

DOCUMENT RESUME

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Private, Profitmaking Firms' Reports on Research and Development Contracts with the Environmental Protection Agency Can Be Evaluated Better. PSAD-77-161; B-164912. October 31, 1977. 2 pp. + 2 appendices (15 pp.).

Report to Sen. Charles H. Percy; by Jerome H. Stolarow (for Richard W. Gutmann, Director, Procurement and Systems Acquisition Div.).

Issue Area: Science and Technology: Management and Oversight of Programs (2004).

Contact: Procurement and Systems Acquisition Div.

Budget Function: Miscellaneous: Financial Management and Information Systems (1002).

Organization Concerned: Environmental Protection Agency.

Congressional Relevance: Sen. Charles H. Percy.

Authority: Clean Air Act.

Most of the Environmental Protection Agency's (EPA's) large-dollar research and development contracts with private, profit-making businesses result in reports. If the project officer finds the report acceptable, it is printed as an official EPA document and distributed within EPA. Depending on the subject matter it is also sent to other Federal agencies, State and local governments, and industry. Wider distribution is achieved through the Commerce Department's National Technical Information Service. Findings/Conclusions: Although EPA has prescribed procedures for preparing appraisal forms to document its evaluation of each contract's end products, these procedures had not been followed in most of the seven completed or terminated contracts examined. Instead, acceptability was assumed to be evidenced by the project officer's decision to distribute a report as an official EPA document. Project officers had not followed up to determine actual use of the reports. Recipients perceived the two reports that had been evaluated and distributed to be useful documents. It is a matter of good management practice that EPA enforce its procedures to formally and systematically document evaluations of contract results, including the project officer's evaluation of the end product. The Assistant Administrator for Research and Development recently directed all officers to comply with the requirements to rate contractors' performance.

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12/11/77

**UNITED STATES  
GENERAL ACCOUNTING OFFICE**

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**Private, Profitmaking Firms' Reports On Research And Development Contracts With The Environmental Protection Agency Can Be Evaluated Better**

Most of the Environmental Protection Agency's large-dollar research and development contracts with private, profitmaking businesses result in reports. Agency acceptance of these reports is usually shown when it distributes the reports as official publications.

The Agency does not formally and systematically document its evaluation of the acceptability of reports received.



UNITED STATES GENERAL ACCOUNTING OFFICE

WASHINGTON, D.C. 20548

PROCUREMENT AND SYSTEMS  
ACQUISITION DIVISION

B-164912

The Honorable Charles H. Percy  
United States Senate

Dear Senator Percy:

Your letter of June 7, 1977, requested that we follow up certain areas of our report, "Federal Agencies' Contracting for Research and Development in the Private, Profit-making Sector" (PSAD-77-66, Mar. 24, 1977).

One such area related to agency evaluations of end products of research and development contracts. Because only a small number of contracts were completed at the time of our prior review, you asked that we return to the agencies and determine for each completed contract the end product's current status; any evaluation, circulation, or other action taken on the end product; and any further use intended by the agency.

In subsequent discussions with your office, we agreed to furnish the information as it became available. This first report summarizes the information obtained at the Environmental Protection Agency (EPA). We are currently developing followup information on contracts awarded by the Maritime Administration and the Department of Transportation and will report that information to you in the near future.

For our prior report we examined 38 contracts, costing over \$100,000 each, awarded by EPA in fiscal year 1975. At that time three contracts had been either completed or terminated. As of July 31, 1977, an additional four contracts had been completed.

The end product of an EPA research and development contract is a report in most cases. If the project officer finds the report acceptable, it is printed as an official EPA document and distributed within EPA. Depending upon the subject matter it is also sent to other Federal agencies, State and local governments, and industry. Wider distribution is achieved through the Commerce Department's National Technical Information Service.

Although EPA has prescribed procedures for preparing appraisal forms to document its evaluation of each contract's end products, these procedures had not been followed in most cases. Alternatively, we discussed the completed and terminated contracts with responsible project officers and learned that acceptability was evidenced by their decisions to distribute the reports as official EPA documents. Project officials had not followed up to determine actual use. Our limited inquiries showed that, for two reports that had been evaluated and distributed, recipients perceived them to be useful documents.

It is a matter of good management practice that EPA enforce its procedures to formally and systematically document evaluations of contract results, including the responsible project officer's evaluation of the end product. EPA's Acting Assistant Administrator for Research and Development concurs, and on October 19, 1977, directed all project officers to comply with the requirement to rate contractors' performance.


A summary of the information obtained at EPA on each of the seven completed or terminated contracts is contained in appendix I. Appendix II gives the status of 31 contracts still in progress at the time of our review.

