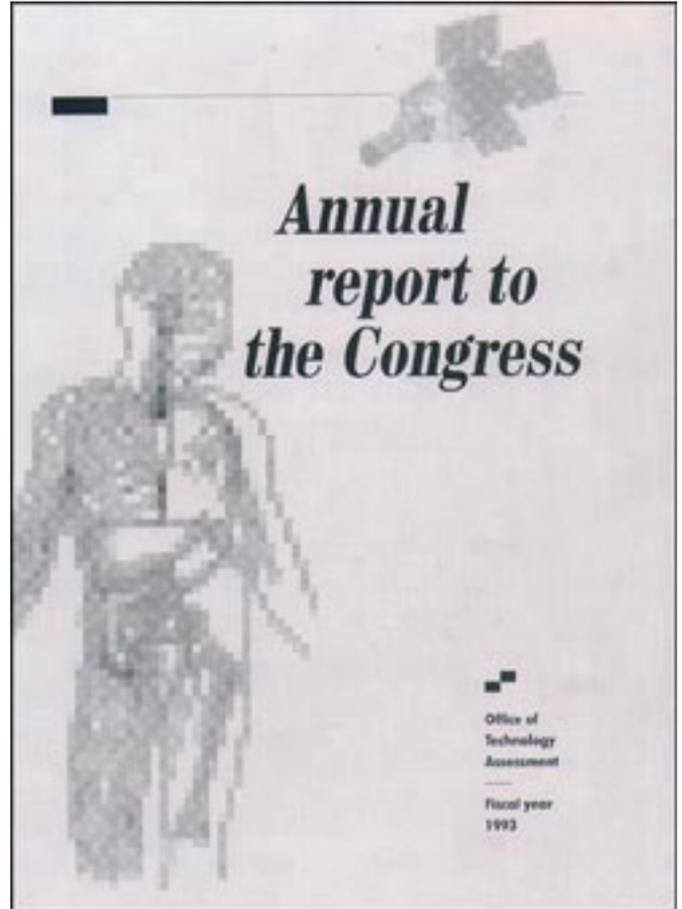


*Annual Report to the Congress: Fiscal Year
1993*

March 1994





CONTENTS

1	Chairman's statement
3	Vice chairman's statement
4	TAAC chairman's statement
5	Director's statement
8	About OTA's organization and operations
12	Industry, commerce, and international security division
15	Health, life sciences and the environment division
18	OTA forum on technology and governance in the 1990s
20	Work in progress at year-end
22	Technology assessment advisory council
24	OTA staff as of September 1993
27	OTA awards and fellowship programs
29	Advisors and panel members
52	Office of technology assessment act

*Statement from
chairman,
Edward M. Kennedy*



It has been gratifying to witness the growth and development of the Office of Technology Assessment since its establishment in 1972. OTA has built a national reputation for its impartial and authoritative analysis of new developments in technology and related public policy issues. By analyzing how the latest scientific research can be applied to pressing economic, environmental, and social problems, and then suggesting policy options based on its findings, OTA performs an essential service for Congress and the country.

I commend the many men and women who have contributed to OTA'S remarkable success. They include the dedicated researchers who have contributed their expertise to hundreds of reports;

the dependable administrative and support staff who have kept OTA operations running smoothly; the program managers and division directors whose foresight has kept OTA on the cutting edge of technology; the knowledgeable and skillful officers who handle OTA'S congressional and public relations; the distinguished members of the Technology Assessment Advisory Council, who have provided wise counsel and advice; the Director Roger Herdman and his predecessors, whose gifted and energetic leadership has guided OTA toward the fulfillment of its mission.

More than ever, OTA'S work is essential to intelligent policy decisions by Congress. The nation is in the midst of extraordinary

progress in technology. New developments in telecommunications and electronic networks are ushering in an information revolution that will be as significant as the industrial revolution of a century ago. We all know the need for fundamental restructuring in the nation's social services—especially in health care, welfare, education, job training, and crime prevention. We are working to find the best means to convert our industries from the defense orientation of the Cold War years to a civilian economy today. OTA has made essential contributions in all of these areas and many others. It has conducted important studies on electronic delivery of government

services, the economic impacts of health reform, and defense conversion, to name just a few of the reports published by OTA in the past year. Studies such as these are providing Congress and the American people with indispensable tools for understanding the present and preparing for the future.

It is an honor to serve on OTA's board, and I applaud all those who have contributed so much to OTA's well-deserved success.

Senator Kennedy

*Statement from
vice chairman,
Don Sundquist*

*

It has been my pleasure to serve as the Vice Chairman of the Technology Assessment Board during this Congress, after a number of years on the Board.

OTA has made some important transitions in the last year, not the least of which was Jack Gibbon's departure after many years as Director of OTA and, of course, Roger Herdman's becoming Director. I feel as though it has been a smooth transition, and we on the Board are looking forward to working with Roger in the future.

OTA has continued to give the Congress useful, nonpartisan advice on a wide range of topics: health care reform, environmental

issues and the conversion of our economy in a post-Cold War environment. This is a unique institution that provides a lot of valuable analysis for Congress and policy makers generally.

I look forward to working with OTA in the second session of this Congress, and in the future.

Congressman Sundquist

*Statement from
TAAC chairman,
Neil E. Harl*



It has been my great pleasure to serve on the Technology Assessment Advisory Council and especially to assume the responsibilities of Chair of the Council in the past year.

OTA has remained a strong and important analytical organization. I am confident that OTA will continue to play a vital role in providing high quality information and analysis for the remainder of the decade and into the twenty-first century. The dramatic political happenings of recent time, the continuing economic and social pressures of the world, and the on-rush of technical and technological developments assure that OTA's unique niche will be an

important one to the Congress and to the country generally. The shifting political, economic, legal and technological maelstrom creates an ever-changing relationship between technology and public policy. The dissolution of the former Soviet Union, the revolutions occurring in biology and information technology and the conversion of our domestic economy in a post-Cold War setting into an economy capable of sustained economic growth in an environmentally responsible manner are greatly increasing the need for sound advice on technology, policy to the Congress. OTA has shown itself to be an objective, dependable source of advice and counsel and, I believe, will continue to be so.

I congratulate Roger Herdman on being appointed Director of OTA in the past year. I believe Roger will continue to provide the same valuable leadership that Jack Gibbons demonstrated during his tenure. The Council looks forward to working with Dr. Herdman in the future.

Neil E. Had

*Statement from
OTA director,
Roger C. Herdman*

Fiscal Year 1993 was a year of substantial change for OTA. In January 1993, OTA's Director for the last thirteen years was called to become Science Advisor to newly-elected President Clinton and was also appointed Director of the White House Office of Science and Technology Policy (OSTP). During the rest of 1993 a number of additional senior and administrative OTA staff also joined OSTP. Those staff departures along with the retirement of another assistant director resulted in the formation of a new top management team halfway through the fiscal year.

The change in management provided for more flexibility in responding to the legislative branch's priorities for resource economies. In doing so OTA's

policy was to manage for the best value and to try to achieve expected levels of productivity with a less expensive process, primarily, by reducing management overhead. In doing so a major effort has been made to preserve the working units of the agency, the project teams, and to make changes in organization and personnel through reassignment and attrition not through reductions in force. The response to the requirements of our appropriations has been made in a series of steps. These include reduction of OTA's research divisions from three to two, with redistribution of the existing nine programs to the two new divisions. Also the support offices' management by a separate operations manager has been ended, and these offices are now distributed into the research divisions and the Congressional and Public Affairs office. This management change should improve the coordination of administrative and research functions. Further steps for the future have been the subject of major staff planning efforts and involve coalescing of the nine programs to six in response to continuing financial stringency

We are proud that during the time that all this activity has been going on, OTA was able to maintain the unique OTA process, which has served the agency and the Congress so well over the years, and to continue at traditional levels of productivity in generation of reports and information for congressional committees. The hallmarks of OTA's process remain: working on an agenda that flows from committee priorities and reflects, therefore, by definition important national issues; staff commitment to independent research, analysis and responsibility for the results with only focused reliance on contracting outside of OTA; careful search for and attraction of the best national experts and stakeholders as advisors for each assessment; reliance on advisors and the peer review process to monitor and ensure the quality of OTA work; and with the help of our Technology Assessment Board, a staff culture that assigns the highest priority to producing work that is nonpartisan, accurate and complete.

OTA spent considerable time preparing documentation and appearing before the Joint Committee on the Organization of Congress to explain and

demonstrate how our work for the Congress is accomplished. Although there was some discussion in the Joint Committee directed at a consideration of duplicating some aspects of OTA's Technology Assessment Board for other congressional support agencies, the Committee did not propose any changes for OTA itself. At the same time, however, OTA took steps resulting from an internal analysis to provide greater standardization and uniform quality of reports. These steps included an agency-wide managing editor to provide continuous quality review and suggestions to project teams, a program to make available expert outside consultation on a periodic basis, and a rethinking of how prescriptive or conclusive OTA might or should be in reporting to Congress, among others.

With respect to achieving traditional levels of productivity during the year, OTA released 50 reports, full assessments or background papers—essentially the same number as in fiscal year 1992. And early in the fiscal year, in celebration of our 20th anniversary, OTA sponsored a "Forum on Technology and Governance in the 1990s." This Forum set the stage for OTA's future and focused sharply on five major

areas of importance to the Congress and the Nation: international security, the environment, economic competitiveness, health care and education. Major presentations in these areas were made by Robert McNamara, Gro Brundtland, Laura Tyson, Arnold Relman and Derek Bok respectively, and these presentations were published by OTA in a monograph to recognize the event.

Our reports for the year covered the usual wide range of subject matter, and included a number which might be singled out as particularly of interest and use to Congress and the Nation. "Dismantling the Bomb and Managing the Nuclear Materials" capitalized to some extent on work OTA did looking into cleanup of DOE weapons production facilities. This study warned the Congress that a lot of work remained to be done to design and implement a plan to dismantle nuclear weapons and handle the resulting large quantities of radioactive materials and, in particular, to achieve the understanding and support of the public through a thoughtful and open process which involved as well as educated the public. At the same time OTA issued a study reviewing "Aging Nuclear Power

Plants" which should give the Congress a good sense of what to expect in terms of power plants going offline and some of the particular problems and challenges that lie ahead in managing this very difficult process with which the Nation has had relatively little experience.

OTA completed during 1993 a major study on "Adult Literacy and New Technologies" which raised the salience of this vital issue; OTA emphasized that the problem of illiteracy is of far greater magnitude than most appreciate. OTA's study defined the issue, conservatively estimated prevalence, and delved into implications for competitiveness and ways in which we might address, through new technologies, among others, the difficult task of remediation,

Fiscal year 1993 was the year that health care reform came into its own, and OTA was involved in a number of studies that would prove helpful to congressional committees in tackling the difficult issues in reform plans. Of particular, widespread interest was OTA's report, "An Inconsistent Picture" in which OTA looked at the economic projections made by a number of analysts and stakeholders for the various major categories of health care reform

approaches. The enormous disparities from plan to plan and analysis to analysis in the expenditures, savings, and economic impacts on various sectors of American life proved to be of great interest and generated considerable debate, leading to a request for a follow-on study for delivery in mid-fiscal year 1994. OTA was asked to look at the assumptions that might explain the disparities and the documentation provided by authors of prelections that might allow observers to evaluate the methodology and reliability of those projections,

OTA also released "Multinationals and the National Interest: Playing by Different Rules" in 1993. This report was the first of two analyzing the objectives and policies of multinational corporations and the way they differ from the goals of the countries in which the corporations do business. The first report provided a wealth of descriptive detail and analysis. OTA looked at the treatment of home and foreign multinationals by various major trading partners, Japan, the European Community and the United States primarily, and the way the multinationals behave in various home and foreign environments. The treatment of foreign direct

investment, the implications for trade, for technology transfer and the like were all described. The second report which will contain options for the Congress will appear in fiscal 1994 and together these reports should improve understanding of international trade and U.S. competitiveness.

Many other reports could be highlighted—our work on applications of information technologies, our very topical effort (in view of the major bioethical problems surfacing in early 1994) reviewing federal efforts in biomedical ethics, in the implications of global climate change and many, many more. Altogether OTA is proud of the accomplishments and the assistance to Congress achieved during 1993. We see complex issues continuing to come before the Congress and the American people—issues which will need thoughtful, careful analysis. We look forward to continuing to serve as a shared resource for the Senate and the House, the Majority and the Minority, to help frame issues, to help inform the debate, and to provide useful options for resolution of the issues,

Roger C. Herdman

*About OTA's
organization
and operations*



Created by the Technology Assessment Act of 1972 [86 Stat. 797], OTA is an agency of the legislative branch of the Federal Government (a copy of the Act is found on p. 52). OTA's primary function is to provide congressional committees with studies that identify the positive and negative consequences of policy alternatives affecting the uses of technology.

OTA assists Congress by identifying existing or probable impacts of technology; alternative technological methods and management programs for implementing specific actions (estimating and comparing the impacts of alternatives); and areas where additional research or data collection is required to provide support for assessments.

OTA presents its completed analyses to the appropriate legislative authorities and, whenever possible, undertakes whatever additional related activities are necessary.

The Act provides for a bipartisan Technology Assessment Board, a director, and other employees and consultants necessary for the Office to conduct its work. The congressional board is made up of six Senators, appointed by the President pro tempore of the Senate, and six Representatives, appointed by the Speaker of the House, evenly divided by party. In 1993, Sen. Edward M. Kennedy (D-Massachusetts) and Rep. Don Sundquist (R-Tennessee) served as the Chairman and Vice Chairman, respectively, of the board. The two posts alternate between the Senate and the House with each Congress. The board members from each Chamber select their respective officer.

The congressional board sets the policies of the Office and is the sole and exclusive body governing OTA. The board appoints the director, who is OTA's chief executive officer and a nonvoting member of the board.

The Act also calls for a Technology Assessment Advisory

Council composed of 10 public members eminent in scientific and technological fields, the Comptroller General of the United States, and the Director of the Congressional Research Service of the Library of Congress. The advisory council advises the board and the director on such matters as the balance, comprehensiveness, and quality of OTA's work, and OTA's non-governmental resources.

Requests for OTA assessments may be initiated by:

- the chairman of an, standing, special, select or joint committee of Congress, acting alone, at the request of the ranking minority member, or at the request of a majority of the committee members;
- the OTA board; or
- the OTA director, in consultation with the board.

The authorization of specific assessment projects and the allocation of funds for their performance are the responsibilities of the OTA board.

Toward the end of January 1993, new senior management had begun to be put in place at OTA. By the end of FY 1993, an entirely new top management

team was confirmed, consisting of a new director and two new assistant directors. This reorganization was initiated with the departure of former director John H. Gibbons to assume the position of President Clinton's Science Advisor.

The analytical work of the Office is now organized into two divisions, each headed by an assistant director. They encompass assessments grouped in the areas of energy and materials; industry, technology, and employment; international security, and commerce; science, education, and transportation; telecommunication and computing technologies; biological applications; food and renewable resources; health; and oceans and environment.

Administrative offices support the analytical work of the Office. These offices handle budget and finance, contracts, information services, personnel, telecommunications and information systems, building services, and publishing.

The Congressional and Public Affairs Office assists in coordinating OTA's work with various committees of the House and Senate, by initiating communications between OTA management and staff, and the Technology Assessment Board and the

Technology Assessment Advisory Council. OTA publications are widely disseminated on Capitol Hill and are publicly available. The Information Center provides public access to the full collection of OTA publications, including an online index, and the Publications Distribution Office within information Marketing handles public dissemination of OTA publications. (General Information on OTA and availability of OTA publications is listed on the inside back cover.)

FY 1993 **Activities**

The prosperity and security of the Nation depend in no small part on how the U.S. Congress and others anticipate and respond to complex issues involving science and technology. OTA has an unequalled record in providing Congress with facts, figures, and nonpartisan analyses it can rely on in dealing with critical national issues involving science and technology. As we approach the 21st century, the United States and the world are undergoing momentous political, economic, social, and technological transformations that pose both new problems and new opportunities

for the nation's lawmakers. U.S. lawmakers seeking to cope with these transformations are likely to find that the guidance OTA can provide is more valuable than ever.

During FY 1993, OTA completed 50 reports spanning the full range of science and technology issues facing the Congress. The following are examples of OTA projects that had a significant impact in areas that are of vital interest to the Congress:

- Getting the U.S. economy on a sound footing for the years ahead is clearly a high priority of the Congress. One of the challenges will be to find productive civilian uses for the resources that were formerly devoted to the Nation's defense. OTA's assessment of U.S. Technology and the Defense Conversion, which includes Defense Conversion; Redirecting R&D, concentrates on new opportunities in this area. Another OTA report, Adult Literacy and New Technologies: Tools for a Lifetime, focuses on how information technologies can help equip U.S. citizens with the skills needed to participate fully in

the workplace. Multinationals and the National Interest discusses how to help ensure that multinational corporations such as IBM and AT&T work to support economic growth and high standards of living in the United States.

