

United States Should Capitalize on Benefits of Foreign Participation in U.S. R&D

Insufficient evidence exists to substantiate the concern over possible negative effects of foreign participation in U.S. research and development (R&D), a committee of the National Academy of Engineering has concluded in a report, *Foreign Participation in U.S. Research and Development: Asset or Liability?* The committee recommended that Congress should avoid restricting foreign access to the nation's R&D efforts except when such participation poses a clear threat to national security. Restrictions discourage foreign direct investment in the United States and encourage similar discriminatory treatment of U.S. firms abroad.

By a number of measures, foreign participation in privately and publicly funded U.S. R&D is on the rise. During the 1980s, the share of foreign ownership of U.S. manufacturing assets nearly tripled, from 7.2% to 19.2%. Between 1982 and 1993, spending by foreign-owned firms in the United States jumped from 9.3% to 15.5% of all privately funded U.S. R&D. Foreign firms' involvement in publicly funded research is much smaller, accounting for less than 2% of total sponsored research at U.S. universities and federal laboratories. In 1991, however, 37% of all doctoral students and more than 50% of all postdoctoral candidates enrolled in U.S. science and engineering programs were not U.S. citizens.

Direct investment in the United States by foreign companies has driven their participation in privately funded U.S. R&D, the report said. Between 1982 and 1992, the amount of foreign direct investment in the United States grew from \$124.7 billion to \$430.2 billion. About 80% of foreign direct investment in the United States during this period was used to acquire existing U.S.-based businesses.

Foreign involvement in U.S. R&D has raised concerns that foreign-owned firms could gain a monopoly on technologies that are vital to U.S. national defense. The risks of denied or delayed access to critical technologies as a result of foreign ownership are real but poorly understood, the committee said. However, it cautioned against taking actions that ignore the substantial contributions made by foreign-owned firms. For instance, Sony Corp.'s 1989 purchase of Materials Research Corp. saved the semiconductor-equipment manufacturer from bankruptcy, thereby assuring the United States access to 60% of the world's production capacity for crucial defense materials.

To maximize the benefits while minimizing potential risks of foreign participation in U.S. R&D, the committee also recommended that the federal government

continue its efforts to open foreign markets to U.S. trade and investment through international negotiation and more effective use of existing trade laws. Barriers to U.S. investment in the R&D systems of other nations impose real costs on U.S. citizens and raise questions about the fairness and value of foreign involvement in the United States. As a result, some have called for unilateral measures that force a level playing field. However, such measures tend to discourage positive foreign investment and undercut long-standing U.S. efforts to remove trade barriers through negotiation, said the committee.

The committee also recommended that federal agencies be given more latitude to benefit from the R&D capabilities of U.S.-based, foreign-owned firms. Foreign participation in publicly funded R&D is regulated by confusing and at times contradictory intergovernmental agreements and by U.S. agency directives and guidelines. These impede agencies in fulfilling their missions and diminish the contributions of federal R&D programs to the U.S. economy, the committee said. Laws and guidelines that regulate the R&D interaction of federal agencies and laboratories with U.S.-based companies should be reconciled so that agencies can take full advantage of R&D opportunities.

Copies of *Foreign Participation in U.S. Research and Development: Asset or Liability?* are available from the National Academy Press, 2101 Constitution Avenue, N.W., Washington, DC 20418; 202-334-3313 or 1-800-624-6242.

Privacy, Health Issues Should be Considered in Development of Passenger Screening Devices

A report from the National Research Council examines issues such as privacy, legal concerns, and possible adverse health effects from new screening devices, all of which affect public and airline industry acceptance of new technologies for passenger screening. Chemical trace-detection and imaging technologies are among the approaches being considered by the Federal Aviation Administration (FAA). Trace-detection devices react to vapors or particles from explosives materials. Imaging technologies reveal objects concealed under layers of clothing, enabling security personnel to detect the presence of weapons or other dangerous objects.

The electromagnetic radiation emitted by imaging and other technologies falls well below levels thought to be harmful by some, the panel said. Trace-detection technologies also pose no known health threats.

Imaging technologies, which "see"

through a person's clothing and produce an image may cause the greatest privacy concerns. It may be possible and more acceptable to develop trace-detection technologies that screen purses, bags, boarding passes, or other objects that people have touched.

Courts generally have found that current screening procedures constitute a "reasonable search" under the Fourth Amendment. New technologies are likely to be considered in the same legal light if the degree of intrusiveness does not exceed that of current systems.

Copies of *Airline Passenger Security Screening: New Technologies and Implementation Issues* are available from the National Academy Press, 2101 Constitution Avenue, N.W., Washington, DC 20418; 202-334-3313 or 1-800-624-6242.

Civilian Radioactive Waste Management Program Releases Multi-Year Program Plan

A draft of the revised Program Plan for the U.S. Department of Energy's Office of Civilian Radioactive Waste Management (OCRWM) has been released, detailing preparation to implement the Clinton administration's Fiscal Year 1997 budget request and the direction of Congress in the Fiscal Year 1996 Appropriation's legislation. The Department of Energy recognizes that the plan is based on assumptions that may have to be updated and modified, as appropriate.

The plan is consistent with the administration's position on high-level radioactive waste management with geologic disposal remaining as the basic goal. The administration said that the siting of any interim storage facility must be based upon objective criteria and that such a decision should be informed by the scientific work necessary to determine the viability of the proposed Yucca Mountain repository. Prior to the completion of that work the activities in the plan related to interim storage are limited to nonsite specific design and engineering and the preparation for transportation.

Key elements of the program direction for the Yucca Mountain Project include updating the regulatory framework for a repository at Yucca Mountain in 1997, completing the viability assessment of the Yucca Mountain Repository Site in 1998, recommending a repository site to the President in 2001, and submitting a repository license application to the Nuclear Regulatory Commission (NRC) in 2002.

To obtain a copy of the revised plan, contact the Civilian Radioactive Waste Information Center at 1-800-225-6972, or access it through the OCRWM homepage on the internet at <http://www.rw.doe.gov>. □