Briefing:

Industrial, Government Cooperation Urged

To deal with increasingly competitive world markets, the United States must reshape industry and government working relationships and manufacturers must embrace a new operating philosophy. Without improved industrial performance it will be impossible to retain jobs and maintain the country's standard of living, says the National Academy of Engineering.

In a 25 April report, *The Technological Dimensions of International Competitiveness**, the academy says that "U.S. industry must commit itself to offering world-class products at competitive costs." A key factor in achieving this, says the academy, is a "commitment to good engineering"—one that stresses manufacturing processes and materials as well as product function.

With about 70% of the U.S. manufacturing sector subject to foreign competition, industry must raise productivity, constantly strive to improve quality, and must compress product development times. But, ". . .improved national competitiveness cannot be achieved by any quick single action, or by technological means alone," according to the 20-member panel that assembled the report. What the country needs, the group says, is a long-term strategy. And to accomplish this, business, labor, government, and education interests must join together to formulate new approaches to meet the challenges of a changing world economy.

The timing of the release of the academy's report is no accident, says W. Dale Compton, co-chairman of the report committee and a senior fellow of the NAE. It is aimed at presidential contenders George Bush, Michael Dukakis, and Jesse Jackson as well as to other policy-makers.

"We are hoping to encourage more debate about this during the political process," Compton told *Science*. "People need to realize that this is a very critical time in our history. All of us have to learn and understand that we are in a global economy. It is changing the way we do business."

Indeed, Compton and the other panel members think it is time to reassess government's role in research and development and its relationship with industry. Increased government assistance to American industry may be necessary at times, the academy says. The government, for example, must be prepared to provide partial funding for industry-wide R&D consortiums.

In conjunction with being more willing to support development of technologies with commercial potential, industry, and the federal government must attempt to develop a "common view" on the nation's technological agenda, says the academy. "Mechanisms should be developed to encourage government and industry to work together more effectively to anticipate technological challenges," says the panel. It suggests that the government rely on an independent group of experts to periodically study and report on the engineering and technological needs of the country.

In addition to federal efforts, the academy report calls for states to do more to assist their industries. As important as providing funding for technological centers, is the need to improve primary and secondary education, the academy notes. Maintaining a competitive work force, the panel contends, will require greater training and education in the future.

Specifically, the committee calls for substantial increases in the salaries provided math and science teachers. Incentive must be provided, the academy says, to encourage more American citizens to pursue advanced degrees in science and engineering. Immigration laws also should be revised to permit more foreign students to remain in the United States after they have obtained their doctoral degrees, the report says. ■ **M.C.**

*The report is available from the Office of Administration, Finance, and Public Awareness, National Academy of Engineering, 2101 Constitution Avenue, NW, Washington, DC 20418.

Commission to Assess Science and Government

The Carnegie Corporation has decided that the way government, especially the federal government, uses science and technology for policy-making needs a thorough new examination. It has therefore set up a Commission on Science, Technology, and Government, to be co-chaired by Rockefeller University president Joshua Lederberg and New York Academy of Sciences president William T. Golden. The executive director is Carnegie vice president David Z. Robinson, who served in the White House Office of Science and Technology during the 1960s.

The 22-member commission is filled with luminaries from science and industry and former high government officials, including former President Jimmy Carter. The group will organize studies, issue interim reports, and make final recommendations in about 3 years. ■ **C.H.**

Acid Rain Said to Threaten Bay

Acid rain, already considered a major peril to freshwater lakes and streams, is also a significant polluter of the Chesapeake Bay, the nation's largest estuary, according to a new study released on 25 April by the Environmental Defense Fund (EDF).

In freshwater, acid rain jeopardizes aquatic life by increasing the acidity in the water. The EDF study asserts that acid rain threatens marine life in a different way—by acting as a fertilizer, says Michael Oppenheimer, a scientist at EDF. As a nutrient, nitrogen oxides promote algal growth, which in turn depletes the oxygen from the Bay. Acid rain "is acting like raw sewage from the sky," Oppenheimer said.

The study contends that nitrates in acid rain account for a quarter of the nitrogen load in the Bay, a figure that is almost double previous estimates by the Environmental Protection Agency. If this calculation is right, then acid rain would contribute as much nitrogen pollution to the Bay as point sources, which include raw sewage and industrial plants.

The study also concludes that animal waste represents only 4% of the total nitrogen loading, which is much less than current federal estimates. Its findings are based on data collected by state and federal agencies. The acid rain falling on the Bay comes from regional emissions from cars and trucks and midwestern utilities, Oppenheimer says.

Scientists studying nutrient pollution in the Bay have long believed that phosphorus, rather than nitrogen, is the principal promoter of algal growth. But in the past few years, more research indicates that phosphorus boosts algal growth mainly in brackish areas whereas nitrogen is the controlling factor in saltier water, EPA scientist Joseph Macknis says.

William Baker, president of the Chesapeake Bay Foundation, Inc., a consortium of public interest groups, notes that limiting acid rain to prevent Bay pollution "is a long term project." For now, he says, "we've got to put more aggressive controls on sewage" and other sources that can be more easily regulated.

EDF chose not to submit the report to a journal. It released the study now because it hopes to influence a meeting this week between President Reagan and visiting Canadian Prime Minister Brian Mulroney, who has urged the United States to toughen acid rain controls. Congress is currently debating tighter regulations on acid rain. ■ **M.S.**