- Health care reform increasingly is coming to dominate the domestic policy agenda, and OTA can help U.S. lawmakers sort out some of the dilemmas that arise in the debate. An Inconsistent Picture: A Compilation of Analyses of Economic Impacts of Competing Approaches to Health Care Reform by Experts and Stakeholders, for example, points to some of the reasons for the wide range of differences in estimated economic impacts of approaches to health care reform. OTA's report Pharmaceutical R&D: Costs, Risks, and Rewards can help inform the development of sound Federal policies related to payment for prescription drugs. Another item high on the domestic policy agenda is "reinventing government." At a time when demand is growing

and budgets are tighter, Federal, State and local governments face the challenge of delivering better services faster and at less cost. OTA's report Making Government Work: Electronic Delivery of Federal Services provides Congress with alternative strategies for improving the performance of government by using modern computer and telecommunication technologies.

- Dealing with environmental problems will be a continuing challenge for U.S. policymakers for the foreseeable future. Many scientists believe that as a result of CO₂ emissions from cars and other factors, the Earth's climate is likely to warm by several degrees during the next few decades. OTA's report Preparing for an Uncertain Climate discusses how U.S. policymakers can begin to plan for the possibility of global warming in the light of considerable uncertainties about when, where, and how much change will occur. Another OTA report, Dismantling the

Bomb and Managing the Nuclear Materials presents options for the successful dismantlement and disposition of nuclear weapons materials. This is one of the major environmental and public health challenges the country faces.

- Energy Efficiency Technologies for Central and Eastern Europe, part of OTA's assessment of Energy and Environmental Technology Transfer to Central and Eastern Europe, notes that transferring technology to improve the efficiency of energy use is one highly cost-effective way for the United States to encourage economic reform, democratization, and stability in the former communist countries of the Soviet bloc. Energy is used very wastefully in formerly centrally planned economies, and the

waste limits economic development and contributes to local and global environmental degradation.

- The proliferation of chemical, biological, and nuclear weapons of mass destruction—especially in unstable regions of the world such as the Middle East, S. Asia, and Korea—is likely to pose a major security threat to the United States and other countries for many years to come. OTA's report Proliferation of Weapons of Mass Destruction: Assessing the Risks

identifies a range of measures from which a coherent nonproliferation treaty might be constructed.

OTA's work in FY 1994 will continue to reflect the explicit needs of the committees of jurisdiction. OTA serves as a shared resource for Congress, providing nonpartisan analysis of scientific and technological issues—issues intrinsic to all important policy issues—in a cost-effective way.

***Industry, commerce,
and international
security division***



The Industry
Commerce, and
International Security
Division comprise five
research Programs:
Energy and Materials;
Industry, Technology
and Employment;
International Security
and Commerce;
Science, Education,
and Transportation; and
Telecommunication
and Computing
Technologies,

The Energy and Materials Program is responsible for assisting the Congress in understanding the role of technology in developing energy and materials resources and the consequences of these developments for society. The Program helps the Congress progress toward rational resource development such that economic **growth is maintained, undesirable side effects are kept to a minimum, and the resource base is sustained for future generations.** The Program covers those technologies that concern the **extraction, delivery, and the use of energy and materials.** The Program also analyzes world energy and materials markets and policies, especially the implications of U.S. imports and exports of energy and materials.

The Industry, Technology, and Employment Program examines how technology affects the ability of U.S. industry to contribute to a healthy national economy. This includes consideration of the competitiveness of U.S. industries in international markets; trade and economic development issues; the number and nature of employment opportunities in the U.S. economy; needs for worker education, training and retraining; and ways to ease adjustment in structural economic transitions. The ITE Program is concerned with the role of technology in examining the competitive position of both basic and new industries, with the development and dissemination of pre-competitive technologies, and with the quantity, nature, and quality of jobs in the U.S. economy.

The International Security and Commerce Program deals with the role of technology in national security, exploration and commercialization of space, and international technology transfer. The Program's work in national security focuses on assessment of the likely impacts of technological considerations on national security, including international stability, terrorism, diplomacy,

alliance relations, arms control, deterrence, and defense. Assessment of issues related to the nation's defense industrial and technology base is an increasing part of ISC'S work. The Program's work on space involves a broad range of issues, such as space transportation, international cooperation and competition in civilian space activities, and other areas in which technological progress, civilian exploration, commercial uses of space, and national security must all be reconciled.

The Science, Education, and Transportation Program includes efforts focusing on the Federal government's role in national transportation systems and policy; it includes a variety of efforts related to the Federal Government's role in maintaining the health of the U.S. scientific enterprise, especially allocation and decision methods available to the Congress to support and manage research and development; and, finally, the Program activities include a strong focus on the role of technology in enhancing learning in schools as well as in non-school educational systems.

The Telecommunication and Computing Technologies Program is concerned primarily with the changing role of telecommunications and computing technologies in the nation's industry, commerce, and government. The core responsibilities of the Program require monitoring the research and development of new information technologies and assessing the state-of-the-art in these areas as well as the pace and direction of basic research and development. The Program also studies telecommunications regulation, information policy, and applications of information technology in the public sector.

In FY 1993, the Industry, Commerce, and International Security Division published 17 assessment reports and 10 background papers.

U.S. Banks and International Telecommunications, October 1992

Requested by:
House Committee on Foreign Affairs
Senate Committee on Finance

Industrial Energy Efficiency, April 1993

Requested by:
Senate Committee on Governmental Affairs
Senate Committee on Energy and Natural Resources
House Committee on Energy and Commerce

House Committee on Government Operations
House Committee on Science, Space and Technology

Data Format Standards for Civilian Remote Sensing Satellites, May 1993

Requested by:
House Committee on Science, Space and Technology
Senate Committee on Commerce, Science, and Transportation

Access to Over-the-Road Buses for Persons with Disabilities, May 1993

Requested by
Mandated under Public Law 101-336

Advanced Network Technology, June 1993

Requested by:
House Committee on Science, Space and Technology
Senate Committee on Commerce, Science and Transportation

The 1992 World Administrative Radio Conference: Technology and Public Implications, June 1993

Requested by:
Senate Committee on Commerce, Science and Transportation
House Committee on Energy and Commerce

Defense Conversion: Redirecting R&D, June 1993

Requested by:
Senate Committee on Foreign Relations
Senate Committee on Labor and Human Resources
Senate Committee on Commerce, Science and Transportation
Senate Committee on Labor and Human Resources
Senate Committee on Armed Services
House Committee on Interior and Insular Affairs
House Committee on Government Operations

Energy Efficiency Technologies for Central and Eastern Europe, July 1993

Requested by:

Senate Committee on

Environment and Public Works

House Committee on Foreign Affairs

House Committee on

Energy and Commerce

Senate Committee on Foreign Relations

Who Goes There: Friend or Foe?,

July 1993

Requested by:

House Committee on Armed Services

Adult Literacy and New Technologies:

Tools for a Lifetime, July 1993

Requested by:

House Committee on Education and Labor

Senate Committee on

Labor and Human Resources

Endorsed by:

Joint Economic Committee

The Future of Remote Sensing for

Space: Civilian Satellite Systems and

Applications, July 1993

Requested by:

House Committee on

Science, Space and Technology

Senate Committee on Commerce, Science

and Transportation

The Chemical Weapons Convention:

Effects on the U.S. Chemical Industry,

August 1993

Requested by:

Senate Committee on Foreign Relations

Senate Committee on Governmental Affairs

Development Assistance, Export

Promotion, and Environmental

Technology, August 1993

Requested by:

House Committee on Foreign Affairs

House Committee on Energy and

Commerce

Senate Committee on Finance

Accessibility and Integrity of Networked Information Collections, August 1993

Aging Nuclear Power Plants: Managing Plant Life and Decommissioning,

September 1993

Requested by:

Senate Committee on Governmental Affairs

House Committee on

Energy and Commerce

Proliferation of Weapons of Mass

Destruction: Assessing the Risks,

September 1993

Requested by:

Senate Committee on Foreign Relations

Senate Committee on Governmental Affairs

Multinationals and the National

Interest: Playing by Different Rules,

September 1993

Requested by:

Senate Committee on

Commerce, Science and Transportation

U.S. Telecommunications Services in

European Markets, September 1993

Requested by:

House Committee on Foreign Affairs

Senate Committee on Finance

Pulling Together for Productivity: A Union

Management Initiative at U S West, Inc.,

September 1993

Requested by:

Senate Committee on

Commerce, Science and Transportation

Protecting Privacy in Computerized

Medical Information, September 1993

Requested by:

Senate Committee on Governmental Affairs

House Committee on

Government Operations

Making Government Work: Electronic

Delivery of Federal Services,

September 1993

Requested by:

Senate Committee on Governmental Affairs

Contributions of DoE Weapons Labs and NIST to Semiconductor Technology,

September 1993

Requested by:

Hon. Ernest F. Hollings

Energy Efficiency: Challenges and

Opportunities for Electric Utilities,

September 1993

Requested by:

Senate Committee on Governmental Affairs

Senate Committee on

Energy and Natural Resources

House Committee on

Energy and Commerce

House Committee on

Science, Space and Technology

House Committee on Government

Operations

Aircraft Evacuation Testing: Research

and Technology Issues, September 1993

Requested by:

House Committee on

Science, Space and Technology

Potential Environmental Impacts of

Bioenergy Crop Production,

September 1993

Requested by:

House Committee on

Science, Space and Technology,

House Committee on Energy and

Commerce

Biopolymers: Making Materials

Nature's Way, September 1993

Requested by:

Senate Committee on

Energy and Natural Resources

Information Systems Related to

Technology Transfer: A Report on Federal

Technology Transfer in the United States,

September 1993

*Health, life sciences,
and the environment
division*



The Health, Life Sciences, and the Environment Division comprises four Programs: the Biological and Behavioral Sciences Program, the Food and Renewable Resources Program, the Health Program, and the Oceans and Environment/ Program.

The Biological and Behavioral Sciences Program assesses state-of-the-art technologies arising from progress in a wide range of scientific and technical disciplines. Typical studies explore actual and potential applications of results and techniques from biological and behavioral sciences, usually with an emphasis on ethical, legal, economic, and regulatory issues. Currently, the Program's activities center on (1) biotechnology and applications and implications of human molecular genetics, (2) neurological and behavioral sciences, and (3) Federal regulatory programs that involve use and understanding of biological tests and knowledge.

The scope of the Food and Renewable Resources Program

includes all agriculture-related technologies used to provide society with food, fiber, and chemicals, and technologies that enhance or Jeopardize the ability to sustain in perpetuity the renewable resource bases that make such production possible. Agriculture itself is defined in the broad sense, including all crop and livestock production and forestry. Attention also is given to the impact that technology has had and is likely to have on how the agricultural system is organized, who controls it, and where it is heading. Further, the Program covers renewable resources that presently may not be considered or produced as crops, but that support agricultural production and are fundamental to human needs generally. Relevant international analyses on renewable resources and agriculture are included in certain Program studies.

The Health Program's charter is reflected in two primary types of efforts:

- 1) assessments of specific clinical and general health care technologies, and
- 2) studies of broader issues of health policy related to or with implications for technology.

In addition, it has certain statutory, methodology oversight responsibilities regarding Vietnam veterans health studies, and provides the staff work for the OTA Director's mandated responsibility to select and appoint members of the Prospective Payment Assessment Commission, the Physician Payment Review Commission, and the Advisory Panel on Alzheimer's Disease.

The Oceans and Environment Program has responsibility for all ocean-related questions, including ocean resources and maritime policy, and for large-scale environmental issues, such as climate modification and air, water, and land pollution. As a result of changing congressional interest, the Program has developed capability for analyzing the difficult questions in which the overriding concern lies with the environmental effects of decisions. The work of the Program usually falls under several categories: Federal services related to oceans and the environment, natural resources, pollution control, marine industry, and climate change.

In FY 1993, the Health, Life Sciences, and the Environment Division published 10 assessment reports and 13 background papers.

Genetic Tests and Health Insurance: Results of a Survey, October 1992
Requested by:
House Committee on
Science, Space and Technology
House Committee on
Energy and Commerce

Genetic Counseling and Cystic Fibrosis Carrier Screening: Results of a Survey, October 1992
Requested by:
House Committee on
Science, Space and Technology
House Committee on
Energy and Commerce

Federal and Private Roles in the Development and Revision of Alglucerase Therapy for Gaucher Disease, October 1992
Requested by:
House Committee on
Energy and Commerce

Science and Technology Issues in Coastal Ecotourism, October 1992
Requested by:
House Committee on
Merchant Marine and Fisheries

Coverage of Preventive Services: Provision of Selected Current Health Care Reform Proposals, October 1992
Requested by:
Senate Committee on
Labor and Human Resources

Hazards Ahead: Managing Cleanup Worker Health and Safety at the Nuclear Weapons Complex, February 1993
Requested by:
Senate Committee on Armed Services

Pharmaceutical R&D: Casts, Risks, and Rewards, February 1993
Requested by:
House Committee on
Energy and Commerce

Drug Labeling in Developing Countries, May 1993
Requested by:
Senate Committee on
Labor and Human Resources
House Committee on
Energy and Commerce

An Inconsistent Picture:
A Compilation of Analyses of Economic Impacts of Competing Approaches to Health Care Reform by Experts and Stakeholders, June 1993
Requested by:
Senate Committee on
Labor and Human Resources

Health Insurance:
The Hawaiian Experience, June 1993
Requested by:
Senate Committee on
Labor and Human Resources

Compilation of Abbreviations and Terms, September 1993

Water for Walker Lake, September 1993
Requested by:
Senator Harry Reid

Alternative Coca Reduction Strategies in the Andean Region, September 1993
Requested by:
Senate Committee on
Labor and Human Resources
Senate Committee on the Judiciary
House Select Committee on Narcotics Abuse and Control

Dismantling the Bomb and Managing the Nuclear Materials, September 1993
Requested by:
Senate Committee on Governmental Affairs

OTA Assessment: The Department of Veterans Affairs Persian Gulf Veterans' Health Registry, September 1993
Requested by:
Mandated under Public Law 102-585

Subcommittee on Labor, Health and Human Services
Senate Committee on Finance
House Committee on Energy and Commerce

The Continuing Challenge of Tuberculosis, September 1993
Requested by:
House Committee on Energy and Commerce
House Committee on Government Operations

Biomedical Ethics in U.S. Public Policy, September 1993
Requested by:
Senate Committee on Appropriations
Senate Committee on Labor and Human Resources
Senate Committee on the Judiciary

Harmful Non-Indigenous Species in the United States, September 1993
Requested by:
House Committee on Merchant Marine and Fisheries
House Committee on Energy and Commerce
Endorsed by,
Hon. Amo Houghton, TAB member

The Biological Components of Substance Abuse and Addiction, September 1993
Requested by:
House Committee on Government Operations
Senate Committee on Governmental Affairs
Senate Committee on Labor and Human Resources

Benefit Design in Health Care Reform: Clinical Preventive Services, September 1993
Requested by:
Senate Committee on Labor and Human Resources

Benefit Design in Health Care Reform: Patient Cost-Sharing, September 1993
Requested by:
Senate Committee on Labor and Human Resources

Hip Fracture Outcomes in People Age 50 and Over: Mortality, Service Use, Expenditures, and Long-Term Functional Impairment, September 1993
Requested by:
Senate Special Committee on Aging

Impact of Legal Reforms on Medical Malpractice Costs, September 1993
Requested by:
House Committee on Ways and Means
Senate Committee on Labor and Human Resources
House Committee on Appropriations,

*OTA forum on
technology and governance
in the 1990s*

The Forum
Proceedings are
available from
the OTA
Publications
Distribution
Office, Office of
Technology
Assessment,
U.S. Congress,
Washington, DC
20510-8025,
(202) 224-8996.

Twenty years ago, Congress created the Office of Technology Assessment to demystify the roles of science and technology in governance—to make specialized information more accessible. For two decades, during which time the influence of technology has grown enormously, OTA has examined key socio-technical issues of our time, providing detailed information to congressional committees and other policy makers.

On January 27, 1993, in celebration of OTA's twentieth anniversary, the Technology Assessment Board hosted a one-day Forum on Technology and

Governance in the 1990s for members of Congress and key congressional staff. The Forum was designed to address several goals:

- To raise congressional and public awareness of the most critical issues faced by our nation and the world.
- To equip policy makers with an improved understanding of how best to deal with these issues.
- To show how technology is woven into socio-economic, domestic, and international policies, and to demonstrate the need to adapt our policies, methods of governance, and institutional mechanisms to this reality.

Five topics were chosen, selected on the basis of national and/or global urgency, likely continued importance to the legislative agenda, and the centrality of technology in creating or solving the problem: international security; sustaining the global environment; U.S. economic competitiveness; health care; and public education. Distinguished speakers were invited to address the topics—

outlining the problems, the reasons for their urgency, and alternatives for resolution. The following is the list of papers presented:

A New World Order and Its Implications for Arms Reductions
Robert S. McNamara
Former U.S. Secretary of Defense
Former President,
The World Bank

■ Sustaining the Global Environment
Gro Harlem Brundtland
Prime Minister of Norway
Chair of the World Commission on Environment and Development

■ Economic Competitiveness in the U.S.
Laura D'Andrea Tyson,
Chair of the Council of Economic Advisors

■ Medical Care Reform: Building a Viable System
Arnold S. Relman
Professor of Medicine and of Social Medicine, Harvard School of Medicine
Editor-in-Chief Emeritus
New England Journal of Medicine

■ Rethinking Public Education in the U.S.
Derek Bok
President Emeritus, Harvard University

OTA wishes to acknowledge the generous financial support of the Carnegie Corporation of New York and Corning International, without whom the Forum could not have taken place. In addition, OTA thanks the members of the Technology Assessment Board and the Technology Assessment Advisory Council for their ongoing cooperation and support.

