to the edge of the platform. As a plume of fire billowed behind him, he quickly assessed the situation. He had been trained to never consider jumping from a platform because it is a 150-foot drop from the platform to the water; debris and burning oil often cover the surface; and if the jump into 40° F water were not fatal, death from exposure would occur in about 15 minutes. The man jumped anyway (and survived). When asked why he had decided to jump, he replied, "Better probable death than certain death." (Quality Digest, 1997)

BNL's "burning platform" had been established by the public outcry, DOE's firing of the contractor, and the new contract requirements. The new BNL management recognized the need to change the way they operated in a fundamental and systematic way. "All" that remained was to determine how and where to jump, and to do it.

The Solutions

BNL chose a multi-pronged approach to address historical and current problems and to prevent future problems. One key to the success of their approach was leadership.

Organizational Changes: When BSA was awarded the operating contract, they brought in several high-level managers and a new Laboratory Director. Environmental protection and communication functions were formerly buried in the AUI organizational structure. BSA created a new organization, Community Involvement, Government and Public Affairs, reporting directly to the Laboratory Director. This organization is responsible for coordinating internal and external communications, community relations, government relations, and museum programs. An Environment, Safety and Health Directorate was also formed. Within the latter organization, a separate Environmental Services Division that integrated the environmental protection programs was established.

BNL also implemented an Environmental Compliance Representative (ECR) program. These environmental professionals are deployed to the field full time. They were initially tasked with supporting the process reviews described below and providing technical support to researchers and facility managers. Embedding environmental professionals in the line organizations is improving compliance with environmental laws, regulations, and policy. Upon project completion, ECR's will transition to site-wide technical support roles. In this capacity, they will help implement systems for continual improvement of environmental performance, with emphasis on pollution prevention and waste minimization.

Expectations for staff and management were defined. As is often the case, in the past, responsibility for ES&H had been relegated to the support organizations. Now senior management made it very clear that they expected all line managers to take full responsibility for ES&H performance, and that line managers and staff would be held accountable. Each manager and staff person was required to develop a Roles Responsibilities Accountabilities and Authorities (R2A2) document signed by the employee, their supervisor, and the supervisor's manager. Specifics on ES&H performance expectations are included in each employee's R2A2.