As discussed with you, we did not obtain written agency comments. The matters covered in this report, however, were discussed with agency officials and their comments were included when appropriate.

Our work was performed at EPA headquarters, Washington, D.C.; and at EPA laboratory facilities in Cincinnati, Ohio, and Research Triangle Park, Durham, North Carolina.

As arranged with your office, unless you publicly announce its contents earlier, we plan no further distribution of this report until 30 days from the date of the report. At that time we will send copies to interested parties and make copies available to others on request.

Sincerely yours,

  
for R. W. Gutmann  
Director

COMPLETED AND TERMINATED EPA  
RESEARCH AND DEVELOPMENT CONTRACTS

Contract 68-01-2959

The contract was awarded to MATHTECH, Inc. (previously Mathematica, Inc.) on November 12, 1974, in the amount of \$111,537.

The Clean Air Act of 1970 requires substantial reductions in mobile-source air pollution. Emission standards for discharges of carbon monoxide, hydrocarbons, and nitrogen oxides from light-duty vehicles are specified in the act. EPA undertook studies of the costs and benefits of implementing hypothetical mobile-source emission control policies. The contractor was to develop and apply a model to quantify benefits from achieving various air-quality levels.

EPA issued a report in August 1976 on the study results entitled "A Computer Simulation Model for Analyzing Air Pollution Control Strategies." The general conclusions were that:

- It is economically inefficient to impose the same emission controls program in different regions. Each region has different emissions compositions, different meteorological carrying capacities, and different transportation systems. A flexible national policy that encourages exploitation of these differences could yield substantial economic benefits.
- Costs associated with changes to less preferred modes of transportation and reductions in trip frequencies can be substantial and should not be omitted from any cost calculation.

The project officer said that the report is highly technical and would be used by EPA economists and other specialists to advise those officials responsible for EPA decisions on emission control policies. Interest in the report was also expressed by staff economists at the Energy Research and Development Administration, industrial firms (EXXON and General Motors), and the Institute for Environmental Sciences.

Contract 68-01-3228

The National Planning Association was awarded a \$135,522 contract on June 10, 1975, to research how societies' choices

are made under situations of technological risk and uncertainty. The contract was to be completed in June 1977.

In August 1976 the contract was modified to have the contractor report on risk acceptability for use in public hearings to be held on EPA's radioactive-waste management program. The estimated increased cost was \$40,000. In January 1977 the contract was further modified to have the contractor study the state of the art for implementing proposed waste management alternatives. The estimated additional cost was \$74,202, bringing the contract's total potential value to \$249,724.

In June 1977 EPA determined that the contractor could not satisfactorily perform the work required under the two modified tasks. An EPA official said that the contract will be terminated at the Government's convenience because the contractor does not have the expertise to complete the work. About \$207,000 had been expended on the contract through March 31, 1977; about \$88,000 of that amount was spent on the two incomplete modifications.

The contractor furnished one report and EPA is to receive a second under the basic contract. Once the required reports have been evaluated they will be used by EPA economists and technicians as source data for EPA decisions.

#### Contract 68-02-1482

The contract 1/ was awarded to Englehard Minerals and Chemicals Corporation on October 18, 1974. Contract value increased from \$117,368 to \$128,134.

The contractor provided EPA a small mobile van containing an environmentally clean energy source and energy-conserving components, plus various services such as training and instruction manuals on the van's operation. (A final report was also provided.) The mobile van is to demonstrate that the system can provide all the energy needs of a home, apartment, or small commercial building in a clean and efficient manner while cutting pollution and energy consumption.

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1/Listed as contract 68-02-1182 in our March 24, 1977, report.

The original scheduled delivery date was February 1975; the van was delivered in June 1976. Its mobility allows it to be used in experimental testing in various parts of the United States. It is presently located at EPA's Environmental Research Center in the Research Triangle Park at North Carolina. Another contractor is using the van in demonstration testing as part of EPA's research program to control air pollution.

Contract 68-02-1712

This \$64,671 contract was awarded to Copley International Corporation on September 1, 1974. In March 1975 the scope was expanded and this increased the contract price to \$140,160. On May 16, 1975, the contract was terminated for the Government's convenience at a cost of \$103,560.

Copley was awarded the contract to participate in a coordinated series of epidemiological studies being conducted in the Los Angeles, California, basin, under EPA's Community Health and Environmental Surveillance System (CHESS) program. Copley's primary responsibility was to collect data on the health of persons residing in three California communities. The contract, for data collection only, was a level-of-effort type in that the contractor collected health information in accordance with EPA procedures. The epidemiologic studies were designed to relate community health to environmental quality.