*Work in
progress at
year-end*

More than 41 projects were in progress during fiscal year 1993. In addition, 14 new studies were undertaken.

This section lists the titles of assessments underway or in press, as of September 30, 1993. For a full description of these projects, please refer to the current "Assessment Activities," OTA-PC -105. This pamphlet is available from OTA by calling the Publications Distribution Office at (202) 224-8996.

**Industry, Commerce, and
International Security Division**

Energy and Materials Program

- U.S. energy efficiency: past trends and future opportunities
- Renewable energy technology: research development and commercial prospects
- Energy and environmental technology transfer to Central and Eastern Europe

Industry Technology, and
Employment Program

- American industry and the environment: implications for trade and U.S. competitiveness
- Multinational corporations and U.S. technology base
- Commercialization of emerging technologies
- Technology, jobs and productivity in the service economy

International Security and
Commerce Program

- Defense modeling and simulation
- Proliferation of weapons of mass destruction

- Earth observation systems
- Assessing the potential integration of defense and civilian technology and manufacturing

Science, Education, and Transportation Program

- Teachers and technology Federal aviation research and technology,
- Vocational education assessment instruments

Telecommunication and Computing Technologies Program

- Information security and privacy in network environments
- Social Security Administration's information technology automation program
- Information technology and the health care system
- The Electronic enterprise: opportunities for American business and industry

Health, Life Sciences, and the Environment Division

Biological and Behavioral Sciences Program

- Research on health risk assessment
- Technologies for understanding the root causes of substance abuse and addiction
- OSHA'S selection of control technologies and assessments of their impacts and costs
- The human genome project and patenting human DNA sequences

Food and Renewable Resources Program

- Agriculture, trade and the environment
- Aquaculture: food and renewable resources from U.S. waters
- Biological pest control
- Science and technology, renewable resources and international development

Health Program

- Assessing the assumptions behind health reform projections
- Regulator-y and health assessments of dietary supplements

- Setting the stage for studying Persian Gulf veterans' health
- Monitoring of mandated veteran studies
- Federal response to AIDS: congressional issues
- Health professions training: roles of Titles VII and VIII
- Technology, insurance, and the health care system
- Defensive medicine and the use of medical technology
- International differences in health technology, services and economics
- Policy issues in the prevention and treatment of osteoporosis
- Prospects for health technology assessment
- Appointment of the Prospective Payment Assessment Commission and the Physician Payment Review Commission

Oceans and Environment Program

- Systems at risk from climate change
- New approaches to environmental regulation

*Technology
assessment advisory
council*



The Technology Assessment Advisory Council (TAAC) was established by OTA's statute, and members are appointed by OTA's Congressional Technology Assessment Board (TAB). The Council advises TAB and the Director on issues and other matters related to science, technology, and technology assessment.

Neil E. Harl, Chairman
Dr. Harl is the Charles F. Curtiss Distinguished Professor of Economics at Iowa State University, where he has served on the faculty since 1964.

James Hunt, Vice Chairman
Dr. Hunt is Distinguished Professor, Health Sciences Center, at the University of Tennessee in Memphis. He previously served as Chancellor of the Health Science Center and as the Dean of Medicine for the University. Prior to joining the University, he served as Chairman of the Department of Medicine at the Mayo Clinic.

Lewis M. Branscomb
Dr. Branscomb is the Albert Pratt Public Service Professor at Harvard's John F. Kennedy School of Government. He is a former executive of International Business Machines. Prior to joining IBM, he was the Director of the National Bureau of Standards.

Herbert D. (Ted) Dean
Mr. Doan is a Partner with Doan Associates. He was Chairman and Founder of Doan Resources Corporation. He served as President of the Dow Chemical Company for nine years.

Joshua Lederberg
Dr. Lederberg was President of Rockefeller University, New York. He is the former Chairman of the Department of Genetics at

Stanford University School of Medicine. He is a member of the National Academy of Sciences and is a Nobel Laureate in Physiology and Medicine.

Max Lennon

Dr. Lennon is President of Clemson University. He previously served on the faculties of Ohio State University, (Vice-President for Agricultural Administration and Executive Dean for Agriculture, Home Economics and Natural Resources), University of Missouri, and Texas Tech University.

Thomas J. Perkins

Mr. Perkins is the General Partner of Kleiner & Perkins in San Francisco. He held a number of positions with Hewlett Packard Company, most recently as Assistant Manager, Corporate Research Laboratories. He also served as Vice President, Marketing with Optics Technology, Inc. and as an Electrical Engineer with Sperry Corporation.

Chase N. Peterson

Dr. Peterson is President Emeritus of the University of Utah. He practiced medicine at the Salt Lake Clinic and taught at the LDS

Hospital and University of Utah Medical School until his appointment as Dean of Admissions and Financial Aids at Harvard College. There he also served as Vice President for Alumni Affairs and Development. Dr. Peterson returned to the University of Utah in 1978 as Vice President for Health Sciences, and has served as University President since 1983.

John F. M. Sims

Dr. Sims is Vice President for Marketing for Usibelli Coal Mine, Inc. He previously served as Director of the Office of Mineral Development with the Alaska Department of Commerce and Economic Development. Dr. Sims also taught Geological Engineering at the University of Alaska-Fairbanks.

Marina v.N. Whitman

Dr. Whitman is a Professor at the Institute of Public Policy Studies at the University of Michigan. Previously she served as the Vice President and Group Executive for Public Affairs Staff Group at General Motors Corporation. She also served as Vice President and

Chief Economist at General Motors. Prior to joining General Motors she taught at the University of Pittsburgh.

Statutory Members

Charles A. Bowsher

Mr. Bowsher is Comptroller General of the United States and Director of the U. S. General Accounting Office.

Joseph E. Ross

Mr. Ross is Director of the Congressional Research Service, U. S. Library of Congress.

*OTA staff
as of September
1993*

Office of the Director

Roger Herdman, Director
Barbara Linkins, Executive Assistant
Gilda Squire, Secretary
Kerry Kemp, Managing Editor

Budget and Finance

Jack Boertlein, Budget and Finance Officer
Carolyn Datcher, Senior Accounting Technician
Frances Hemingway, Senior Finance Analyst
Alan King, Accounting Technician
Carrie Miller, Accounting Technician

Personnel Services

William Norris, Personnel Director
Lola Crow, Payroll/Benefits Officer
Laura Ellinger, Administrative Assistant
Gail Turner, Personnel Specialist

Information Management and Building Services

Martha Dexter, Director, Information Management

Information Marketing

Debra Datcher, Information Marketing Officer
Theodore Williams, Publications Distribution Technician

Building Services

Kevin McNair, Building Services Supervisor
Markell Robinson, Clerk/Courier

Medical Services

Janet Hammond, Resident Nurse

Congressional and Public Affairs

James Jensen, Director
Congressional Affairs
Jean McDonald, Director, Press Affairs
Barbara Ketchum, Administrative Secretary
Karen Piccione, Administrative Assistant
Eugenia Ufholz, Congressional Affairs Officer

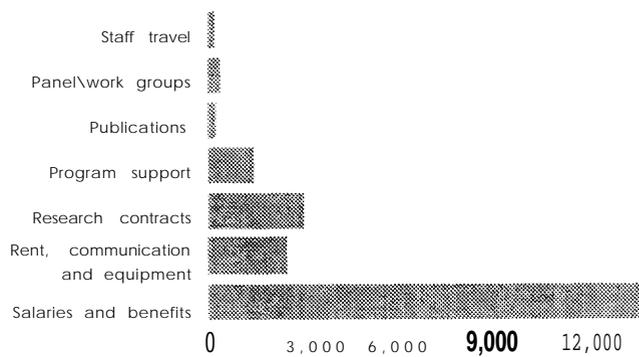
Publishing Office

Mary Lou Higgs, Manager, Publishing Services
Cheryl Davis, Electronic Publishing Specialist
Dorinda Edmondson, Senior Electronic Publishing Specialist
Denise Felix, Production Editor
Susan Hoffmeyer, Graphic Designer
William Moore, Production Editor
J. Christine Onrubia, Senior Graphic Designer
Bonnie Sparks, Electronic Publishing Specialist

Service Center

Carlton Agee, Service Center Supervisor
Michael Brown, Service Center Technician

FISCAL YEAR 1993 BREAKDOWN (IN THOUSANDS)



Industry, Commerce, and International Security Division

Peter Blair, Assistant Director
 Pidge Chapman, Division Administrator

Energy and Materials Program

Emilla Govon, Program Manager
 Tina Alkens, Secretary
 Samuel Baldwin, Senior Analyst
 Alan Crane, Senior Associate
 Joy Dunkerley, Senior Analyst
 Gregor Eyring, Senior Analyst
 David Jensen, Analyst
 Paul Komor, Senior Analyst
 Karen Larsen, Senior Analyst
 Linda Long, Administrative Secretary
 John Newman, Senior Analyst
 Steven Plotkin, Senior Associate
 Robin Roy, Senior Analyst
 Joanne Seder, Senior Analyst
 Matthew Weinberg, Analyst

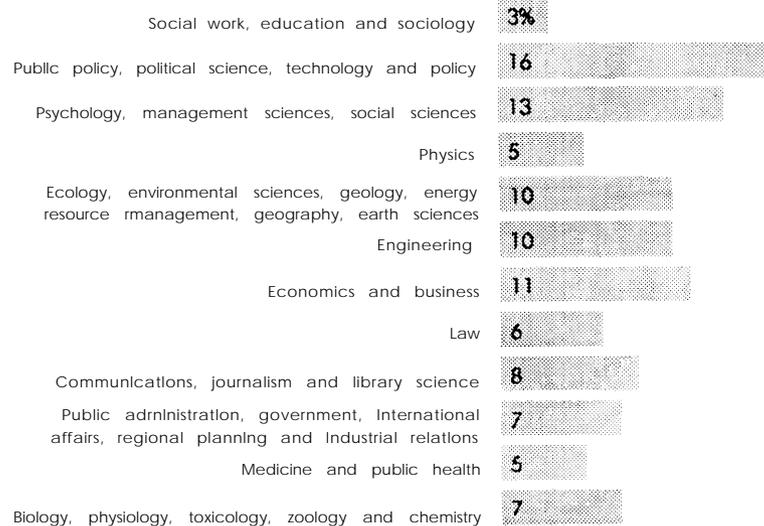
Industry Technology and Employment Program

Audrey Buyrn, Program Manager
 John Alic, Senior Associate
 Rob Atkinson, Senior Analyst
 Wendell Fletcher, Senior Associate
 Ken Freeman, Senior Analyst
 Margaret Hilton, Senior Analyst
 June Gorte, Senior Associate
 William Keller, Senior Analyst
 Gretchen Kolsrud, Senior Associate
 Rodney Sobin, Analyst
 Louise Staley, Off Ice Administrator
 Robert Weissler, Senior Analyst
 Diane White, Administrative Secretary

International Security and Commerce Program

Alan Shawi, Program Manager
 Jacqueline Boykin, Off Ice Administrator
 Michael Collaham, Senior Analyst
 Arthur Charo, Senior Analyst
 Dean Cheng, Analyst, Congressional Fellow
 Gerald Epstein, Senior Analyst
 Anthony Falnberg, Senior Associate

OTA IS COMPOSED OF 205 STAFF MEMBERS, OF WHICH 79% ARE ANALYTICAL AND 21 PERCENT ARE ADMINISTRATIVE.



Thomas Karas, Senior Associate
 Brian McCue, Senior Analyst
 Jack Nunn, Senior Associate
 Ivan Oelrich, Senior Analyst
 Christopher Waychoff, Senior Analyst
 Ray Williamson, Senior Associate

Science, Education, and Transposition Program

Nancy Carson, Program Manager
 Daniel Cohen, Research Analyst
 Kevin Depart, Senior Analyst
 Marsha Fenn, Off Ice Administrator
 Kathleen Fulton, Senior Analyst
 Gay Jackson, PC Specialist
 Tamara Kowalski, Secretary
 Ethan Leonard, Research Analyst
 Patty Morison, Analyst
 Beth Robinson, Senior Analyst
 Kelley Scott, Analyst
 Greg Wallace, Research Assistant
 John Wirt, Senior Analyst

Telecommunication and Computing Technologies Program

James Curlin, Program Manager
 Karen Bandy, Senior Analyst
 Paula Bruening, Analyst
 Alan Buzacott, Analyst
 Vary Coates, Senior Associate
 Elizabeth Emanuel, Off Ice Administrator
 Stephanie Gajar, Analyst
 Linda Garcia, Senior Associate
 Emillo Gonzalez, Analyst
 Tom Hausken, Analyst
 Todd Lo Porte, Analyst
 Sunil Paul, Analyst
 Joe Raguso, Analyst
 Karolyn St. Clair, PC Specialist
 Michelle Smith, Secretary
 Joan Winston, Senior Associate
 Fred Wood, Senior Associate
 David Wye, Analyst

conference center

Edie Grandstaff, Conference Center Coordinator
Sean Copeland, Conference Center Assistant

Telecommunications and Information Systems

Sylvester Boyd, Manager, Telecommunications and Information Systems
Larry Bond, Senior Systems Analyst
Mary Beth Breitbach, Systems Support Analyst
Brenda Hahn, Systems Support Analyst
Philip Jackson, Assistant Manager, Telecommunications and Information Systems
Vincent McCall, Systems Technician
John Warren, Systems Technician

Health, Life Sciences, and the Environment Division

Clyde Behney, Assistant Director
Carol Bock, Division Assistant

Biological and Behavioral Sciences Program

Michael Gough, Program Manager
David Butler, Analyst
Gerard Ferguson, Milbank Fellow
Ellen Goode, Research Analyst
Laura Lee Hall, Senior Analyst
Jacqueline Keller, Research Analyst
Jene Lewis, Administrative Secretary
Ellen McDermott, Research Assistant
Robyn Nishimi, Senior Associate
Kevin O'Connor, Senior Analyst
Cecile Parker, Off Ice Administrator
Dalton Paxman, Senior Analyst
Linda Rayford, PC Specialist
Jennifer Schmidt, Analyst
Michael Snyder, Analyst
Thomas Vischi, Congressional Fellow

Food and Renewable Resources Program

Walter E. Parham, Program Manager
Elizabeth Chornesky, Analyst
Patricia Durana, Senior Analyst
Nellie Hammond, Administrative Secretary
Alison Hess, Senior Associate
Vivian Keller, Analyst
Nathaniel Lewis, Office Administrator
Michael Phillips, Senior Associate
Cameron Proffitt, Research Analyst
Carolyn Swarm, PC Specialist
Catherine Torres, Research Analyst
Robin White, Senior Analyst
Phyllis Windle, Senior Associate

Health Program

Clyde J. Behney, Acting Program Manager
Doug Berkson, Research Assistant
Dan Carson, PC Specialist
Jackie Corrigan, Senior Analyst
Denise Dougherty, Senior Associate
Jill Eden, Senior Analyst
Neil Eisenberg, Research Assistant
Beckie Erickson, Off Ice Administrator
Hellen Gelband, Senior Associate
Eric Gille, Secretary/Receptionist
Michael Gluck, Senior Analyst
Dave Grabowski, Research Assistant
Maria Hewitt, Senior Analyst
David Klingman, Senior Analyst
Arna Lane, Research Analyst
Mary Laschober, Analyst
Justin Latus, Research Analyst
Cheryl Liechty, Research Assistant
Tami Mark, Senior Analyst
Carolyn Martin, Secretary/Word Processor
Katie Maslow, Senior Associate
Robert McDonough, Senior Analyst
Philip Pollshuk, Research Assistant
Elaine Power, Senior Analyst
Terri Smith, Intern
Laura Stricker, Research Assistant
Sean Tunis, Senior Analyst
Judith Wagner, Senior Associate
Leah Wolfe, Analyst

Oceans and Environment Program

Robert Niblock, Program Manager
Kathleen Beil, Office Administrator
Rosina Bierbaum, Senior Associate
Michael Bowes, Senior Analyst
Mark Brown, Senior Analyst
Paul Carroll, Research Analyst
Kathy Cox, Analyst
Donna Downing, Senior Analyst
Robert Friedman, Senior Associate
Betsy Gunn, Congressional Fellow
Joan Horn, Senior Analyst
Elise Holland, Research Analyst
Kim Holmlund, Administrative Secretary
Peter Johnson, Senior Associate
Lois Joellenbeck, Analyst/Congressional Fellow
Sharon Knarvik, Secretary
Jan Linsenmeyer, Research Analyst
Tara O'Toole, Senior Analyst
German Reyes, Analyst
Sherry Showell, Analyst
William Westermeyer, Senior Analyst