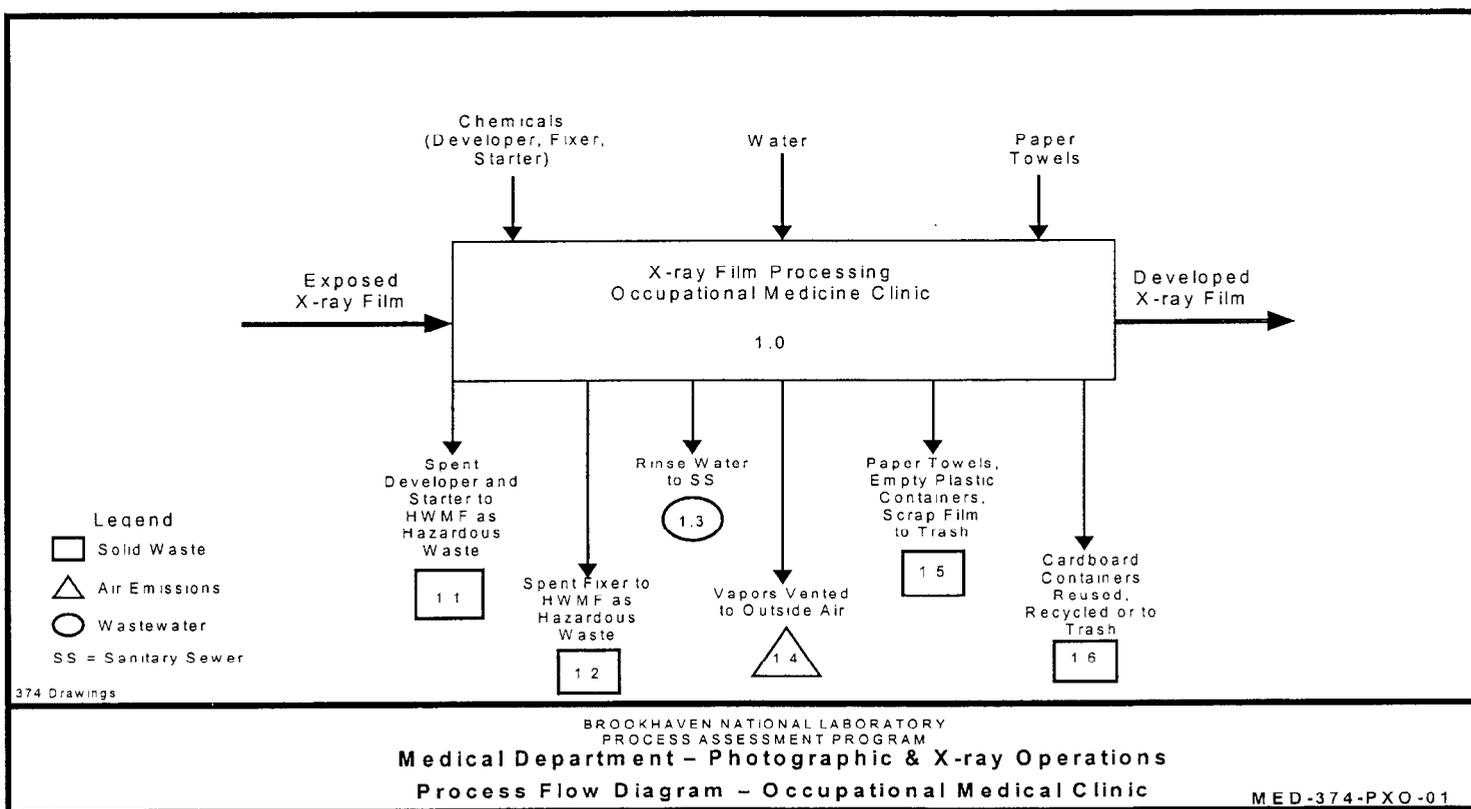
BSA also developed and funded a set of projects designed to integrate environmental stewardship into all facets of the Laboratory's missions. The managers selected for the projects described below were all long-time BNL employees who had institutional knowledge and a good understanding of the BNL culture. They were strong technically, and were widely respected by both the regulators and laboratory personnel. They also had the full support of upper management.

Addressing the Past: BNL already had an active Environmental Restoration Program onsite. However, after contamination coming from a "forgotten" sump at the Brookhaven Graphical Research Reactor was discovered, BNL realized that their understanding of potential vulnerabilities onsite was incomplete. To assess and address historical problems, BSA initiated the **Facility Review Project**, a comprehensive examination of site facilities to identify any past or current activities with the potential to downgrade the environment. During this project, BNL reviewed 50 years of history and more than 900 systems, facilities and operations including tanks, pipes, sumps, cesspools, storage areas, current and past operating practices, etc. Over 2,000 "issues" that posed a potential threat were identified. BNL worked closely with the County to identify and prioritize the issues, and is now in the process of further defining and remedying the problems. A database shared between BNL and the County tracks progress. The 75 highest priority issues that had the potential to have a negative impact on groundwater will be closed-out this fiscal year.