The contract was one of a series of contractor studies under CHESS. However, the reliability of a CHESS monograph issued by EPA in 1974 was questioned. The Office of Management and Budget subsequently placed funding and personnel restrictions on CHESS and delayed the approval of EPA's releasing questionnaires relating to CHESS. CHESS ultimately became the subject of a congressional hearing. Before this, data collection through CHESS was suspended, and the Copley contract was among those terminated.

EPA received three reports from Copley with the data requested. The project officer said that EPA is presently analyzing the reports and plans a series of articles on the basis of its interpretation of the Copley data. These articles are to be published in scientific journals.

Contract 68-03-2213

The \$128,100 contract was awarded to Hittman Associates, Inc., June 10, 1975. The contract, completed November 10,

1976, resulted in a planning and design manual for placement and operation of water-control structures to remove sediment during runoff in surface-mining operations.

Sediment and erosion control is a major problem in surface mining. About 14 million tons of sediment are discharged from surface mines annually. The key to minimizing erosion is to control the water flow in the mining area. To be effective, water-flow controls must be properly designed, installed, and integrated with the mining and reclamation sequences.

According to EPA officials, the manual is currently being used by the Soil Conservation Service, EPA, various State and local agencies, and mining and contractor companies to design sediment-removal ponds. For examples, the Reclamation Technology Department of the Madisonville Community College (Kentucky) is using the handbook as a textbook on reclamation, and the Division of Reclamation, Department of Natural Resources of the State of Ohio, requested 300 copies.

A Soil Conservation Service official said that 2,000 copies were distributed to field offices within the Service, where they are being used as handbooks on surface-mining reclamation projects. The official stated that the material furnished by EPA is very useful to his office, and he plans to acquire other reports on surface mining.

#### Contract 68-03-2216

On June 10, 1975, a \$144,000 contract was awarded to HRB-Singer, Inc. Work was completed December 31, 1976, and the contractor prepared an information report on current underground coal-mine sealing techniques in the Eastern United States.

The contract was to (1) survey the methods used by the coal industry to close mines, (2) evaluate the effectiveness of these methods by detailed field investigations and sampling, and (3) recommend research and demonstration areas necessary to develop more advanced mine-closure technology.

The rationale for the contract is that the contractor was to prepare an up-to-date document on mine-closure techniques to evaluate individual mine closings and for use in the national mining research and development plan.



EPA officials said that the report, received for evaluation at the end of September 1977, will be used by EPA, various State and local agencies, and coal-mining companies.

Contract 68-03-2226

The \$173,000 contract was awarded to MATHECH, Inc. (previously Mathematica, Inc.) on June 30, 1975. Work was completed on June 30, 1977, and a report was drafted.

The project was to evaluate the surface-mining methods presently employed in mining western coal and to evaluate the effect these methods have on the environment. The contractor's final report is to detail the environmental damage resulting from mining methods currently being used and to recommend ways to alter these methods to reduce both short- and long-term damage.

According to EPA officials the draft report was received in September 1977 and is undergoing internal review. They expect that it will be used by the Soil Conservation Service, EPA, various State and local agencies, and coal-mining companies.

LIST OF EPA CONTRACTS STILL IN  
PROCESS AS OF JULY 31, 1977

<u>Contract no.</u>	<u>Contractor</u>	<u>Estimated completion</u>	<u>Comments</u>
68-01-3299	Urban Systems Research	12/77	The contractor is to categorize every standard Metropolitan Statistical Area in the United States to establish a set of typical (model) areas, and then construct a Spatial Pollution Analysis and Comparative Evaluation System data base for each area. The contract amount has increased from \$98,241 to \$127,314.
68-02-1863	KVB, Inc.	12/78	The contract has increased in cost from \$675,400 to \$743,715. It is to determine the suitability of various boiler designs to utilize western coals.
68-02-1869	Air Pollution Technology, Inc.	9/77	The contractor is to evaluate the collection efficiency of five full-scale industrial scrubber systems. The cost is \$106,400.
68-02-1873	United Technologies Corporation (previously United Aircraft Corporation)	12/77	The contract was for \$343,765 but modifications have increased it to \$411,397. It is to determine the role of physical processes of combustion in pollution formation. The study is to include natural gas and various liquid fuels.