Contracts and Procurement Office

Karen Cox, Director of Contracts
Paul Starr, Contracts and Legal Specialist
Greg Joyce, Senior Procurement Specialist

Information Center

Gail Kouril, Manager, Information Services
Tracey Amey, Librarian
Nancy Bennett, Intern
Debra McCurry, Assistant Manager, Information Services
Linda Trout, Librarian
Keith West, Information Technician

*OTA awards
and fellowship
programs*



The Distinguished Service Award is given to those individuals who have made notable outstanding contributions to OTA and the accomplishment of OTA's mission. Nominations are made by all OTA staff, and employees in all job categories are eligible. A rotating Employee Recognition Committee selects the recipients. The following OTA staff were honored with the Distinguished Service Award for 1993:

- Pidge Chapman, Division Administrator, Industry, Commerce, and International Security, Division
- Mary Lou Higgs, Manager, Publishing Services
- Vincent McCall, Systems Technician, Telecommunications and Information Systems

OTA Reports Recognized as Notable

In May 1993, the American Library Association's Government Documents Round Table announced their list of Notable Government Documents for 1992. Of the 20 Federal government documents recognized, four were OTA reports:

- *After the Cold War: Living with Lower Defense Spending, Industry, Technology and Employment Program*, Kitty Gillman, Project Director
- *Biological Rhythms: Implications for the Worker, Biological and Behavioral Sciences Program*, David I. Iskowsky, Project Director
- *Testing in American Schools: Asking the Right Questions, Science, Education, and Transportation Program*, Michael Feuer, Project Director
- *U.S. Dairy Industry at a Crossroads: Biotechnology and Policy Choices, Food and Renewable Resources Program*, Mike Phillips, Project Director

The Government Documents Round Table selects those documents they consider to be the best of the government information sources produced in the previous year. These documents "expand

our knowledge, enhance the quality of life, and/or contribute to an understanding of government. "

Blue Pencil Awards

The National Association of Government Communicators conducts the Blue Pencil Competition as an annual recognition of outstanding government communications projects and producers. Entries are judged on writing, editorial content, layout and design, achievement of purpose and cost effectiveness. This year three OTA reports were recognized in the competition:

- Cystic Fibrosis and DNA Tests: Implications of Carrier Screening, Biological and Behavioral Sciences Program, Robyn Nishimi, Project Director, First Place, Books for a Technical Audience Category
- Testing in American Schools: Asking the Right *Questions*, Science, Education, and Transportation Program, Michael Feuer, Project Director, Second Place, Books for General Audience Category
- *Evaluation* of the Oregon Medicaid Proposal, Health Program, Elaine Power, Project Director, Honorable Mention, Books for a Technical Audience Category

The Morris K. Udall Fellowship Program

The Udall Fellowship Program is awarded to up to six individuals each year for a one-year appointment at OTA. It was established in 1991 by the Technology Assessment Board in honor of Morris K. Udall, retired congressman from Arizona who served 30 years in the House of Representatives and 18 years on the Technology Assessment Board. Qualified candidates must demonstrate exceptional ability in areas needed in OTA's work, such as the physical or biological sciences, engineering, law, economics, environmental and social sciences, and public policy. Candidates must have significant experience in technical fields or management or have completed research at the doctoral level.

Fellows, 1992-93

- Lucian Hughes, Industry, Technology and Employment Program
- Thomas Vischi, Biological Applications Program

Fellows, 1993-94

- Dean Cheng, International Security and Commerce Program
- Betsy Gunn, Oceans and Environment Program
- Lois Joellenbeck, Oceans and Environment Program

Congressional Fellowship in Health Policy

The Milbank Memorial Fund and OTA established the Congressional Fellowship in Health Policy in 1992 to be served at OTA beginning in September 1992. The program seeks candidates with substantial training and experience in research and strong interest in health policy. The fellowship provides an opportunity for an individual of proven ability, and considerable promise to work with OTA researchers to assist Congress in its deliberations of science and technology issues affecting our Nation's health policy and to gain a better understanding of the ways in which Congress establishes national Policy related to these issues.

The Fund and OTA invited applications from individuals who have demonstrated ability in research on issues of health policy. Applicants should have doctorates in the social sciences or related areas or have terminal scientific or professional degrees and considerable training in research using the policy sciences

Fellow, 1992-93

- Sean Tunis, Health Program

Fellow, 1993-94

- Gerard Ferguson, Biological and Behavioral Sciences Program

*Advisors
and panel
members**

Energy and Materials Program

**AGING NUCLEAR POWER PLANTS
ADVISORY PANEL**

Richard E. Schuler, Chairman
Professor
School of Civil and Environmental
Engineering
Cornell University

Peter Bradford
Commissioner
New York Public Service Commission

Richard W. Devane
President
Framatome USA, Inc.

William Dornsife
Acting Director
Bureau of Radiation Protection
Pennsylvania Department of
Environmental Resources

S. David Freeman
General Manager
Sacramento Municipal Utility District

Michael W. Golay
Professor
Department of Nuclear Engineering
Massachusetts Institute of Technology

Jerome Goldberg
President
Nuclear Division
Florida Power and Light Company

Howard Hiller
Vice President
Salomon Brothers

David G. Heel
Director
Division of Biometry and Risk Assessment
National Institute of Environmental Health
Science

Leonard Hyman
First Vice President
Merrill Lynch Capital Markets

James Joosten
Principal Administrator
OECD/Nuclear Energy Agency

George J. Konzek
Senior Research Engineer
Waste Systems Department
Battelle, Pacific Northwest Lab

Martin J. Pasqualetti
Professor
Department of Geography
Arizona State University

Robert Pollard
Senior Nuclear Safety Engineer
Union of Concerned Scientists

Daniel W. Reicher
Senior Attorney
Natural Resources Defense Council

Cas Robinson
Director
National Association of Regulatory
Commissioners

John J. Taylor
Vice President
Nuclear Power Division
Electric Power Research Institute

*Affiliations are at time of appointment to panel
or workshop

H.B. Tucker
Senior Vice President
Nuclear Generation Group
Duke Power Co.

Nat Wood son
Vice President and General Manager
Westinghouse Electric Corp.

**ENERGY TECHNOLOGY TRANSFER
TO CENTRAL AND EASTERN EUROPE
ADVISORY PANEL**

Marshall Goldman, Chairman
Associate Director
Russlan Research Center
Wellesley College

Margaret Bowman
Director
Environmental Program for
Central & Eastern Europe
Environmental Law Institute

Robert W. Campbell
Professor
Department of Economics
Indiana University

William U. Chandler
Director
Advanced International Studies Unit
Pacific Northwest Laboratory

Robert Ebel
Senior Associate
Energy Security Program
Center for Strategic & International Studies

Charles K. Ebinger
Director, Energy Group and
Executive Vice President
International Resources Group

Richard Jacobs
President
Newstar, Inc.

Richard A. Liroff
Director
Central & Eastern European Program
World Wildlife Fund

Simon K. Mencher
President
Alpha Finance & Management Corp.

John F. Minneman
Vice President
Chase Manhattan Bank, New York

Espy P. Price
Vice President
CIS Department
Chevron Overseas Petroleum Inc.

Matthew J. Sagers
Director
Energy Services & Senior Economist
PlanEcon, Inc.

Raymond J. Sero
General Manager
International Division
Westinghouse Energy Central

Ra,Snokhaus
Senior Vice President
Government & Regulatory Affairs
Houston Industries, Inc.

Robert H. Socolow
Director
Energy and Environmental Policy Center
Princeton University

Richard Spears
Vice President
Spears & Associates

**RENEWABLE ENERGY TECHNOLOGY
RESEARCH, DEVELOPMENT AND
COMMERCIAL PROSPECTS ADVISORY
PANEL**

Robert W. Fri, Chairman
President
Resources for the Future

Jim Batchelor
Vice President
Technical Services
SF Services, Inc.

Art Brooks
President
Sun Earth, Inc.

Edward J. Carlough
General President
Sheet Metal Workers International

John Corsi
Chairman and CEO
Solarex

J. Michael Davis
Consultant

David Dawson
Forest Polic, Consultant

W. Densmore Hunter
Department Manager
Process R&D
Weyerhaeuser Co.

Renz D. Jennings
Chairman
Arizona Corp. Commission

David Kearney
President
Kearney and Associates

John Kennedy
Chief Engineer—Space Systems
Allied-Signal Aerospace, Air Research
Los Angeles Division

Alden Meyer
Director
Climate Change and Energy Program
Union Of Concerned Scientists

Roberta Nichols
Manager, Electric Vehicle
Strategy and Planning
Technical Affairs
Ford Motor Co.

Mike Nicklas
President
Innovative Design

Dale Osborn
 President
 US Windpower Inc.

Elizabeth Paine
 Commissioner
 State of Maine

Bruce Pasternak
 Senior Vice President
 Managing Officer, Energy Practice
 Booz, Allen, and Hamilton

Mario Richter
 Vice President
 Salomon Brothers, Inc.

Victor Shaio
 President
 New Energy Corporation of Indiana

Scott Sklar
 Executive Director
 Solar Energy Industries Association

Cad Weinberg
 Manager
 Research and Development
 Pacific Gas & Electric Co.

Robert H. Williams
 Senior Research Scientist
 Center for Energy and Environmental
 Studies
 Princeton University

Kurt E. Yeager
 Senior Vice President
 Technical Operations
 Electric Power Research Institute

**US. ENERGY EFFICIENCY
 ADVISORY PANEL**

James F. Gibbons, Chairman
 Dean
 School of Engineering
 Stanford University

Dale Compton
 Professor
 School of Industrial Engineering
 Purdue University

Marc Cooper
 Director of Research
 Consumers Federation of America

Robert deHaan
 Director of Engineering
 Amana Refrigeration Company

Daniel A. Dreyfus
 Vice President
 Strategic Planning & Analysis
 Gas Research Institute

Clark W. Gellings
 Director
 Customer Systems Division
 Electric Power Research Institute

David B. Goldstein
 Senior Scientist
 Natural Resources Defense Council

Cheryl Harrington
 Director
 Regulatory Assistance Project

Kenneth Hickman
 Vice President
 Applied Systems Division
 The York International Corporation

Edward McInerney
 Chief Engineer
 GE Appliance Division
 General Electric Company

Alan Miller
 Professor
 Center for Global Change
 University of Maryland-College Park

Gary Nakarado
 Commissioner
 Public Utility Commission of Colorado

John W. Rowe
 President and Chief Executive Officer
 New England Electric System

Maxine Savitz
 Director
 Garrett Ceramic Components
 Allied-Signal Aerospace

Sherwood Smith
 Chairman & President
 Carolina Power & Light Company

Richard Tracey
 Director of Engineering Services
 Ryland Homes

B.C. Waycaster
 Vice President & General Manager
 Hydrocarbons & Energy Department
 Dow Chemical

Irvin White
 Senior Director
 Laboratory Energy Program
 Battelle Pacific Northwest Labs

Mason Willrich
 President
 Pacific Gas and Electric Enterprise

James L. Wolf
 Executive Director
 The Alliance to Save Energy

Eric R. Zausner
 President
 Strategic Performance Management

WORKSHOP ON ENVIRONMENTAL IMPACTS
 OF BIOENERGY CROP PRODUCTION

WORKSHOP ON SOCIAL COSTS OF
 ENERGY USE

**Industry, Technology, and
 Employment Program**

**AMERICAN INDUSTRY AND
 ENVIRONMENT ADVISORY PANEL**

Roland W. Schmitt, Chairman
 President
 Rensselaer Polytechnic Institute

Edgar Berkey
 President
 National Environmental Technology
 Applications Corp.

Judith Dean
Associate Professor of Economics
School of Advanced & International Studies
Johns Hopkins University

Robert E. Driscoll
President
U S -ASEAN Council for Business and
Technology, Inc.

Peter Emerson
Senior Economist
Environmental Defense Fund

Harry L. Foster
Senior Economist
Product Planning and Economics Staff
General Motors

Stewart J. Hudson
Legislative Representative
International Affairs Department
National Wildlife Federation

Mary Kelly
Executive Director
Texas Center for Policy Studies

Jeffrey Leonard
President
Global Environment Fund

David S. Marsh
President
Marsh Plating Corp

Jessica T. Matthews*
Vice President
World Resources Institute

Robert S. McNamara
Trustee
U S.-Japan Foundation

J.A Meyer
Senior Vice President
Chevron Research & Technology Co.

T.C. Parsons
Executive Director
Center for Industrial Services
University of Tennessee—Nashville

Lowrence Ross
Director
Center for Waste Reduction Technologies
American Institute of Chemical Engineers

Martyn Riddle
Chief
Environmental Unit
International Finance Corp.

Paul Relis
Board Member
California Integrated Waste
Management Board

Maxine Savitz
Director
Garrett Ceramic Components
Allied-Signal Aerospace

Samuel A. Schulhof
Director
Environmental Research Center
General Electric Co.

James Selover
Principal
Selover Associates

Morgaret Seminario
Director
Department of Occupational
Safety and Health
AFL-CIO

John J. Sheehan
Legislative Director and
Assistant to the President
United Steelworkers of America

Sally Shelton
Former U.S. Ambassador of
Eastern Caribbean Countries

MULTINATIONAL FIRMS & THE U.S TECHNOLOGY BASE ADVISORY PANEL

Lawrence M. Friedman, Chairman
Professor
Stanford Law School

Jay Chai
Chairman and CEO
C. Itoh and Compan,

Alfred Chandler
Professor
Harvard Business School

Lance Compa
Administrative Officer
Washington -Baltimore Newspaper Guild

Stanley J. Fidleman
Senior Vice President
Engineering, Safety and Environment
Merck

R. Scott Fosler
President
National Academy of Public Administration

William Greider
National Editor
Rolling Stone

Richard W. Heimlich
Corporate Vice President
International Strategy
Motorola, Inc.

Robert J. Hermann
Vice President
Science and Technology
United Technology Corp.

Jeffrey Leonard
President
Global Environment Fund

Theodore J. Lowi
John L, Senior Professor of
American Institutions
Government Department
Cornell University

*Resigned April 1993

David A. Markle
Vice President
Advanced Technology
Ultratech Stepper

Oscar B. Marx, III
Vice President
Automotive Components Group
Ford Motor Company

William D. Mulholland
Bank of Montreal

Indra Nooyi
Vice President
Strategy and Planning
Asea Brown & Boveri, Inc.

James F. Rill
Partner
Collier, Shannon, Rill and Scott

Richard B. Samuels
Ford International Professor and Head,
Department of Political Science
Director of MIT Japan Program
Massachusetts Institute of Technology

Peter Schavolr
IBM Director of Strategy
IBM

Steven Schlosstein
President
SBS Associates, Inc

Harley Shaiken
Professor
Department of Communications
University of California—San Diego

Raymond Vernon
Clarence Dillon Professor of
International Affairs
Emeritus, John F. Kennedy School of
Government, Harvard University

Andrew W. Wyckoff
Head of Economic Analysis Section
Directorate for Science, Technology, and
Industry
Organization for Economic Cooperation
and Development

DEFENSE CONVERSION: REDIRECTING R&D ADVISORY PANEL

McGeorge Bundy, Chairman
Professor Emeritus of History
New York University

Michael Borrus
Deputy Director
Berkeley Roundtable on International
Economics
University of California

Kent H. Bowen
Co-Director
Leaders for Manufacturing
Massachusetts Institute of Technology

Charles Bradford
Director
Occupational Safety & Health and
Community Services
International Association of
Machinists and Aerospace Workers

Robert S. Carlton
Vice President
Community and Business Services
Jackson Community College, Jackson, MI

Philip W. Cheney
Vice President of Engineering
Raytheon Co

Robert S. Cooper
President, CEO and
Chairman of Board of Directors
Atlantic Aerospace Electronics Corp

Christopher Demisch
Partner
McFadden Brothers

Robert C. Dynes
Professor
Department of Physics
University of California, San Diego

Craig Fields
President
Chief Technical Officer and
Chief Operating Officer
Microelectronics & Computer
Technology Corp.

Arthur Flathers
Director of Independent R&D
GE Aerospace

Douglas Fraser
Professor
Labor Studies
Wayne State University

Gregory S. Frisby
Chief Executive Officer
Frisby Airborne Hydraulics

Donald A. Hicks
Professor
Political Economy
The Bruton Center for Development Studies
University of Texas, Dallas

Frank J. Lewis
Senior Vice President and Special Assistant
to Chairman and CEO
Harris Corp

John P. McTague
Vice President for Technical Affairs
Ford Motor Co,

Ann Markusen
Professor
Director of the Project on Regional and
Industrial Economics
Rutgers University

Basil Papadales
Site Manager
W.J. Schafer Associates, Inc.

Jack Simon
Manager
Government R&D Programs
General Motors, Washington Office

Suzanne Teegarden
Executive Director
Industrial Services Program
State of Massachusetts

Charles D. Vollmer
Vice President
Technology Initiatives
Booz-Allen and Hamilton, Inc

CONTRIBUTIONS OF DOE
DEFENSE LABS & NIST TO THE
SEMICONDUCTOR INDUSTRY WORKSHOP

International Security and Commerce Program

ASSESSING THE POTENTIAL FOR CLOSER INTEGRATION OF DEFENSE AND CIVILIAN TECHNOLOGY AND MANUFACTURING ADVISORY PANEL

Walter La Beige, Chairman
Consultant

Robert Calaway
President
Resource Management International, Inc.