Addressing the Present: DOE signed a voluntary Memorandum of Agreement (MOA) with the U.S. EPA on March 23, 1998. One of the MOA requirements was "to evaluate all experiment and industrial

type operations at BNL for the purpose of identifying all waste streams produced at BNL” on a very aggressive schedule. All high priority processes were to be completed within one year, with the balance done the following year. At first, BNL viewed this as an onerous requirement. But then they realized that this effort could provide an unprecedented level of knowledge of operations, and form a strong technical basis for other environmental improvement programs. The scope was expanded voluntarily by BNL. The efforts were “projectized” into the **Process Evaluation Project**. A process mapping technique was used to develop flow diagrams showing all inputs and outputs (see simple example in Figure 1). A formal regulatory determination of all outputs (waste description, determination, and handling) was conducted. Pollution prevention opportunities and best management practices were identified. In total, over 130 industrial processes (e.g., machining, painting, electronics) and 1,870 research experiments were evaluated. The approximate cost of \$1.6 million was borne by line organizations (60 percent) and overhead funding (40 percent). Over 170 pollution prevention opportunities were identified. The cost savings realized from implementing these and previously identified pollution prevention opportunities was more than \$2.0 million in 1999 alone.

Figure 1: Sample Process Flow Diagram from Process Evaluation Project



Addressing the Future: The MOA also required that BNL establish an Environmental Management System (EMS). Again, BNL decided to go above and beyond what the Agreement and the contract with DOE required by electing to ultimately register to the ISO 14001 standard, as opposed to self-declaring that they had a conforming system. Under the **Environmental Management System Project**, BNL is using a phased approach, first registering high-profile, select facilities, and then seeking to register the entire Laboratory to the ISO standard in 2001. The registration process involves rigorous audits by an American National Standards Institute, Registrar Accreditation Board (ANSI/RAB), an aspect that appealed to the NYS Attorney General. While the significance of ISO 14001 registration may not be as meaningful to the general public as it is to the environmental and regulatory community, BNL believed that it was important from a trust and credibility standpoint to undergo the third party review. The NYS Attorney General saw an EMS as a valuable blueprint and a recognized mechanism that the outside world can judge. (Vacco, 1997)

BNL has committed more than \$2.7 million to this three-year project. The goal is to fundamentally and systematically change the way the Laboratory operates. Existing systems were identified and are being enhanced, revamped and integrated. BNL's EMS is consistent with the international standard. However, in response to EPA's concerns, there is increased emphasis in the areas of compliance assurance, pollution prevention and community outreach.

In the first year of the project (which began in July 1998), BNL developed institutional requirements. One of the early steps was developing and communicating an environmental policy (reproduced below). The policy is posted throughout the Laboratory and on the BNL web site. A hard copy was also sent to all employees with a personal letter from the Laboratory Director, outlining his commitment to environmentally responsible operations and his expectation that all staff would participate in this new way of doing business.

Figure 2: BNL Environmental Stewardship Policy

**Brookhaven National Laboratory
Environmental Stewardship Policy**

Policy: It is Brookhaven National Laboratory's (BNL) policy to integrate environmental stewardship into all facets of the Laboratory's missions. We will manage our programs in a manner that protects the ecosystem and public health.

In support of this policy, BNL makes the following commitments:

- We are committed to achieving compliance with applicable environmental requirements.
- In consideration of the potential impacts of our activities on the environment, we will integrate pollution prevention/waste minimization, resource conservation, and compliance into all of our planning and decision-making. We will adopt cost-effective practices that eliminate, minimize or mitigate environmental impacts.
- We will define, prioritize, and aggressively correct and clean up existing environmental problems.

- We will work to continually improve our environmental management system and performance. We will establish appropriate environmental objectives and performance indicators to guide these efforts and measure our progress.
- We will maintain a positive, proactive, and constructive relationship with our neighbors in the community, regulators, DOE, and our other stakeholders. We will openly communicate with stakeholders on our progress and performance.

In addition to my annual review of BNL's progress on environmental goals and adherence to this policy, I invite all interested parties to provide me with input on our performance relative to this policy, and the policy itself.

