

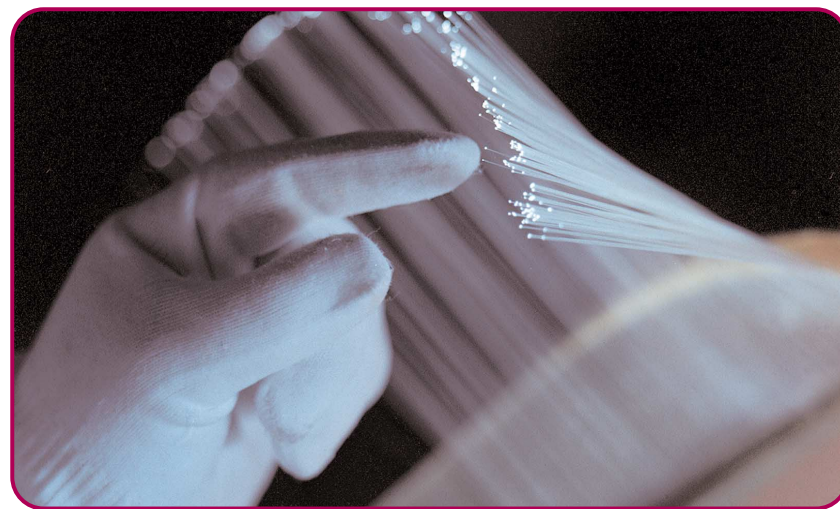
National Security

In 2001, Pacific Northwest received a major national award for defense innovation when the Christopher Columbus Foundation and *Discover Magazine* awarded researcher Dick Craig a \$100,000 fellowship in recognition of the development of the Timed Neutron Detector. Craig and a team of researchers created the detector to quickly and inexpensively locate metal and plastic landmines.

While other landmine detection systems also can locate these mines, the Timed Neutron Detector goes a step beyond. It is portable, comparatively inexpensive and easy to operate. Landmines are a significant problem worldwide—the United Nations' Landmine Database estimates that there are 110 million landmines hidden in the soils of nearly 70 countries.

At Oak Ridge, researchers are making significant contributions to the Army's Objective Force Warrior program, whose goal is to develop a high-tech soldier with 20 times the capability of today's warriors and have that soldier commissioned by 2010.

In Kazakhstan, expertise from Pacific Northwest guided one of the world's largest and most successful nonproliferation projects. More than three tons of plutonium were placed in secure storage, which should significantly reduce the risk of thefts.



Pacific Northwest's Plutonium Measurement and Analysis (PUMA) is a revolutionary radiation monitoring system that uses glass fibers to detect the presence of materials such as plutonium. This system can be used to monitor nuclear materials and has significant potential in countering the threat of nuclear terrorism.

Staff from the national laboratories that Battelle operates have also played an important role in DOE's Initiatives for Proliferation Prevention Program, which seeks to create nondefense work for former Soviet weapons scientists.

Environment

In 2001, environmental regulatory officials asked Battelle to develop a suite of tests and screens for identifying chemicals that alter or impair

the endocrine systems of humans and wildlife.

Pacific Northwest, Battelle Columbus, and Battelle Sequim are collaborating and integrating their skills to support this critical federal project, whose benefit will be the creation of toolkits of tests that EPA and industry can use to evaluate chemicals.

On the cleanup front, Pacific Northwest is managing an \$8.4 million effort for DOE's Environmental Management Science Program to complete 16 key projects aimed at bridging the gap between fundamental science and applied technologies to clean up DOE sites.



Robert Wind, a physicist at Pacific Northwest National Laboratory, won a 2001 Discover Magazine Innovation Award for a microscope that may have great value in cellular research.

At Oak Ridge, environmental researchers developed a portable instrument that analyzes chemicals in just seconds. It is the first battery-operated portable device with tunable filters and performance comparable to that of laboratory-scale instruments.

Throughout Battelle and the national laboratories that we manage or co-manage for DOE, environmental researchers are leading the way in collaborations on waste remediation, water quality, and environmental sustainability. Continued integration of our science and technology strengths will ensure environmental advances throughout the 21st century.



Zugen Fu (left), Stony Brook University, and Jose Rodriguez, Brookhaven National Laboratory, conduct research at BNL's National Synchrotron Light Source, where high intensity X-ray beams are helping to decode structures of proteins involved in disease processes.



The Environmental Molecular Sciences Laboratory (EMSL) at Pacific Northwest is a world leader in environmental research, especially in areas such as environmental restoration and waste remediation.