Gordon Corlew
Vice President
Engineering and Production
AIL Systems, Inc.

S.P. Desjardins
President
Simula Inc.

Roger Fountain
President and CEO
Great Lakes Composites Corp.

Jacques S. Gander
Senior Vice President
The Analytic Sciences Corp.

Herbert Glazer
Professor of International Business
International Business Department
Kogod College of Business Administration
American University

Alfred G. Hansen
Vice President C-130 Programs
Lockheed

Joel W. Marsh
Director
Government Acquisition Policy
United Technologies

Thomas L. McNaugher
Senior Fellow
The Brookings Institution

Christian L. Midgley
Division Manager
RayChem Corp.

F Whitten Peters
Partner
Williams and Connolly

Louis Rosen
Partner & National Director of
Government Contract Services
Ernst & Young

Howard Samuel
Senior Fellow
Council on Competitiveness

Robert W. Selden
Associate Director
Laboratory Development
Los Alamo National Laboratory

Leonard Sullivan
Consultant
System Planning Corp.

James A. Tegnella
Executive Vice President
Sandia National Laboratory

Nicholas Tore III
Torelli Enterprises

Harry Train
Division Manager
Strategic Research and Management
Services Division
Science Application International Corp.

FUTURE OF REMOTE SENSING FROM SPACE ADVISORY PANEL

Rodney W. Nichols, Chairman
CEO
The New York Academy of Sciences

James G. Anderson
Professor
Department of Chemistry
Harvard University

William Brown
President
ERIM Corp.

Ronald Brunner
Professor
Department of Political Science
University of Colorado

Joanne Gabrynowicz
Associate Professor
Center for Aerospace Sciences
University of North Dakota

Alexander F.H. Goetz
Director
Center for Study of Earth from Space
University of Colorado

David Goodenough
Chief Research Scientist
Pacific Forestry Center
Forestry Canada

Donald Latham
Corporate Director
Loral Corp.

Cecil E. Leith
Physicist
Lawrence Livermore National Laboratory

John H. McElroy
Dean of Engineering
The University of Texas at Arlington

Molly McCauley
Fellow
Resources for the Future

Earl Merritt
President
Merritt Assoc.

Alan Miller
Professor
Center for Global Change
University of Maryland-College Park

Raymond E. Miller
Professor
Department of Computer Science
University of Maryland

Kenneth Pedersen
Research Professor of International Affairs
School of Foreign Service
Georgetown University

David T Sandwell
Geological Resources Division
Scripps Institute of Oceanography

Dorm Walk let
President
Terra Nova Corp

Albert D Wheelon
Consultant

PROLIFERATION OF WEAPONS OF MASS DESTRUCTION ADVISORY PANEL

James E. Goodby, Chairman¹
Distinguished Service Professor
Carnegie-Mellon University

James E. Leonard, Chairman²
Executive Director
Washington Council on Non-Proliferation

George Anzelon
Associate Division Leader
Lawrence Livermore National Laboratory

Will D Carpenter
Consultant

Lewis A Dunn
Assistant Vice President and Manager of
Negotiations and Planning Division
Science Applications International Corp.

Randall Forsberg
Executive Director
Institute for Defense and Disarmament
Studies

Thomas R. Fox
Director
Office of National Security Technology
Pacific Northwest Laboratories

Alan R. Goldhammer
Director of Technical Affairs
Industrial Biotechnology Association

John M. Googln
Senior Staff Consultant
Martin Marietta Energy Systems, Inc.

Robert G. Gough
Senior Member, Technical Staff
Sandia National Laboratories

Elisa D. Harris³
Senior Research Analyst
The Brookings Institution

Geoffre Kemp
Senior Associate
Carnegie Endowment for International
Peace

Joshua Lederberg⁴
Professor
The Rockefeller University

John W. Lewis
Professor
Center for International Security and Arms
Control

Stanford University

Lee W. Mercer
Corporate Export Manager
Digital Equipment Corp.

Matthew S. Meselson
Professor
Department of Biochemistry and Molecular
Biology
Harvard University

Stephen M. Meyer
Professor
Center for International Studies
Massachusetts Institute of Technology

Gary Milhollin
Director
Wisconsin Project on Nuclear Arms Control

Marvin M. Miller
Senior Research Scientist
Department of Nuclear Engineering
Massachusetts Institute of Technology

Janne E. Nolon
Senior Fellow-in-Foreign Policy
The Brookings Institution

William C. Potter
Director
Center for Russian and Eurasian Studies
Monterey Institute of International Studies

Barbara Hatch Rosenberg
Professor
Division of Natural Sciences
SUNY

Lawrence Scheinmon⁵
Professor of Government and Associate
Director
Peace Studies Program
Cornell University

Leonard S Spector
Senior Associate
Carnegie Endowment for International
Peace

Sergio C Trindade
President
SET International, Ltd

Resigned to become Chief U S Negotiator for
Safe and Secure Dismantlement of Nuclear
weapons

¹Panel member until June 1, 1993; Panel chair
after June 1, 1993

²Resigned Jan 29, 1993 to join National Security
Council staff

³Ex-office, Member of Technology Assessment
Advisory Council

⁴Resigned Aug 13, 1993 to become Counselor
for Nonproliferation in the U S Department
of Energy

WORKSHOP ON CIVIL-MILITARY
INTEGRATION OF MANUFACTURING
PROCESS

WORKSHOP ON EOS AND USGCRP

WORKSHOP ON FORMATS, MEDIA AND
STANDARDS FOR CIVILIAN REMOTELY
SENSED DATA

WORKSHOP ON FUTURE OF REMOTELY
SENSED DATA

WORKSHOP ON FUTURE OF REMOTE
SENSING FROM SPACE

WORKSHOP ON REMOTE SENSING DATA:
MANAGEMENT/ DISTRIBUTION, AND
ANALYSIS

WORKSHOP ON POTENTIAL MILITARY USES
OF CIVILIAN SATELLITES

WORKSHOP ON SHIPBUILDING

WORKSHOP ON FUTURE TRENDS IN
GLOBAL SECURITY

Science, Education, and Transportation Program

FEDERAL AVIATION RESEARCH AND TECHNOLOGY ADVISORY PANEL

Najeeb E. Halaby, Chair
Chairman
Sofair International

Robert W. Baker
Executive Vice President, Operations
American Airlines, Inc.

William F. Ballhaus, Jr.,
President
Martin Marietta Aero & Naval Systems

Robert A. Davis
Vice President, Engineering
Boeing Commercial Airplane Group

Donald D. Engen
President
AOPA Air Safety Foundation

Edmund S. Greenslet
President
ESG Aviation Services

David Haase
Executive Central Air Safety Chairman
Air Line Pilots Association

Jonathan Howe
Attorney
Zuckert, Scoutt, & Rasenberger

Noreene Koan
Chairperson
National Air Safety Committee
Association of Flight Attendants

Richard Livingston
Air Transportation Consultant

T. Al Ian McArtor
President
FEDEX Aeronautics Corp.

Clinton V. Oster, Jr.
Professor
School of Public and Environmental Affairs
Indiana University

Willard G. Plentl, Jr.
Director
Division of Aviation for North Carolina

Robert W. Simpson
Director
Flight Transportation Lab
Massachusetts Institute of Technology

Richard Swauger
Air Traffic Consultant

Patricia F. Waller
Director
Transportation Research Institute
University of Michigan

INTERCITY BUS ACCESS FOR INDIVIDUALS WITH DISABILITIES

Charles B. Wheeler, Jr., Chair
President
Wheeler Medical Laboratories

Robert C. Brown
Senior Vice President
Lehman Brothers

Richard V. Burkhauser
Senior Fellow
Gerontology Program
Syracuse University

Kenneth M. Campbell
Executive Director
Ohio Developmental Disabilities
Planning Council

Joseph M. Dabrowski
Vice President for Engineering
Transportation Manufacturing Corp.

Joseph S. Dusenbury
Commissioner
South Carolina Vocational
Rehabilitation Department

Marlene Eide
Commissioner
Williams County, North Dakota

Lex Frieden
Senior Vice President
Texas Institute for Rehabilitation and
Research

Frank M. Henry
President
Frank Martz Coach Co.

Ralf Hotchkiss
Director
Wheeled Mobility Center
San Francisco State University

Fred Kaiser
President
Kerrville Bus Co., Inc.

Theodore Knappen
Principal
Government Affairs Management
Associates

Jock Michaels
Technology Access Consultant

Ronald R. Moore
President
Burlington Trailways

Michael H Sharff
Assistant Secretary for Public Transportation
Massachusetts Executive Office of
Transportation and Construction

Walter A Spencer
Senior Vice President
Cole Layer-Trumble Co

Patricia Weaver
Assistant Research Scientist
University of Kansas Transportation Center

James A Williams
Chairman
United Transportation Union Local 1564

Ex-officio members
Robert Ashby
Deputy Assistant General Counsel
Office of the Secretary,
U S Department of Transportation

Lawrence Roffee
Executive Director
Architectural and Transportation Barriers
Compliance Board

Donald Trilling
Director, Office of Transportation Regulatory
Affairs
Office of the Secretary,
U S Department of Transportation

**TEACHERS AND TECHNOLOGY
ADVISORY PANEL**

Allen Glenn, Chairperson
Dean
College of Education
University of Washington, Seattle

Milton Chen
Director
Center for Education and Lifelong Learning
KQED

Chris Cross
Executive Director
Business Roundtable

Molly Drake
Director
Alternate Teacher Preparation Program
University of Southern Florida, Tampa

Lee Ehman
Professor of Education
Indiana University, Bloomington

Geoffrey Fletcher
Associate Commissioner for Technology
Applications
Texas State Department of Education

Keith Heuttig
School Board Member
Valle, School District, Hazelton, Indiana

Yolanda Jenkins
Senior Program Administrator
IBM EduQuest

Stanley Johnson
Science Teacher
Jefferson Junior High School, Washington,
D C

Leslie Lemon
Fifth Grade Teacher
West Elementary School, Moss Point,
Mississippi

Louise McCarran
Regulatory Consultant

Henry R. Marockie
Superintendent of Schools
West Virginia State Department of
Education

Argelio B. Perez
Associate Superintendent for Educational
Services
Lansing School District, Michigan

Dwight Prince
Principal
Robert E Lee Elementary School, Long
Beach, California

Tom Snyder
President
Tom Snyder Productions

Adam Urbanski
President
Rochester Teachers Association, New York

Valerie J. Wilford
Media Specialist
Executive Director
Illinois Valley Library System

Art Wise
President
National Council for Accreditation of
Teacher Education

Kristina Woolsey
Distinguished Scientist
Advanced Technology Group
Apple Computer

**TECHNOLOGIES FOR LITERACY
ADVISORY PANEL**

Richard Venezky, Chair
Unidel Professor of Educational Studies and
Professor of Computer and Information
Science
University of Delaware

Christine Cope
President
South Dakota Literacy Council

Sharon Darling
President
National Center for Family Literacy,
Louisville, KY

Allen DeBevoise
President
AND Communications, Inc.

Ronald Gillum
Director
Adult Extended Learning Services
Michigan Department of Education

Shirley Brice Heath
 Professor of English, Linguistics, and
 Anthropology
 Stanford University

Jim Kadamus
 Assistant Commissioner
 Higher and Continuing Education
 New York State Department of Education

Irwin Kirsch
 Director
 Division of Cognitive and Assessment
 Research
 Educational Testing Service

William Kolberg
 President & CEO
 National Alliance of Business

Ra, Marshall
 Professor
 L. B.J. School of Public Affairs
 University of Texas, Austin

Earline McNary
 Consultant

Job Moraido
 Social Worker
 Law Offices of the Public Defender
 Child Advocacy Division, San Diego, CA

Richard Murnane
 Professor of Economics
 Harvard Graduate School of Education

Reg Murphy
 Executive Vice President
 National Geographic Society

Dale Rezapak
 GAIN Coordinator
 California Community College, Sacramento

Antonia Stone
 President
 Playing to Win

Richard Varn
 Senator
 Iowa State Legislature

George Walker
 President
 Delta Wire Co.

WORKSHOP ON FEDERAL AVIATION
 TECHNOLOGY AND U.S. COMPETITIVENESS

**Telecommunication and
 Computing Technologies
 Program**

**ELECTRONIC ENTERPRISE: NEW
 OPPORTUNITIES FOR AMERICAN
 BUSINESS AND INDUSTRY ADVISORY
 PANEL**

Daniel Bell, Chairman
 Scholar-in-Residence
 American Academy of Arts & Sciences

Marietta L. Baba
 Acting Chair
 Department of Anthropology
 Wayne State University

James Beatty
 President
 National Consulting Systems

Jim Benn
 Executive Director
 Federation for Industrial Retention &
 Renewal

Kathleen Bernard
 Director, External Programs
 North Carolina Supercomputer Center

Willard R. Bishop, Jr.
 President
 Willard Bishop Associates

Fred Block
 Chairman
 Department of Sociology
 University of California

Bernie Campbell
 Vice President
 Information Services
 Sonoco Products

Carl Cargill
 Standards Strategist
 Sun Microsystems, Inc.

Rev. William Cunningham
 Founder and Director
 Focus HOPE

Irwin Dorros
 Vice President
 Technology,
 Bell Communications Research

Frank Emspak
 School for Workers
 University of Wisconsin

Peter Keen
 Consultant

Sara Kiesler
 Professor
 Department of Social and Decision
 Sciences
 Carnegie Mellon University

James L., Koontz
 Chief Executive Officer
 Kingsbury Corp.

Donald Lasher
 President
 Information Service Division
 United States Automobile Association

Scott Loftness
 Group Vice President
 Visa International

Glenn Smith
 Manager
 Strategic Technology Planning
 United Parcel Service

Paul Vetter
 Director
 Information Services
 Cone Mills Corp.

Mark Weiser
Chief Scientist and Manager
Computer Science Lab
Xerox Palo Alto Research Center

John Wohlstetter
Director
Technology Affairs
GTE Corp.

John Zysman
Co-Director
Berkeley Round Table on International
Economy,
University of California, Berkeley

**MAKING GOVERNMENT WORK:
ELECTRONIC DELIVERY OF FEDERAL
SERVICES ADVISORY PANEL**

Donald A. Marchand, Chairman
Dean
School of Information Studies
Syracuse University

Raza A. Babar
Director
Global Research and Intelligence
Detroit Edison Company

Thomas B. Beard
Chairman
Florida Public Service Commission

Ying-Chung Annie Chen
Director
Strategic Analysis
Pacific Telesis Group

William H Dutton
Professor of Communication
The Annenberg School of Communication
University of Southern California

Francis Dummer Fisher
Visiting Scholar
L.B.J. School of Public Affairs
University of Texas

Carol Fukunaga
Vice Chair
NCSL Information Policy Task Force
Hawaii House of Representatives

Charles H. Geisler
formerly Director, Technical Computing
Technical Computations Department
3M Company

Thomas M. Grundner
President
National Public Telecomputing Network

Glen P Haney
Former Director
Office of Information Resources Manage-
ment
U.S. Department of Agriculture

Alexander H. Hills
Distinguished Service Professor
Carnegie Mellon University

Edwin A. Levine
formerly Regional Director
Government Affairs
EDS Corp.

Alvin E. Nashman
Former President
Systems Group
Computer Science Corp

Diana Roose
Research Director
9 to 5, National Association of Working
Women

Jorge Reina Schement
Associate Professor
School of Communication, Information,
and Library Studies
Rutgers University

Alan F Westin
Professor of Public Law and Government
Department of Political Science
Columbia University

Joseph Terrence Williams
Manager
Women, Infants and Children Program
Wyoming Department of Public Health

**US. TELECOMMUNICATIONS SERVICES IN
EUROPEAN MARKETS ADVISORY PANEL**

John Diebold, Chairman
Diebold Institute for
Public Policy Studies, Inc

James R. Beniger, Professor
Annenburg School of Communications
University of Southern California

Mark L. Bigelow
Network Architect
Information Services
Bechtel Corp.

Robert Bruce
Partner
Debevoise & Plimpton

Emilio DeLia
Department Director
International Communications Services
AT&T

Steven Flaizer
Vice President for Space Systems
LORAL

Kenneth Gordon
Chief Commissioner
Massachusetts Department of Public
Transportation

Bruce Greenwald
Professor
Department of Economics
Columbia University School of Business

J Donald Karmizin
Vice President
Management Information Systems
United Airlines

Gene Kimmelman
Consumer Federation of America

Mike Nugent
Vice President and Associate
General Counsel
Citibank, NA

Barbara O'Connor
Chairperson, Alliance for Public Technology
Department of Communications
California State University

Reynie U. Ortiz
Vice President for Public Polic,
U.S. West

Francis Plude
Professor
Department of Communications
John Carroll University

Michael J. Reilly, Sr.
Vice President for External Relations
Reuters America, Inc.

