

SCIENCE

Publisher: Richard S. Nicholson
Editor-in-Chief: Daniel E. Koshland Jr.
Editor: Ellis Rubinstein
Managing Editor: Monica M. Bradford
Deputy Editors: Philip H. Abelson (*Engineering and Applied Sciences*); John I. Brauman (*Physical Sciences*); Thomas R. Cech (*Biological Sciences*)

Editorial Staff

Assistant Managing Editor: Dawn Bennett
Senior Editors: Eleanor Butz, R. Brooks Hanson, Pamela J. Hines, Barbara Jasny, Katrina L. Kelner, Paula A. Kiberstis, David Lindley, Linda J. Miller, L. Bryan Ray, Phillip D. Szuromi, David F. Voss
Associate Editors: Gilbert J. Chin, Suki Parks
Letters: Christine Gilbert, *Editor*; Steven S. Lapham
Book Reviews: Katherine Livingston, *Editor*
Contributing Editor: Lawrence I. Grossman
Editing: Valerie Jablow, *Supervisor*; Cara Tate, *Senior Copy Editor*; Jeffrey E. Cook, Harry Jach, Erik G. Morris, Christine M. Pearce
Copy Desk: Ellen E. Murphy, *Supervisor*; Joi S. Granger, Daniel T. Helgerman, Melissa Q. Rosen, Beverly Shields, Kameaka Williams, *Assistant*
Editorial Support: Sherry Farmer, *Supervisor*; Brent Gendelman, Carolyn Kyle, Michele Listsiad, Diane Long, Patricia M. Moore, Ted Smith
Administrative Support: Sylvia Kihara, Charlene King, Jeanette Prastein
Telephone: 202-326-6501; **FAX:** 202-289-7562; **TDD:** 202-408-7770

News Staff

News Editor: Colin Norman
Features Editor: John M. Benditt
Deputy News Editors: Tim Appenzeller, Joshua Fischman, Jean Marx, Jeffrey Mervis
News & Comment/Research News Writers: Linda B. Felaco (copy), Constance Holden, Richard A. Kerr, Andrew Lawler, Elliot Marshall, Rachel Nowak, Antonio Regalado (intern), Robert F. Service, Richard Stone, John Travis
U.S. Bureaus: Marcia Barinaga (Berkeley), Jon Cohen (San Diego), Anne Simon Moffat (Chicago), Wade Roush (Boston)
Contributing Correspondents: Barry A. Cipra, Robert Crease, Elizabeth Culotta, Ann Gibbons, Virginia Morell, Dennis Normile (Tokyo), Robert Pool, Gary Taubes
Administrative Support: Fannie Groom, Jennifer Hodgkin
Telephone: 202-326-6500; **FAX:** 202-371-9227; **Internet Address:** science_news@aaas.org

Art & Production Staff

Production: James Landry, *Director*; Wendy K. Shank, *Manager*; Elizabeth A. Harman, *Assistant Manager*; Laura A. Creveling, Scherraine B. Mack, Stephen E. Taylor, *Associates*; Leslie Blizard, *Assistant*
Art: Amy Decker Henry, *Director*; C. Faber Smith, *Associate Director*; Katharine Suttli, *Scientific Illustrator*; Holly Bishop, *Graphics Associate*; Elizabeth Carroll, Preston Morrighan, *Graphics Assistants*

Europe Office

Editorial: Richard B. Gallagher, *Office Head and Senior Editor*; Stella M. Hurlley, Julia Uppenbrink, *Associate Editors*; Belinda Holden, *Editorial Associate*
News: Daniel Clery, *Editor*; Michael Balter (*Paris*), Patricia Kahn (*Heidelberg*), *Contributing Correspondents*
Administrative Support: Janet Mumford; Anna Riches
Address: 14 George IV Street, Cambridge, UK CB2 1HH
Telephone: (44) 1223-302067; **FAX:** (44) 1223-302068
Internet address: science@science-int.co.uk