Signed: *John H. Marburger*, Laboratory Director Date: 11/19/98

As part of the EMS, BNL improved on a tool that had been developed by their sister organization, Pacific Northwest National Laboratory, called SBMS. SBMS, or the Standards Based Management System, is a web-based system to deliver requirements in a user-friendly format. All labwide requirements reside in this system. The information provided focuses on what staff need to know to do their work, and translates the requirements into plain English. Up-to-date requirements were developed and translated into "Subject Areas" for the following topics:

- Calibration
- Correspondence and Commitment Tracking
- Drinking Water
- Environmental Assessments
- Environmental Evaluation of Industrial Processes and Experimental Research
- Environmental Monitoring
- Hazardous Waste Management
- Identification of Significant Environmental Aspects and Impacts
- Internal, Controlled Documents
- Laboratory-wide Procedures and Guidelines Development
- Liquid Effluents
- Mixed Waste Management
- National Environmental Policy Act (NEPA) and Cultural Resource Evaluations
- Nonconformance and Corrective and Preventative Action
- Non-Radioactive Airborne Emissions

- Oil/PCB Management
- Pollution Prevention and Waste Minimization
- Radioactive Airborne Emissions
- Radioactive Waste Management
- Regulated Medical Waste
- Requesting SBMS Variances
- Requirements Management
- Spill Response
- Storage and Transfer of Hazardous Materials
- Underground Injection Control (UIC)

Existing standards for work and research planning and control were also upgraded to ensure that reviews by qualified ES&H staff occur early in the planning process, and that adequate measures to control hazards and risks are incorporated during the design phase.

The requirements were then tested and validated in pilot facilities. After incorporating improvements recommended by the pilots, the requirements were rolled out to the rest of the Laboratory. Extensive training on these requirements was provided to staff whose responsibilities involved environmental protection. In addition, all staff were required to take a computer-based training course developed by BNL. The course discusses the EMS, reviews the environmental requirements at a high level, and describes the impacts of noncompliance. Finally, the top three levels of management were required to attend overview training on the EMS.

Another key environmental program designed to improve operations is **Groundwater Protection**. BNL developed a program that focuses on preventing further impacts to groundwater and restoring groundwater quality. Whereas most sites rely solely on groundwater monitoring, at BNL, monitoring is used mainly as a tool to determine whether operational or engineered controls are effectively protecting groundwater. In 1997, most of the existing 700 wells onsite were associated with environmental restoration. In conjunction with the Facility Review Project, BNL conducted a thorough review of all active and operational areas onsite that could potentially impact groundwater, and added over 80 new wells to monitor those areas. BNL has also developed a contingency plan that defines an orderly process for responding quickly to unexpected monitoring results. A key element of that plan and the Groundwater Protection Program is full and timely disclosure of groundwater monitoring results to stakeholders.

Communication: After the HFBR tritium incident, the NYS Attorney General expressed concern about BNL's "chronic inability to work with the constructive forces that are trying to guide the Lab back onto the right path..." He believed that BNL needed to "step outside the Laboratory's gates and demonstrate a commitment to the entire Long Island community." (Vacco, 1998)

All of the programs described above emphasize timely, on-going and meaningful communication with stakeholders on findings and progress. BNL has improved their working relationship with regulatory agencies by sharing both good and bad news, and attempting to get their buy-in early on with regard to plans, priorities and corrective actions. BNL has an open door policy with the regulators. Quarterly

meetings are held with EPA on the MOA projects and operations of interest. Some agencies (the County and Region II EPA) have liaison staff with offices located at the Laboratory.

BSA has "put their money where their mouth is" by investing millions of dollars in programs geared towards improving the Laboratory's environmental systems and performance. The voluntary MOA demonstrated BNL's willingness to make major changes, and involve the regulators at every step along the way. DOE and BNL have entered into several other Consent Orders/Agreements with the regulators to address compliance concerns. BNL project and senior managers have made communicating regularly on progress and honoring commitments a high priority. The Laboratory Director's frequent presence at meetings with the regulators and the community demonstrates his personal commitment to environmental stewardship.