Tony Rutkowski
Vice President
SPRINT

Marie-Monique Steckel
President
France Telecom Inc.

WORKSHOP ON BUSINESS APPLICATIONS
OF INFORMATION TECHNOLOGY

WORKSHOP ON THE ELECTRONIC
ENTERPRISE: LABOR MANAGEMENT

WORKSHOP ON THE ELECTRONIC
ENTERPRISE: NEW OPPORTUNITIES FOR
AMERICAN BUSINESS AND INDUSTRY

WORKSHOP ON PRIVACY RIGHTS IN
COMPUTERIZED MEDICAL INFORMATION

Biological and Behavioral Sciences Program

CYSTIC FIBROSIS AND DNA TESTS: IMPLICATIONS OF CARRIER SCREENING ADVISORY PANEL

Jessica G. Davis, Chair
Co-Director
Genetics Department
New York Hospital

Arthur L. Beaudet
Professor
Howard Hughes Medical Institute
Baylor College of Medicine

Debra L. Collins
Genetic Counselor
University of Kansas Medical Center

Beth A. Fine
Genetic Counselor/Clinical Instructor
Section of Reproductive Genetics
Northwestern University Medical School

Lynn D. Fleisher
Attorney
Sidley & Austin

Clark C. Havighurst
William Neal Reynolds Professor of Law
School of Law
Duke University

John Z. Jacoby, III
Clinical Assistant
The Cystic Fibrosis Center
St. Vincent's Hospital and Medical Center

Ang'le Khachadour
General Counsel
Hastings College of Law

Katherine W. Klinger
Vice President, Science
Integrated Genetics

Arthur Lifson
Vice President
Health Management Services
CIGNA Companies

Robert F. Murray, Jr.
Professor
Department of Pediatrics and Child Health
College of Medicine—Howard University,

Mark Pauly
Executive Director
Leonard Davis Institute of
Health Economics
Wharton School—University of
Pennsylvania

Susan Poling
Parent

Thomas K. Reed, Jr.
Chairman
Vivigen, Inc

Philip R. Reill,
President
Shriver Center for Mental Retardation, Inc

Joseph D. Schulman
Director
Genetics & IVF Institute

HUMAN GENOME PROJECT AND PATENTING HUMAN DNA SEQUENCES ADVISORY PANEL

LeRoy Walters, Chair
Director Center for Bioethics
Kennedy Institute of Ethics
Georgetown University

Charles Auffrey
Project Director
Genethon
Evry, France

David Botstein
Professor and Chairman
Department of Genetics
Stanford University Medical Center

Robert M. Cook-Deegon
Director
Division of Biobehavioral Sciences and
Mental Disorders
Institute of Medicine

Rebecca S. Eisenberg
Professor of Law
University of Michigan Law School

James F. Haley, Jr.
Partner
Fish & Neave

Marilyn Hartig
Director
Corporate Development,
Pharmaceuticals/Biotech
Warner-Lambert Co.

Max D. Hensley
Vice President for Intellectual Property
Gilead Sciences, Inc.

Thomas D. Kiley
Consultant

William A. Linton, III
President and Chairman
Promega Corp.

Lita L. Nelsen
Director
Technology, Licensing Office
Massachusetts Institute of Technology

Deborah Nickerson
Professor
Department of Molecular Biotechnology
University of Washington, Seattle

David A.A. Owen
Director
Industrial Collaboration and Licensing
Medical Research Council, UK

J. David Roessner
Professor
School of Public Policy
Georgia Institute of Technology

Joseph Straus
Professor
Max Planck Institute for Foreign and
International Patent and Copyright
Munich, Germany

J. Craig Venter
President and Director
Institute for Genomic Research

Teri S. Willey
Associate Director
Office of Technology Transfer
Purdue Research Foundation

Ronald G. Worton
Geneticist-in-Chief
Department of Genetics
Hospital for Sick Children,
Toronto, Canada

**OSHA'S SELECTION OF CONTROL
TECHNOLOGIES AND ASSESSMENT OF
THEIR IMPACTS AND COSTS ADVISORY
PANEL**

John R. Froines, Chair
Director
Center for Occupational and
Environmental Health
School of Public Health
University of California-Los Angeles

Nicholas A. Ashford
Professor
Center for Technology,
Policy and Industrial Development
Massachusetts Institute of Technology,

Robert Crandall
Senior Fellow
Economic Studies Program
The Brookings Institution

Morton Corn
Professor
School of Hygiene and Public Health
The Johns Hopkins University

William T. Dickens
Associate Professor
Department of Economics
University of California, Berkeley

James S. Holt
Senior Economist and
Vice President for Research
Employment Policy Foundation

William F. Kelly
Vice President and General Manager
Fibers Division
The Carborundum Co,

Karl Kronebusch
La Follette Institute of Public Affairs
University of Wisconsin

Lester B. Lave
James H. Higgins Professor of Economics
Department of Economics
Carnegie-Mellon University

Thomas McGarity
William Stomps Farish Professor of Law
School of Law
University of Texas at Austin

John Mendeloff
Professor
School of Public and International Affairs
University of Pittsburgh

Stephen M. Rappaport
Professor of Occupational Health
Department of Environmental
Sciences and Engineering
Occupational Safety and
Health Educational Resource Center
University of North Carolina

Susan Rose-Ackerman
Henry R. Luce Professor of Jurisprudence
School of Law
Yale University

Barbara A. Silverstein
Director of Research
Department of Labor and Industries
Safety and Health Assessment and
Search for Prevention
State of Washington

James W. Smith
Chief Economist (ret.)
United Steel Workers of America

Margaret M. Seminario
Director
Department of Occupational
Safety and Health
American Federation of Labor and
Congress of Industrial Organizations

**RISK ASSESSMENT OF CHEMICAL
CARCINOGENS ADVISORY PANEL**

Ronald W. Estabrook, Chair
Virginia Lazenby O'Hera Professor of
Biochemistry
Department of Biochemistry,
University of Texas Southwestern Medical
Center

Eula Bingham
Vice President & Dean for Graduate Studies
Institute of Environmental Health
University of Cincinnati Medical Center

Thomas A. Burke
Assistant Professor
Department of Health Policy and
Management
The Johns Hopkins University School of
Hygiene and Public Health

Adam M. Finkel
Fellow
Center for Risk Management
Resources for the Future

Joseph H. Guth
Senior Project Scientist
Natural Resources Defense Council, Inc.

Oliver Hankinson
Associate Professor of Pathology
Laboratory of Biomedical and
Environmental Sciences
University of California—Los Angeles

David Lilienfeld
Senior Epidemiologist
The EMMES Corp.

Gilbert Omenn
Dean
School of Public Health and Community
Medicine
University of Washington, Seattle

Cohn N. Park
Associate Scientist and Issues Manager
Health and Environmental Sciences
The Dow Chemical Co.

David F. Rail
Consultant

Joseph V. Rodricks
Senior Vice President
Head, Health Sciences Department
ENVIRON International Corp.

Curtis C. Travis
Director
Center for Risk Assessment
Oak Ridge National Laboratory

James D. Wilson
Regulatory Issues Director
Environmental Safety and Health Staff
Monsanto Co.

Lauren Zeise
Acting Chief and Senior Toxicologist
Office of Environmental Health Hazard
Assessment
California Environmental Protection Agency

Rae Zimmerman
Professor of Planning
Robert F. Wagner Graduate School of
Public Service
New York University

**TECHNOLOGIES FOR UNDERSTANDING
THE ROOT CAUSES OF SUBSTANCE
ABUSE AND ADDICTION ADVISORY
PANEL**

Patricia E. Evans, Chair
Director of Research
Bayview-Hunter's Point Foundation

Marilyn Aguirre-Molina
Assistant Professor
Department of Environmental and
Community Medicine
Robert Wood Johnson Medical School

Jeffrey G. Becker
Vice President
Office of Alcohol Issues
The Beer Institute

Lawrence S. Brown Jr.
Vice-President
Addiction Research and Treatment Corp.

Mary Edwards
Director
Joy of Jesus
Camden House

Bernard Ellis
Consultant

Robbie M. Jackman
Assistant Commissioner
State of Tennessee
Department of Public Health

Sheppard Kellam
Professor and Chairman
Department of Mental Hygiene
School of Hygiene and Public Health
The Johns Hopkins University

Herbert Kleber
Director, Division on Substance Abuse
Department of Psychiatry,
College of Physicians and Surgeons
Columbia University

George F. Koob
Member
Department of Neuropharmacology
The Scripps Research Institute

Mary Jeanne Kreek
Associate Professor
Department of Biology and Addictive
Diseases
The Rockefeller University

John Lucas
President
John Lucas Enterprises

Spero Manos
Professor
Department of Psychiatry
University Health Science Center
Colorado Psychiatric Hospital

Roger Meyer
Vice President for Medical Affairs and
Executive Dean
George Washington University,
Medical School

David F. Musto
Professor of Psychiatry
Child Studies Center
Yale University

Ruben Ortega
Police Chief
Salt Lake City, Utah

Sue Rusche
Executive Director
National Families In Action

Lawrence Wallack
Associate Professor
School of Public Health

Kenneth E Warner
Professor and Chair, Department of Public
Health Policy and Administration
School of Public Health
University of Michigan

Roger Wilkins
Clarence J Robinson Professor of History
and American Culture
George Mason University

WORKSHOP ON THE AMERICANS WITH
DISABILITIES ACT, MENTAL ILLNESS AND
EMPLOYMENT

WORKSHOP ON BIOMEDICAL ETHICS IN
U.S. PUBLIC POLICY

WORKSHOP ON COMMUNITY-BASED DRUG
PREVENTION

WORKSHOP ON DRUG AVAILABILITY

WORKSHOP ON INTERNATIONAL RESEARCH
IMPLICATIONS OF DNA PATENTS

WORKSHOP ON FEDERAL SUPPORT OF RISK
ASSESSMENT: STRUCTURE AND
ORGANIZATION

WORKSHOP ON LEGAL ISSUES IN
PATENTING HUMAN DNA

WORKSHOP ON ROLE OF RECREATIONAL,
CULTURAL, AND OTHER COMMUNITY
ACTIVITIES AND SETTINGS IN PREVENTING
DRUG ABUSE AMONG YOUTH

WORKSHOP ON UNDERSTANDING THE
ROLE OF GENETIC FACETS IN MENTAL
ILLNESS

Food and Renewable Resources Program

AGRICULTURE, TRADE AND THE ENVIRONMENT ADVISORY PANEL

Sandra Batie
Professor
Department of Agricultural Economics
Michigan State University

William L. Bryant
Chairman
W.L. Bryant Company

Anne Chadwick
Special Trade Consultant
Department of Food & Agriculture
The Chadwick Company

John M. Duxbury
Director
Agricultural Ecosystems Program
Cornell University

Allan Robert James Eaglesham
Visiting Scientist
Cornell University

Peter Emerson
Senior Economist
Environmental Defense Fund

Dan Esty
Fellow
Institute for International Economics

David Fredrickson
President
Minnesota Farmers Union

Stephen R. Gliessman
Director
Department of Agroecology Program
University of California, Santa Cruz

Ralph W. F Hardy
President
Boyce Tower Institute

Robert Harness
Vice President for Regulatory Science
Agriculture Group
Monsanto Company

Robbin Johnson
Corporate Vice President
Department of Public Affairs
Cargill, Inc.

Jack Laurie
President
Michigan Farm Bureau

Alexander F McCalla
Professor
Department of Agricultural Economics
University of California, Davis

Stanley Miller
Vice President
Department of International Sales
Excel Corp

Kitty Reichelderfer Smith
Director of Policy Studies
Henry A. Wallace Institute

Ann Veneman
Counsel
Patton, Boggs, and Blow

Justin R. Ward
Senior Resource Specialist
Natural Resources Defense Council

Cecil A. Watson
Farmer

Pete Wenstrand
Vice President
National Corn Growers Association

David Wheeler
Acting Division Chief
Environment, Infrastructure and
Agriculture Division
The World Bank

**AQUACULTURE: FOOD AND RENEWABLE
RESOURCES FROM US. WATERS
ADVISORY PANEL**

Don Abt
Marine Biological Laboratory
Woodshole Oceanographic Institute

Jan Auyong
Project Manager
Mar Res Associates

John Bardach
Senior Marine Advisor
Environment and Policy Institute

Merry Camhi
Ecology/Staff Scientist
Scully Science Center

John S. Corbin
Manager
Aquaculture Development Program

Mike Freeze
Keo Fish Farm, Inc.

Michael Hastings
Executive Director
Maine Aquaculture Innovation Center

Timothy K. Hennessy
President
Ekk Will Waterlife Resources

Bille Hougart
Vice President
Oceanic Institute

Robert Hulbrock
Aquaculture Coordinator
Department of Fish and Game

Ann Kapuscinski
Associate Professor
Sea Grant College Program
University of Minnesota

Roy Martin
Executive Director
National Aquaculture Council
National Fisheries Institute

Joseph McCraren
Executive Director
National Aquaculture Association

Ted McNulty
Aquaculture Coordinator
Arkansas Development Finance Authority,

David Ortman
Director
Friends of the Earth

John Pitts
Consultant

Bradley H. Powers
Director
Aquaculture/Seafood Programs
National Association of Aquaculture
Coordinators

Robert R. Stickney
Professor
School of Fisheries,
University of Washington

Hugh Warren, III
Executive Vice President
Catfish Farmers of America

**NON-INDIGENOUS SPECIES
ADVISORY PANEL**

Marion Cox, Chair
Managing Director
Resource Associates

J. Baird Callicot
Professor
Department of Philosophy
University of Wisconsin—Stevens Point

Faith Campbell
Senior Scientist
Natural Resources Defense Council

James Carlton
Director
Maritime Studies Program
Williams College—Mystic Seaport

Alfred Crosby
Professor
Department of American Studies
University of Texas

Les Ehler
Professor
Department of Entomology
University of California—Davis

William Flemer, III
President
Wm. Flemer's Son's, inc.
Princeton Nurseries

John Grandy
Vice President
Wildlife & Habitat Protection
Humane Society of the U.S.

Lynn Greenwatt
Vice President
Department of International Affairs
National Wildlife Federation

Roberti Kahn
Consultant

William B. Kovalak
Supervisor
Environmental & Regulatory Compliance
Detroit Edison Company

Jack Lattin
Curator of the Museum
Entomology Museum
Oregon State University-Corvallis

Joseph P McCraren
Executive Director
National Aquaculture Association,

Marshall Meyers
General Council
Pet Industry Joint Advisory Council

Robert Morris
Resource Manager
Western Division
Louisiana Pacific

Philip Regal
Professor
Department of Ecology and
Behavioral Biology
University of Minnesota

Rudolph Rosen
Director of Wildlife
Parks and Wildlife Department
State of Texas

Don Schmitz
Biological Scientist
Bureau of Aquatic Plant Management
Florida Department of Natural Resources

Jerry Scribner
Attorney-at-Law

Howard M Singletary, Jr
Director
Plant Industry Division
North Carolina Department of Agriculture

Clifford W Smith
Director, Cooperative Park Stud,Unit
Department of National Parks
University of Hawaii, Manoa

Reggle Wyckoff
Consultant

WORKSHOP ON AQUACULTURE FUTURES

Health Program

ASSESSING THE ASSUMPTIONS BEHIND HEALTH REFORM PROJECTIONS ADVISORY PANEL

Joseph P Newhouse, Chair
Director
Division of Health Policy Research and
Education
Harvard University

Stuart H Altman
Dean
Florence Heller School
Brandeis University

Harold Cohen
President
Hal Cohen, Inc.

Karen Davis
Executive Vice President
The Commonwealth Fund

Tom J. Elkin
Assistant Executive Officer
Health Benefit Services
CalPERS

Deborah A. Freund
Director
Otis Bowen Research Center
Indiana University

Fernando A. Guerra
Director
San Antonio Metropolitan Health Distri-let

William Hsiao
Professor of Health System Economics
Department of Health Policy and
Management
Harvard School of Public Health

Sherrie Kaplan
Co-Director
Division of Health Services Research
The Health Institute, New England
Medical Center

Lawrence R. Klein
Professor of Economics
University of Pennsylvania

Wood row Myers
Vice President far Medical Affairs
The Associated Group

Jack Rodgers
Senior Manager
Director of Health Policy Analysis
Price Waterhouse

Allen J. Sorbo
Principal
Tillinghast, A Towers Perrin Co.