Science Editorial Board

Charles J. Arntzen	F. Clark Howell
David Baltimore	Paul A. Marks
J. Michael Bishop	Yasutomi Nishizuka
William F. Brinkman	Helen M. Ranney
E. Margaret Burbidge	Bengt Samuelsson
Pierre-Gilles de Gennes	Robert M. Solow
Joseph L. Goldstein	Edward C. Stone
Mary L. Good	James D. Watson
Harry B. Gray	Richard N. Zare
John J. Hopfield	

EDITORIAL

Status of the Department of Energy

Key Republicans have called for restructuring or abolishing the Department of Energy (DOE). In effect this proposal is supported by major studies conducted by two teams of experts from industry, academia, and government. One study was under the auspices of the federal General Accounting Office (GAO). The second, requested by Secretary Hazel O'Leary of DOE, was headed by Robert Galvin, Chairman of the Executive Board of Motorola.

Statements from the GAO indicate that DOE has failed to establish clear and focused missions for its laboratories in the post-Cold War environment. The DOE's day-to-day management has been criticized as costly and unproductive. Laboratory managers have characterized DOE as a micromanager in many areas, especially in overseeing compliance with administrative requirements.

The report of the Galvin Task Force on 10 major DOE laboratories is extensive and worthy of respect. The DOE gets no kind words, though blame is shared by earlier Congresses. The laboratories receive favorable words and some admonitions. Included in the Galvin report is, "The laboratories' research role is a part of an essential, fundamental cornerstone for continuing leadership by the United States. . . . Many of the least exploited investigative paths involve the need for . . . multidisciplinary teams using sophisticated instruments and tools. It is that role for which the national laboratories are uniquely qualified." The Task Force criticized the tendency of the laboratories to seek to create new missions. Rather it recommended that the laboratories concentrate on national security, energy, environmental science and technology, and on the fields of fundamental science which underpin those important missions.

The Task Force stated, "The primary national security mission of the DOE laboratories is to provide for a safe, secure and reliable nuclear stockpile. . . . A vital extension of this mission involves work in non-proliferation, counter-proliferation, arms control verification, and intelligence support."

The Task Force asserted that DOE laboratories have failed to pay sufficient heed to future energy needs. "The Task Force generally believes that the highest priority research areas by the Department and the laboratories are in the areas of energy efficiency, conservation, renewable energy sources, . . . and more efficient recovery of gas and oil resources. The laboratories should also continue to be involved in nuclear fission-related R&D."

Annual expenditures for environmental cleanup of DOE sites rose to \$6.2 billion in 1994. It is by far the largest component of a \$19-billion-per-year budget. Both the Task Force and the General Accounting Office are critical of the quality of the effort. The GAO has stated that DOE has received about \$23 billion for environmental management since 1989, but that little cleanup has resulted. The Galvin Task Force cites estimated eventual costs of \$300 to \$1000 billion, and states there has been a failure to characterize the waste remediation challenge in the many DOE sites and the nature of the risks presented. Little basic research has been conducted, and there has been little rigorous analysis to learn from experience in the field. There has been too much attention to immediate acute problems, a lack of systems approach, a poor priority list with bad choices, and ineffectual, expensive activities. A suggested improvement is to use potential expertise of the national laboratories. If better remediation procedures were devised, massive problems elsewhere, including Superfund sites, would be tackled more effectively. The total U.S. cleanup bill is estimated to be about \$1700 billion.

Some of the strongest comments by the Task Force were devoted to governance of the laboratories. Those experienced in industrial R&D can quickly sense the vitality of a laboratory. Members, subcommittees, the Task Force, and the chairman repeatedly visited installations. They observed multiple symptoms of institutional stress. They learned about increasing overhead costs, poor morale, and gross inefficiencies resulting from overly prescriptive congressional management and oversight by the Department. They noted an inordinate internal focus at every level of these laboratories on compliance issues and questions of management processes. The Task Force concluded that "the current system of governance of these laboratories is broken and should be replaced with a bold alternative." It recommended that "the new system not be burdened by creeping micromanagement, non-productive oversight, and institutional fragmentation."

Philip H. Abelson