BNL also established a Community Advisory Council, which consists of representatives from 32 varied stakeholder groups including civic, business, union, health, education, and environmental groups. The Council advises the Laboratory Director and sets its own agenda. In addition, DOE established the Brookhaven Executive Roundtable. The Roundtable has representatives from elected officials and regulatory agencies, and provides the Laboratory a forum for updating members and the public on issues that may be of interest to them. Subject matter experts are available to give presentations and to respond to questions and concerns in real time. BNL also has an Envoy Program, which builds on relationships that BNL employees have established within community organizations, as a way to communicate information about the Laboratory to a broader audience.

In 1998, BNL hosted more than 10,000 student visitors; another 3,200 people visited the Laboratory through its Summer Sunday programs. To highlight the cutting-edge environmental research conducted at the Laboratory and provide information on cleanup initiatives, BNL hosted an Environmental Fair that drew over 3,000 visitors.

Although all DOE sites produce a comprehensive annual Site Environmental Report,³ BNL is also exploring mechanisms to communicate data in a more user-friendly, visual and timely manner—perhaps through the Internet. A great deal of information about BNL's environmental programs is already on BNL's web site. Project plans, status reports, procedures, etc. are accessible to the general public. A student intern at BNL is developing a natural resources Webpage to increase awareness of the natural resources onsite and the strategies that BNL has employed to protect them. When BNL recently discovered a new tritium plume onsite, all environmental monitoring data, fact sheets and other information were posted on the web. Improved mechanisms to communicate environmental monitoring results to the responsible line managers are also under development.

In 2000, BNL is also organizing a number of events surrounding the 30th anniversary of Earth Day. The goal is to increase employee awareness about environmental protection, and to demonstrate to the community that BNL cares about them and their environment. Events for employees include awards for proactive efforts in environmental protection at all levels of the organization, a nature walk, and tours of the Town of Brookhaven Materials Recycling Facility. Industry is invited to view pollution prevention technologies being deployed at BNL. The local Audubon Society is teaming with BNL staff for an onsite birding field trip. Speakers on pollution prevention and the Long Island Pine Barrens are featured. A contest was held to have local 3rd-5th grade students design the cover of the Year 2000 Site Environmental Report. A 4-mile race through the BNL Pine Barrens is expected to draw hundreds of runners from around the nation.

³ BNL's reports are on the Internet at <http://www.esh.bnl.gov/esd/SER.htm>.

Today

The HFBR, which had been shut down for routine maintenance and refueling when the contamination was discovered, will never reopen. Secretary Richardson announced the decision to permanently close the reactor in 1999. Investigation and remediation costs in 1997 alone were approximately \$18 million.

BNL now has an unprecedented knowledge of potential environmental vulnerabilities and current operations. Compliance assurance programs are improving BNL's compliance status. Pollution prevention projects have resulted in millions of dollars of cost savings/costs avoided. In 1999, the Relativistic Heavy Ion Collider (RHIC) facility was certified to the ISO 14001 standard, becoming the first Long Island-based organization and the first DOE Office of Science facility to achieve this level of recognition. In 1999, BNL received an "Excellent" performance rating from DOE. A "360 Degree" feedback survey indicated that direct reports and peers felt that senior managers believed environmental stewardship was important.

The Laboratory is openly communicating with neighbors, regulators, employees and other interested parties on issues and progress. The communications program is also working to increase the public's awareness of BNL's scientific research and contributions to society, so they do not just think of pollution when they think of BNL. Trust with EPA has improved. While the majority of stakeholders are encouraged by the commitments and programs that the Laboratory is instituting, some remain skeptical. BNL must continue to deliver on commitments and demonstrate real improvements in environmental performance in order to regain trust.

For 50 years, the unique, leading-edge facilities at BNL have made many innovative scientific contributions possible. Today, BNL continues its research mission while paying much closer attention to protecting and cleaning up the environment. The Laboratory's new environmental motto,⁴ "Exploring Earth's Mysteries...Protecting Its Future," reflects a desire to balance world class research with operating in harmony with the natural environment.

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⁴ This motto was selected from employee suggestions submitted during a labwide contest.