Gail R. Wilensky
Senior Fellow
Project HOPE

Michael C. Wolf son
Director General
Institutions and Social Statistics Branch
Statistics Canada, Ottawa

DEFENSIVE MEDICINE AND THE USE OF MEDICAL TECHNOLOGY ADVISORY PANEL

Randall Bovbjerg, Chair
Senior Research Associate
The Urban Institute

John R. Ball
Executive Vice President
American College of Physicians

James Blumstein
Professor of Law
Vanderbilt University Law School

Troyen Brennan
Professor of Law and Public Health
Department of Health Policy and
Management
Harvard School of Public Health

Brad Cohn
President
Physician Insurers Association of America

Edward David
Chairman
Maine Board of Registration in Medicine

Richard Frank
Professor
Health Services Research and
Development Center
Johns Hopkins University

Pamela Gilbert
Legislative Director
Public Citizen Congress Watch

Rodne, Hayward
Assistant Professor
Department of Internal Medicine
University of Michigan School of Medicine

Richard Kravitz
Assistant Professor of Medicine
Division of General Medicine
Primary Care Center, Sacramento, CA

George D Malkasian
Chairman
Department of Obstetrics & Gynecology,
Mayo Clinic

Barry Manuel
Associate Dean
Boston University College of Medicine

J Douglas Peters
Attorney,
Charfoos and Christensen, Attorneys at Law

Richmond Prescott
former Associate Executive Director for the
Permanente Medical Group, Inc

David Sundwall
Vice President and Medical Director
American Healthcare Systems Institute

Laurence R. Tancredi
Private Consultant

James S. Todd
Executive Vice President
American Medical Association

DRUG LABELING ADVISORY PANEL
Bernard Mirkin, Chair
Head & Director of Research
Children's Memorial Institute for Education
Northwestern University Medical School

Stuart Baker
Partner
Septoe & Johnston

Paul A Belford
President
Associate Executive Resources Group

Joseph Cook
Director
Program for Tropical Disease Research
Edna McConnell Clark Foundation

Enrique Fefer
Regional Advisor
Essential Drugs Program
Pan American Health Organization

Paula Fujiwara
Clinical Instructor
Department of Internal Medicine
University of California—San Francisco

Harris Gleckman
Medical Director
MDR TB Team
New York City Department of Health

Keith Johnson
Director of Drug Information
United States Pharmacopoeia

William S. Merkin
Senior Vice President
Strategic Policy, Inc.

Mary Ellen Mortensen
Assistant Professor-Pharmac, & Toxicology,
Columbus Children's Hospital
Ohio State University, Columbus

Robert Neimeth
President
Pfizer International, Inc.

Mark Novitch
Executive Vice President
Upjohn Pharmaceutical Corp.

Johanna E Perlmutter
Head
Division of Human Sexuality
Beth Israel Hospital

Michael Reich
Associate Professor
Harvard School of Public Health

Regina Rowan
Chair, Pharmaceutical Workgroup
Interfaith Center on Corporate
Responsibility
Medical Mission Sisters

Albert Wertheimer
Professor
Philadelphia College of Pharmacy

Sidney Wolfe
Director
Public Citizen Health Research Group

INTERNATIONAL DIFFERENCES IN HEALTH TECHNOLOGY SERVICES, AND ECONOMICS ADVISORY PANEL

Rosemary Stevens, Chairperson
Dean, School of Arts & Sciences
University of Pennsylvania

Stuart Altman
Dean
Florence Heller School
Brandeis University

Jan E. Blanpain
Professor
School of Public Health
Leuven University

Harry F? Cain II
Senior Vice President
Federal Employee Program
Blue Cross/Blue Shield

Tom Chapman
President
FACHE
The Greater Southeast Healthcare System

Louis P. Garrison, Jr,
Director of Health Economics
Pharmacoeconomics Research
Syntex Development Research

Annetine Gelijns
Associate Director
Habib Center for Surgical Studies
Columbia University,

William Glaser
Professor
New School for Social Research
Graduate School of Management and
Urban Polic,

John K. Iglehart
Editor
Health Affairs

Ellen M Immergut
Associate Professor
Department of Political Science
Massachusetts Institute of Technology

Lynn E Jensen
Vice President
Group on Health Policy and Programs
American Medical Association

Stanley Jones
Consultant

Bengt Jonsson
Professor
Stockholm School of Economics

Kenneth Maton
Research Professor
Duke Center for Demographic Studies
Duke University

Edward Neuschler
Director
Policy Development & Research
Health Insurance Association of America

Jean-Pierre Poullier
Director
Education, Employment and Social Affairs
Office for Economic Cooperation and
Development, France

Mark Schlesinger
Associate Professor
Department of Epidemiology and Public
Health
Yale University Medical School

Bruce C Vladeck
Administrator
Health Care Financing Administration

HEALTH AND SAFETY ASSESSMENT OF DIETARY SUPPLEMENTS ADVISORY PANEL

Richard K. Riegelman, Chair
Director
Public Health Programs
George Washington University School of
Medicine and Health Sciences

Adrienne Bendich
Clinical Research Scientist
Department of Human Nutrition Research
Hoffman La Roche, Inc.

Dennis M. Bier
Director
Children's Nutritional Research Center

Gladys Block
Professor
School of Public Health
University of California, Berkeley

Joseph Bresse
Vice President
Sales and Marketing
General Nutrition, Inc

J.B. Cordaro
President
Council for Responsible Nutrition

Ann Corken
Drug Information Specialist
US. Pharmacopela-Drug Information
Division

Johanna Dwyer
Director
Frances Stern Nutrition Center
New England Medical Center

Janet L. Greger
Professor
Department of Nutritional Sciences
University of Wisconsin - Madison

Ryan Huxtable
Professor
Department of Pharmacology,
College of Medicine, University of Arizona

Loren Israelsen
Attorney at Law

Bonnie Liebmon
Director of Nutrition
Center for Science in the Public Interest

Rob McCaleb
President
Herb Research Foundation

Donald B McCormick
Professor
Department of Biochemistry
Emory University School of Medicine

Stephen H. McNamara
Attorney
Hyman, Phelps & McNamara, PC

Walter Mertz
Director
Beltsville Human Nutrition Research Center
U S Department of Agriculture

Joseph E Pizzorno, Jr
Founding President
Bastyr College

Simon Young
Professor
Department of Psychiatry
McGill University, Montreal, Quebec,
Canada

Walter Willett
Chairman
Department of Nutrition
Harvard School of Public Health

PHARMACEUTICAL R&D: COSTS, RISKS, AND REWARDS ADVISORY PANEL

Frederick M Scherer, Chair
Professor of Economics
John F. Kennedy School of Government
Harvard University

Jerome Avorn
Director
Program for Analysis of Clinical Strategies
Harvard Medical School

Martin Neil Bailly
Professor
Department of Economics
University of Maryland-College Park

Nancy L. Buc
Partner
Weil, Gotshal & Manges

William S. Comanor
Professor
Department of Economics
University of California-Santa Barbara

Lewis A. Engman
Partner
Winston & Strawn

Thomas Q. Garvey, III
President
Garvey Associates, Inc.

Frederic Greenberg
Partner
EGS Partners

Robert B. Helms
Resident Scholar
American Enterprise Institute

Gene Kimmelman
Director of Government Affairs
AIDS Action Council

Jeffrey Levi
Consultant

Judy C. Lewent
Senior Vice President and
Chief Financial Officer
Merck & Co. Inc.

George B. Rathmann
Chairman of the Board
ICOS

Jacob C. Stucki
Vice President for Pharmaceutical
Research (retired)
The Upjohn Company

Shyam Sunder
Professor of Management and Economics
Graduate School of Industrial
Administration
Carnegie-Mellon University

W. Leigh Thompson
Executive Vice President
Eli Lilly & Co.

**POLICY ISSUES IN THE PREVENTION
AND TREATMENT OF OSTEOPOROSIS
ADVISORY PANEL**

Robert P. Heaney, Chairman
John A. Creighton Professor
Creighton University

Steven R. Cummings
Research Director
Division of General Internal Medicine
University of California, College of
Medicine

Barbara L. Drinkwater
Research Physiologist
Department of Medicine
Pacific Medical Center

Deborah T. Gold
Assistant Professor of Medical Sociology,
Center for Study of Aging & Human
Development
Duke University Medical Center

Susan L. Greenspan
Associate in Medicine
Gerontology Division
Beth Israel Hospital

Caren Marie Gundberg
Assistant Professor
Department of Orthopedics
Yale University School of Medicine

Sylvia Houghland
Associate Director
Laboratory for Clinical Computing

C. Conrad Johnston, Jr.
Director
Division of Endocrinology and Metabolism
Indiana University School of Medicine

Shiriki K. Kumanyika
Associate Professor of Nutritional
Epidemiology
College of Health and Human
Development
Pennsylvania State University

Edward O. Lanphier, II
Executive Vice President
Commercial Development
Somotix Therapy Corp.

Donald R. Lee
Vice President
Norwich Eaton Pharmaceuticals, Inc.

Robert Lindsay
Chief
Internal Medicine
Helen Hayes Hospital

Betsy Love
Program Manager
Center for Metabolic Bone Disorders
Providence Medical Center

Robert Marcus
Director
Aging Study Unit
VA Medical Center, Palo Alto

Lee Joseph Melton, III
Head, Section of Epidemiology
Department of Health Sciences Research
Mayo Clinic

Gregory Miller
V. P. Nutrition Research/Technical Services
National Dairy Council

Morris Notelovitz
President and Medical Director
Women's Medical & Diagnostic Center and
Climacteric Clinic, Inc.

William Arno Peck
Dean
University of Washington School of
Medicine

Diana Petitti
Associate Professor
Department of Family and Community
Medicine
University of California, San Francisco

Neil M. Resnick
Chief, Geriatrics
Brigham & Women's Hospital

Gideon A. Rodan
Executive Director
Department of Bone Biology
Merck, Sharp & Dohme Research

Mehrsheed Sinaki
Professor, Physical Medicine and Rehabil-
itation
Mayo Medical School

Milton C Weinstein
Henry J. Kaiser Professor
Health Policy and Management
Harvard School of Public Health

**PROSPECTS FOR HEALTH TECHNOLOGY
ASSESSMENT ADVISORY PANEL**

William Fullerton, Chair
Consultant

Peter Bouxsein
Consultant

Robert Brook
Deputy Director for Health Services
The RAND Corp.

Iain Chalmers
Director
The Cochrane Center
NHS R&D Program, United Kingdom

Harold Cohen
President
Harold Cohen, Inc

David Eddy
Professor of Health Polic, and
Management
Duke Universit,

Ruth Faden
Professor and Director
Program in Law, Ethics and Health
The School of Hygiene and Public Health
Johns Hopkins Universit,

Diana Jest
Executive Director for Legislative Polic,
Blue Cross & Blue Shield Association

Robert Keller
Orthopedic Surgeon

Jonathan Lomas
Professor
Centre for Health Economics and
Policy Analysis
Department of Clinical
Epidemiology and Biostatistics
McMaster University, Ontario

Michael McCulley
Assistant General Counsel
Johnson & Johnson

Barbara J. McNeil
Professor
Department of Radiolog,
Harvard Medical School
Brigham & Women's Hospital

Frederick Mosteller
Director
Technology, Assessment Program
Howard University, School of Public Health

Richard Peto
ICRF Reader In Cancer Studies
Clinical Trial Service Unit
Radcliffe Infirmary, UK

John Wennberg
Director
Center for Evaluative Clinical Sciences

**TECHNOLOGY INSURANCE AND THE
HEALTH CARE SYSTEM ADVISORY PANEL**

James C. Hunt, Chairman
Chancellor
University of Tennessee-Memphis

Henry Aaron
Director
Economics Studies Program
Brookings Institution

Robert Brook
Deputy Director for Health Services
The RAND Corp.

Arthur Caplan
Director
Center for Biomedical Ethics
Universtiy of Minnesota

Deborah Chollet
Associate Director
Center for Risk Management & Insurance
Research
Georgia State University

Olivia Cousins
Project Director, Off Ice of Academic Affairs
Borough of Manhattan
Community College

Jane L. Delgado
President & CEO
National Coalition of Hispanic Health &
Human
Services Organization

Paula K. Diehr
Professor, Department of Biostatistics
School of Public Health & Community
Medicine
University of Washington

M. Joycelyn Elders
Surgeon General
Public Health Service
U.S. Department of Health and Human
Services

Jack Hadley
Co-Director
Center for Health Policy Studies
Georgetown University

Douglas E. Henley
Physician

William Hobson
Executive Director
Central Seattle Community Health Centers

John Lewin
Director of Health
State of Hawaii

Barbara J. McNeil
Professor
Department of Radiology
Harvard Medical School

David Mechanic
Rene Dubos Professor of Behavioral
Sciences
Director, Institute for Health, Health Care
Policy and Aging Research
Rutgers University

Joseph Morris
Vice President for Information
Delaware Valle Hospital Council

Patricia Nazemetz
Director of Benefits
Xerox Corp.

David G. Pockell
Senior Vice President and Regional
Manager
Kaiser Foundation Health Plan, Inc.
Kaiser Permanence

Carl Scott
Senior Vice President
Mutual of Omaha

Gordon Trapnell
President
Gordon R. Trapnell Actuaries

Cheryl B. Travis
Professor
Department of Psychology
University of Tennessee-Knoxville

Special Consultant
Stephen H. Long
Senior Economist
RAND Corp.

OTA DEFENSIVE MEDICINE WORKSHOP
DEVELOPING INDICATORS OF DEFENSIVE
MEDICINE USING HOSPITAL DISCHARGE
DATA ABSTRACTS

WORKSHOP ON ALTERNATIVE VISIONS FOR
USING EFFECTIVENESS, COST-
EFFECTIVENESS, AND APPROPRIATENESS
INFORMATION TO DESIGN HEALTH
BENEFITS: IMPLICATIONS FOR HEALTH CARE
REFORM AND TECHNOLOGY ASSESSMENT

WORKSHOP ON LINKING MEDICAL
EVIDENCE WITH CLINICAL PRACTICE:
PROGRESS AND BARRIERS

WORKSHOP FOR PEOPLE WITH DISABILITIES

WORKSHOP ON PERSIAN GULF WAR
VETERANS' HEALTH

WORKSHOP ON POLICY ISSUES IN THE
CONTROL OF TUBERCULOSIS

**Oceans and Environment
Program**

**MANAGING NUCLEAR MATERIALS FROM
WARHEADS ADVISORY PANEL**

John E. Till, Chairman
President
Radiological Assessments Corp.

John F. Ahearne
Executive Director
Sigma Xi
The Scientific Research Society,

Charles Barrett
Industrial Hygienist
Oil, Chemical and Atomic Workers
International Union

Thomas A. Burke
Assistant Professor
Department of Health
Policy and Management
The Johns Hopkins University, School of
Hygiene and Public Health

Beverly E. C. Gattis
President
STAND of Amarillo, Inc

Sherri Wasserman Goodman
Lawyer
Goodwin, Procter & Hoar

Kenneth Lichtenstein
Physician
Division of Infectious Disease
Rose Medical Center

Robert R. Loux
Director
Nuclear Waste Project Office
State of Nevada

Daniel S. Miller
First Assistant Attorney General
Natural Resources Section
Colorado Office of Attorney General

John M. Napier
Environmental consultant
Techniques

Robert H. Neill
Director
Environmental Evaluation Group
State of New Mexico

Louis Peoples
Executive Vice President
Madison Gas & Electric Co

Rozanne L. Ridgway
President
The Atlantic Council of the United States

Frank von Hippel
Professor
Woodrow Wilson School of Public &
International Affairs
Princeton University

James D. Werner
Senior Environmental Engineer
Natural Resources Defense Council

John M. Whitely
Professor
Social Ecology and Social Sciences
University of California—Irvine

**SYSTEMS AT RISK FROM CLIMATE
CHANGE ADVISORY PANEL**

Helen M. Ingram, Chairman
Director
Udall Studies in Public Policy
University of Arizona

Richard M. Adams
Professor of Resource Economics
Department of Agricultural
and Resource Economics
Oregon State University

Vera Alexander
Dean
School of Fisheries and Ocean Sciences
University of Alaska

Michael J. Bean
Senior Attorney
Environmental Defense Fund

Margaret Adela Davidson
Executive Director
South Carolina Sea Grant Consortium

J. Clarence Davies
Executive Director
National Commission on the Environment
World Wildlife Fund

Boruch Fischhoff
Professor
Engineering and Public Policy
Carnegie Mellon University

Michael H. Glantz
Program Director
Environmental and Societal Impacts Group
National Center for Atmospheric Research

George Hoberg
Assistant Professor
Political Science Department
University of British Columbia

Henry D. Jacoby
Professor and Director
Joint Program on the Science and Policy
Massachusetts Institute of Technology

Walter Jarck
Corporate Director
Forest Resources
Georgia Pacific Corp.

David N. Kennedy
Director
Department of Water Resources
State of California

Jon Kusler
Executive Director
Association of State Wetlands Managers

Doug Maclean
Associate Professor
Department of Philosophy
University of Maryland-Baltimore

Jerry Mahlman
Director
NOAA/Geophysical Fluid Dynamics Lab
Princeton University

Barbara Miller
Senior Civil Engineer
Tennessee Valley Authority

Steve Peck
Director
Environmental Sciences Department
Electric Power Research Institute

Herman Shugart
W.W. Corcoran Professor of Environmental
Sciences
Department of Environmental Sciences
University of Virginia
Clark Hall

Phil Sisson
Director
Commodities and Economic
Analysis Division
Quaker Oats Corp,

Don Wilhite
Director
International Drought Information Center
University of Nebraska

Gary Yohe
Professor
Department of Economics
Wesleyan University

WORKSHOP ON SYSTEMS AT RISK FROM
CLIMATE CHANGE

WORKSHOP ON PLUTONIUM STORAGE

*Office of
technology
assessment act*

#

Public Law 92-484
92d Congress, H.R. 10243
October 13, 1972
An Act

To establish an Office of Technology Assessment for the Congress as an aid in the identification and consideration of existing and probable impacts of technological application; to amend the National Science Foundation Act of 1950; and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That this Act may be cited as the "Technology Assessment Act of 1972."

