



UNITED STATES GENERAL ACCOUNTING OFFICE
WASHINGTON, D.C. 20548

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ENERGY AND MINERALS
DIVISION

April 19, 1982

E-207081

The Honorable Dan Glickman
Chairman, Subcommittee on Transportation,
Aviation and Materials
Committee on Science and
Technology
House of Representatives



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Dear Mr. Chairman:

Subject: Impact of Funding on Materials R&D Programs
in the Departments of Energy and Commerce, and
the National Aeronautics and Space Administration
Since Fiscal Year 1980 (EMD-82-73)

In your letter of December 7, 1981, and in subsequent discussions with your staff, you requested that the General Accounting Office review the impact of funding levels on materials research and development programs in three Federal agencies--the Department of Commerce (DOC), the Department of Energy (DOE), and the National Aeronautics and Space Administration (NASA)--for fiscal years 1980 through 1983.

This review was conducted at DOC, DOE, and NASA headquarters in Washington, D.C. It was performed in accordance with GAO's current "Standards for Audit of Government Organizations, Programs, Activities and Functions." We reviewed agency budget documents and records and interviewed appropriate agency officials. Our review was limited to analysis of only those budget line items and component materials R&D activities that agency budget and program officials could identify within our allotted time frame. As a result, our study included only about one third of ongoing materials R&D in DOE, about 90 percent within DOC and 95 percent within NASA.

Because large portions of materials R&D are not readily identifiable in agency budget documents, we were unable to fully reconcile agency reported funding levels with those contained in the 1980 COMAT (Committee on Materials) survey. 1/

1/U.S. Department of Commerce, "Survey: Materials Life Cycle Research and Development in the Federal Government Fiscal Year 1980," September 1981.

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However, officials of all three agencies consider COMAT reported funding levels, in many instances, to be overstated. DOE officials, on the other hand, believe COMAT figures are useful because they reflect funding for large portions of materials R&D activities not readily identifiable in the budget. In our opinion, to rely solely on one or the other source for determining materials R&D spending seems unwise.

As outlined during briefings of your staff our review resulted in three general findings.

- First, based on presently available data, little significant change appears in overall funding levels for materials R&D between FY 80 and 83.
- Second, funding has not generally kept up with inflation or rapidly increasing major facility operating costs.
- Third, materials R&D program funding for FY 82 and 83 generally reflects the administration's stated intent of continuing the Federal role as principal supporter of basic research, while de-emphasizing Federal support of applied and developmental research.

The summaries below also outline these findings on an agency by agency basis.

We have previously provided your staff with detailed budget charts on the individual agencies involved and are, therefore, not attaching them to this report.

Department of Commerce

The DOC is currently authorized to spend about \$16 million on materials R&D in FY 82. Within the department, only one materials R&D budget line item is identifiable. This item, a portion of the National Bureau of Standards' (NBS) Materials Science Program, represents a little over 90 percent of DOC-wide materials R&D. It accounts for \$12.5 million in materials R&D funding in FY 80, \$12.3 million in FY 81 and \$15.1 million in FY 82. Funding is also expected to be about \$15 million in FY 83 when appropriated.

DOC/NBS materials research funding, program emphasis, and personnel levels have remained relatively constant. However, about 90 percent of NBS's program is applied research (10 percent is basic).

As such, under current administration policy, Federal funding of ongoing applied projects, in which the private sector might otherwise take the lead, is likely to be terminated. Commerce officials also anticipate cuts in reimbursable agency contract work between FY 82 and 83.

Although we were unable to obtain full budgetary data on DOC/NBS materials R&D funding for FY 83, agency officials noted that their FY 83 request reflects about a \$2 million decrease in metals processing and automated manufacturing programs which, in turn, was approximately offset by small increases in numerous other activities. The metals processing research consists of metallurgical measurement methods, standards, and R&D data for high strength, light weight steels used in the defense, aerospace and automobile industries for which funding was first appropriated in FY 82. In keeping with current administration policy, this research responsibility is to be shifted "entirely" to private industry or performed on a "cooperative" basis.

National Aeronautics and Space Administration

With agency assistance, we identified about 95 percent of ongoing materials R&D in NASA in the budget. While increasing at a slower rate than inflation and major facility operating costs, funding has increased from about \$60 million in FY 80 to about \$71 million in FY 83.

A large portion of this research is applied and developmental. As such, it is potentially subject to retrenchment under current administration policy. There have, however, been few significant changes in program emphasis and personnel levels. Among the more notable changes were shifts away from large multiuse facilities with sizeable operating costs. Also, funding for space program materials R&D, received a one-time \$2.4 million increase in FY 81 under the previous administration. There has also been a shift in funding from university grant and industry contract research to in-house research.

Department of Energy

Within the allotted time frame for our review, agency officials were able to assist us in identifying only one third of DOE-wide materials R&D they claim is appropriated in the budget. Nevertheless, this identified portion of ongoing materials R&D represents the largest amount of materials R&D funded by the three agencies we reviewed or \$163 million in FY 83.

Of the eight line items identified, most funds are spent within the Materials Science Division, which performs high-risk, long-term basic research. These programs appear unlikely targets for funding cutbacks, given current administration policy.

Modest increases have occurred in overall basic research funding, program emphasis, and personnel levels. However, an increased percentage of operating expenses is being used to support major research facilities. Such facilities include the National Synchrotron Light Source and the High Flux Beam reactor, each requiring over \$6 million per year to operate.

Current administration policy cutbacks in solar, geothermal, and fossil energy programs also have a substantial effect on the materials R&D components of these programs. Materials R&D comprising a substantial portion of funding for solar energy's active heating and cooling, as well as passive and hybrid programs, is significantly reduced in FY 83. Only the basic research portion of these activities is to be continued under the solar thermal program in FY 83.

Because of the short time frame involved in responding to your request and the Subcommittee's urgent need of this material, we did not obtain formal agency comments. Views of agency officials were obtained and are presented in the text of the report where appropriate. Their remarks do not, however, represent the official position of their agency.

If we can be of any further assistance, please let us know.

Sincerely yours,



J. Dexter Peach
Director