**FINDINGS AND DECLARATION
OF PURPOSE**

SEC. 2. The Congress hereby finds and declares that:

- (a) As technology continues to change and expand rapidly, its applications are—
1. large and growing in scale; and
 2. increasingly extensive, pervasive, and critical in their impact, beneficial and adverse, on the natural and social environment.

(b) Therefore, it is essential that, to the fullest extent possible, the consequences of technological applications be anticipated, understood, and considered in determination of public policy on existing and emerging national problems.

- (c) The Congress further finds that:
1. the Federal agencies presently, responsible directly to the Congress are not designed to provide the legislative branch with adequate and timely information, independently developed, relating to the potential impact of technological applications, and
 2. the present mechanisms of the Congress do not and are not designed to provide the legislative branch with such information.

- (d) Accordingly, it is necessary for the Congress to—
1. equip itself with new and effective means for securing competent, unbiased information concerning the physical, biological, economic, social, and political effects of such applications; and
 2. utilize this information, whenever appropriate, as one factor in the legislative assessment of matters pending before the Congress, particularly in those instances where the Federal Government may be called upon to consider support for, or management or regulation of, technological applications.

**ESTABLISHMENT OF THE OFFICE OF
TECHNOLOGY ASSESSMENT**

SEC. 3. (a) In accordance with the findings and declaration of purpose in section 2, there is hereby created the Office of Technology Assessment (hereinafter referred to as the "Office") which shall be within and responsible to the legislative branch of the Government.

(b) The Office shall consist of a Technology Assessment Board (hereinafter referred to as the "Board") which shall formulate and promulgate the policies of the Office, and a Director who shall carry out such policies and administer the operations of the Office.

(c) The basic function of the Office shall be to provide early indications of the probable beneficial and adverse impacts of the applications of technology, and to develop other coordinate information which may assist the Congress in carrying out such function, the Office shall:

1. identify existing or probable impacts of technology or technological programs;
2. where possible, ascertain cause and effect relationships;
3. identify alternative technological methods of implementing specific programs;
4. identify alternative programs for achieving requisite goals;
5. make estimates and comparisons of the impacts of alternative methods and programs;
6. present findings of completed analyses to the appropriate legislative authorities;
7. identify areas where additional research or data collection is required to provide adequate support for the assessments and estimates described in paragraph (1) through (5) of this subsection; and
8. undertake such additional associated activities as the appropriate authorities specified under subsection (d) may direct.

(d) Assessment activities undertaken by the Office may be initiated upon the request of

1. the chairman of any standing, special, or select committee of either House of the Congress, or of any joint committee of the Congress, acting for himself or at

the request of the ranking minority member or a majority of the committee members;

2. the Board; or
3. the Director, in consultation with the Board.

(e) Assessments made by the Office, including information, surveys, studies, reports, and findings related thereto, shall be made available to the initiating committee or other appropriate committees of the Congress. In addition, any such information, surveys, studies, reports, and findings produced by the Office may be made available to the public except where—

1. to do so would violate security statutes; or
2. the Board considers it necessary or advisable to withhold such information in accordance with one or more of the numbered paragraphs in section 552(b) of title 5, United States Code.

TECHNOLOGY ASSESSMENT BOARD

SEC. 4. (a) The Board shall consist of thirteen members as follows

1. six Members of the Senate, appointed by the President pro tempore of the Senate, three from the majority party and three from the minority party;
2. six Members of the House of Representatives appointed by the Speaker of the House of Representatives, three from the majority party and three from the minority party; and
3. the Director, who shall not be a voting member.

(b) Vacancies in the membership of the Board shall not affect the power of the remaining members to execute the functions of the Board and shall be filled in the same manner as in the case of the original appointment

(c) The Board shall select a chairman and a vice chairman from among its members at the beginning of each Congress. The vice chairman shall act in the place and stead of the chairman in the absence of the chairman. The chairmanship and the vice chairmanship shall alternate between the Senate and the House of Representatives with each Congress. The chairman during each even-numbered Congress shall be selected by the Members of the House of Representatives on the Board from among their number. The vice chairmen during each Congress shall be chosen in the same manner from that House of Congress other than the House of Congress of which the chairman is a Member.

(d) The Board is authorized to sit and act at such places and times during the sessions, recesses, and adjourned periods of Congress, and upon a vote of a majority of its members, to require by subpoena or otherwise the attendance of such witnesses and the production of such books, papers, and documents, to administer such oaths and affirmations, to take such testimony, to procure such printing and binding, and to make such expenditures, as it deems advisable. The Board may make such rules respecting its organization and procedures as it deems necessary, except that no recommendation shall be reported from the Board unless a majority of the Board assent. Subpoenas may be issued over the signature of the chairman of the Board or of any voting member designated by him or by the Board, and may be served by such person or persons as may be designated by such chairman or member. The chairman of the Board or any voting member thereof may administer oaths or affirmations to witnesses,

DIRECTOR AND DEPUTY DIRECTOR

SEC. 5. (a) The Director of the Office of Technology Assessment shall be appointed by the Board and shall serve for a term of six years unless sooner removed by the Board. He shall receive basic pay at the rate provided for level III of the Executive Schedule under section 5314 of title 5, United States Code

- (b) In addition to the powers and duties vested in him by this Act, the Director shall exercise such powers and duties as may be delegated to him by the Board.
- (c) The Director may appoint with the approval of the Board, a Deputy Director who shall perform such functions as the Director may prescribe and who shall be Acting Director during the absence or incapacity of the Director or in the event of a vacancy in the office of Director. The Deputy Director shall receive basic pay at the rate provided for level IV of the Executive Schedule under section 5315 of title 5, United States Code,
- (d) Neither the Director nor the Deputy Director shall engage in any other business, vocation, or employment than that of serving as such Director or Deputy Director, as the case may be; nor shall the Director or Deputy Director, except with the approval of the Board, hold any office in, or act in any capacity for, any organization, agency, or institution with which the Office makes any contract or other arrangement under this Act.

AUTHORITY OF THE OFFICE

SEC. 6. (a) The Office shall have the authority, within the limits of available appropriations, to do all things necessary to carry out the provisions of this Act, including, but without being limited to, the authority to-

- 1 make full use of competent personnel and organizations outside the Office, public or private, and form special ad hoc task forces or make other arrangements when appropriate;
- 2 enter into contracts or other arrangements as may be necessary for the conduct of the work of the Office with any agency or instrumentality of the United States, with any State, territory, or possession or any political subdivision thereof, or with any person, firm, association, corporation, or educational institution, with or without reimbursement, without performance or other bonds, and without regard to section 3709 of the Revised Statutes (41 U.S.C. 5);
- 3 make advance, progress, and other payments which relate to technology assessment without regard to the provisions of section 3648 of the Revised Statutes (31 U.S.C. 529);
- 4 accept and utilize the services of voluntary and uncompensated personnel necessary for the conduct of the work of the Office and provide transportation and subsistence as authorized by section 5703 of title 5, United States Code, for persons serving without compensation;
- 5 acquire by purchase, lease, loan, or gift, and hold and dispose of by sale, lease, or loan, real and personal property of all kinds necessary for or resulting from the exercise of authority granted by this Act; and
- 6 prescribe such rules and regulations as it deems necessary governing the operation and organization of the Office.

- (b) Contractors and other parties entering into contracts and other arrangements under this section which involve costs to the Government shall maintain such books and related records as will facilitate an effective audit in such detail and in such manner as shall be prescribed by the Office, and such books and records (and related documents and papers) shall be available to the Office and the Comptroller General of the United States, or any of their duly authorized representatives, for the purpose of audit and examination.
- (c) The Office, in carrying out the provisions of this Act, shall not, itself, operate any laboratories, pilot plants, or test facilities,
- (d) The Office is authorized to secure directly from any executive department or agency information, suggestions, estimates, statistics, and technical assistance for the purpose of carrying out its functions under this Act. Each such executive department or agency shall furnish the information, suggestions, estimates, statistics, and technical assistance directly to the Office upon its request.
- (e) On request of the Office, the head of any executive department or agency may detail, with or without reimbursement, any of its personnel to assist the Office in carrying out its functions under this Act.
- (f) The Director shall, in accordance with such policies as the Board shall prescribe, appoint and fix the compensation of such personnel as may be necessary to carry out the provisions of this Act

ESTABLISHMENT OF THE TECHNOLOGY ASSESSMENT ADVISORY COUNCIL

SEC 7 (a) The Off Ice shall establish a Technology Assessment Advisory Council (hereinafter referred to as the "Council") The Council shall be composed of the following twelve members

1 ten members from the public, to be appointed by the Board, who shall be persons eminent in one or more fields of the physical, biological, or social sciences or engineering or experienced in the administration of technological activities, or who may be judged qualified on the basis of contributions made to educational or **public** activities;

2 the Comptroller General; and

3 the Director of the Congressional Research Service of the Library of Congress

(b) The Council, upon request by the Board, shall--

1 review and make recommendations to the Board on activities undertaken by the Office or on the initiation thereof in accordance with section 3(d);

2 review and make recommendations to the Board on the findings of any assessment made by or for the Off Ice, and

3 undertake such additional related tasks as the Board may direct

(c) The Council, by majority vote, shall elect from its members appointed under subsection (a) (1) of this section a Chairman and a Vice Chairman, who shall serve for such time and under such conditions as the Council may prescribe In the absence of the Chairman, or in the event of his incapacity, the Vice Chairman shall act as Chairman

(d) The term of office of each member of the Council appointed under subsection (a)(1) shall be four years except that any such member appointed to fill a vacancy occurring prior to the expiration of the term for which his predecessor was appointed shall be appointed for the remainder of such term. No person shall be appointed a member of the Council under subsection (a) (1) more than twice. Terms of the members appointed under subsection (a)(1) shall be staggered so as to establish a rotating membership according to such method as the Board may devise.

(e) 1. The members of the Council other than those appointed under subsection (a)(1) shall receive no pay for their services as members of the Council, but shall be allowed necessary travel expenses (or, in the alternative, mileage for use of privately owned vehicles and per diem in lieu of subsistence at not to exceed the rate prescribed in sections 5702 and 5704 of title 5, United States Code), and other necessary expenses incurred by them in the performance of duties vested in the Council, without regard to the provisions of subchapter 1 of chapter 57 and section 5731 of title 5, United States Code, and regulations promulgated thereunder.

(2) The members of the Council appointed under subsection (a)(1) shall receive compensation for each day engaged in the actual performance of duties vested in the Council at rates of pay not in excess of the daily equivalent of the highest rate of basic pay set forth in the General Schedule of section 5332(a) Of title 5, United States

Code, and in addition shall be reimbursed for travel, subsistence, and other necessary expenses in the manner provided for other members of the Council under paragraph (1) of this subsection.

UTILIZATION OF THE LIBRARY OF CONGRESS

SEC. 8. (a) To carry out the objectives of this Act, the Librarian of Congress is authorized to make available to the Off Ice such services and assistance of the Congressional Research Service as may be appropriate and feasible.

(b) Such services and assistance made available to the Off Ice shall include, but not be limited to, all of the services and assistance which the Congressional Research Service is otherwise authorized to provide to the Congress.

(c) Nothing in this section shall alter or modify any services or responsibilities, other than those performed for the Off Ice, which the Congressional Research Service under law performs for or on behalf of the Congress. The Librarian is, however, authorized to establish within the Congressional Research Service such additional divisions, groups, or other organizational entities as may be necessary to carry out the purpose of this Act

(d) Services and assistance made available to the Office by the Congressional Research Service in accordance with this section may be provided with or without reimbursement from funds of the Off Ice, as agreed upon by the Board and the Librarian of Congress.

UTILIZATION OF THE GENERAL ACCOUNTING OFFICE

SEC. 9. (a) Financial and administrative services (including those related to budgeting, accounting, financial reporting, personnel, and procurement) and such other services as may be appropriate shall be provided the Office by the General Accounting Office.

(b) Such services and assistance to the Office shall include, but not be limited to, all of the services and assistance which the General Accounting Office is otherwise authorized to provide to the Congress.

(c) Nothing in this section shall alter or modify any services or responsibilities, other than those performed for the Office, which the General Accounting Office under law performs for or on behalf of the Congress.

(d) Services and assistance made available to the Office by the General Accounting Office in accordance with this section may be provided with or without reimbursement from funds of the Office, as agreed upon by the Board and the Comptroller General.

COORDINATION WITH THE NATIONAL SCIENCE FOUNDATION

SEC. 10. (a) The Office shall maintain a continuing liaison with the National Science Foundation with respect to—

1. grants and contracts formulated or activated by the Foundation which are for purposes of technology assessment; and
2. the promotion of coordination in areas of technology assessment, and the avoidance of unnecessary duplication or overlapping of research activities in the development of technology assessment techniques and programs.

(b) Section 3(b) of the National Science Foundation Act of 1950, as amended (42 U.S.C. 1862(b)), is amended to read as follows:

“(b) The Foundation is authorized to initiate and support specific scientific activities in connection with matters relating to international cooperation, national security, and the effects of scientific applications upon society by making contracts or other arrangements (including grants, loans, and other forms of assistance) for the conduct of such activities. When initiated or supported pursuant to requests made by any other Federal department or agency, including the Office of Technology Assessment, such activities shall be financed whenever feasible from funds transferred to the Foundation by the requesting official as provided in section 14(g), and any such activities shall be unclassified and shall be identified by the Foundation as being undertaken at the request of the appropriate official.”

ANNUAL REPORT

SEC. 11. The Office shall submit to the Congress an annual report which shall include, but not be limited to, an evaluation of technology assessment techniques and identification, insofar as may be feasible, of technological areas and programs requiring future analysis. Such report shall be submitted not later than March 15 of each year.

APPROPRIATIONS

SEC. 12. (a) To enable the Office to carry out its powers and duties, there is hereby authorized to be appropriated to the Office, out of any money in the Treasury not otherwise appropriated, not to exceed \$5,000,000 in the aggregate for the two fiscal years ending June 30, 1973, and June 30, 1974, and thereafter such sums as may be necessary.

(b) Appropriations made pursuant to the authority provided in subsection (a) shall remain available for obligation, for expenditure, or for obligation and expenditure for such period or periods as may be specified in the Act making such appropriations.

Approved October 13, 1972.

LEGISLATIVE HISTORY

HOUSE REPORTS

No. 92-469 (Comm. on Science and Astronautics) and
No. 92-1436 (Comm. of Conference),

SENATE REPORT

No. 92-1123 (Comm. on Rules and Administration).

CONGRESSIONAL RECORD,

Vol. 118 (1972):

Feb. 8, considered and passed House,
Sept. 14, considered and passed
Senate, amended.

Sept. 22, Senate agreed to conference
report.

Oct. 4, House agreed to conference
report.

Technology Assessment Board of the 103d Congress

EDWARD M. KENNEDY, Massachusetts, *Chairman*

DON SUNDQUIST, Tennessee, Vice Chairman

SENATE

ERNEST F. HOLLINGS, South Carolina

CLAIBORNE PELL, Rhode Island

ORRIN G. HATCH, Utah

CHARLES E. GRASSLEY, Iowa

DAVE DURENBERGER, Minnesota

HOUSE

GEORGE E. BROWN, JR., California

JOHN D. DINGELL, Michigan

JIM McDERMOTT, Washington

AMO HOUGHTON, New York

MICHAEL G. OXLEY, Ohio

ROGER C. HERDMAN
(Nonvoting)

Technology Assessment Advisory Council

NEIL E. HARL, Chairman
Charles F. Curtiss Distinguished Professor
Iowa State University
Ames, Iowa

JAMES C. HUNT, Vice *Chairman*
Distinguished Professor, Health Sciences Center
University of Tennessee
Memphis, Tennessee

CHARLES A. BOWSHER
Comptroller General of the United States
Washington, D.C.

LEWIS M. BRANSCOMB
Director, Science, Technology & Public
Policy Program, Harvard University
Cambridge, Massachusetts

HERBERT (TED) DOAN
President (Ret.), The Dow Chemical Company
Midland, Michigan

JOSHUA LEDERBERG
Professor, Rockefeller University
New York, New York

MAX LENNON
President, Clemson University
Clemson, South Carolina

THOMAS J. PERKINS
General Partner
Kleiner, Perkins, Caufield, and Byers
San Francisco, California

CHASE N. PETERSON
President Emeritus and Professor
University of Utah
Salt Lake City, Utah

JOSEPH E. ROSS
Director, Congressional Research Service
The Library of Congress
Washington, DC

JOHN F.M. SIMS
Vice President, Marketing
Usibelli Coal Mine, Inc.
Fairbanks, Alaska

MARINA v. N. WHITMAN
Professor, Institute of Public Policy Studies
University of Michigan
Ann Arbor, Michigan