<u>Contract no.</u>	<u>Contractor</u>	<u>Estimated completion</u>	<u>Comments</u>
68-02-1874	Monsanto Research Corporation	10/79	The cost of the contract has increased from \$4,006,656 to \$5,805,465, with 13 modifications. The contract calls for the preparation of assessment reports documenting an indepth analysis of industry sources of air, water, and solid residue pollutants.
68-02-1881	TRW, Inc.	1/78	The purpose of the contract is to identify any potential environmental problem which would delay shale oil development as a major alternative source of clean fuel; also any potential enhancement which could be applied to an oil shale processing operation. The contract amount has decreased from \$1,065,000 to \$1,060,000.
68-02-1885	Acurex Corporation	1/78	The contract calls for a pilot scale evaluation of advanced combustion control techniques for fossil and waste fuels. There have been five modifications to this contract and the amount is \$791,793 versus \$497,638 at award date.
68-02-1887	Westinghouse Research Laboratories	Not established	The contractor is to demonstrate on a small scale the feasibility of a new concept

## APPENDIX II

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<u>Contract no.</u>	<u>Contractor</u>	<u>Estimated completion</u>	<u>Comments</u>
			(porous ceramic membrane) as an effective and economic technique for controlling fine-particle emissions. The contract amount is \$245,200. At the time of our review, the contract officer did not know when the report would be completed.
68-02-2075	Springborn Labs, Inc. (previously Debell & Richardson)	7/78	The contractor is to conduct an air-pollution-control engineering and cost study of the surface-coating industry. The cost has increased from \$285,818 to \$391,270 with four modifications.
68-02-2101	Ralph M. Parsons Co.	10/77	The contractor is to perform a technical and economic assessment of emerging waste-as-fuel technologies. It includes tasks to determine the most attractive processes and to devise a test to analyze those processes in considerable detail. The contract cost has increased from \$220,617 to \$298,191.
68-02-2102	Radian Corporation	10/77	The contractor is to perform engineering and analytical support of Louisville Gas and Electric's scrubber program. The contract amount

<u>Contract no.</u>	<u>Contractor</u>	<u>Estimated completion</u>	<u>Comments</u>
			has increased to \$247,000 from \$187,000. A service contract with Louisville Gas and Electric was delayed because of weather conditions, causing the \$60,000 increase in cost.
68-02-2105	PEPCO Environmental Specialists	9/78	The contractor is to establish operating procedures for fine-particle control equipment. The contract's scope was increased but the time frame was not. The original \$281,920 award has been increased to \$310,950.
68-02-2116	Aerotherm Division Acurex Corporation	10/77	The contractor is to establish design criteria for application of catalytic combustion to low-emission, high-efficiency stationary combustion systems. There have been five contract modifications and an increase in scope, but no change in the contract amount of \$594,933.
68-02-2232	Olson labs	Not established	The contract calls for testing consumer-owned catalyst-equipped vehicle emissions in California. The contract amount is now \$444,293; the original amount was \$351,000. EPA is currently negotiating a further increase.

<u>Contract no.</u>	<u>Contractor</u>	<u>Estimated completion</u>	<u>Comments</u>
68-02-2245	Mecerology Research, Inc.	10/77	The contract amount is now \$310,822; originally it was \$187,251. The contractor is to obtain measurements in support of studies of sulfur transformation and transport.
68-03-2153	Lockheed Electronics Co.	11/77	There have been 14 modifications to this contract since it was awarded on November 11, 1974, adding the 2d and 3rd years' effort and increasing the amount from \$317,696 to \$2,168,023. The contract is for aerial remote-sensor data collection, processing, and analysis for environmental monitoring.
68-03-2173	Matrecon, Inc.	8/78	The use of land for disposing hazardous wastes is becoming increasingly attractive. The contractor is to evaluate liner materials that have been exposed to hazardous and toxic sludges. The contract amount has increased from \$88,075 to \$136,962.
68-03-2186	Clear Water Consultants	10/77	The study is to obtain design, performance, capital-cost, and operating-cost data for advanced waste-water treatment processes. The contract cost has increased from \$75,000 to \$420,850.

<u>Contract no.</u>	<u>Contractor</u>	<u>Estimated completion</u>	<u>Comments</u>
68-03-2190	Lockheed Aircraft Corporation	12/76	The contract calls for finding new methods for efficient detoxification and destruction of hazardous wastes. The contract has increased in scope to include the test and evaluation of a pilot prototype system. The contract amount has increased from \$108,000 to \$679,451.
68-03-2193	Geraghty and Miller, Inc.	8/77	The contract calls for a report on existing and potential groundwater pollution problems in seven Southeastern States. Information gathered under this contract is required by the Safe Drinking Water Act (Public Law 93-523). The contract amount has increased from \$66,000 to \$137,600.
68-03-2198	Arthur D. Little, Inc.	11/77	The contract cost increased from \$783,400 to \$878,865 with six modifications. The contractor is to assess the adequacy of pollution control technology for manufacturing-process industries that expect to maximize energy conservation.
68-03-2202	United Engineers and Construction, Inc.	11/77	The contractor is to optimize wet/dry cooling towers for water conservation. A \$6,000

<u>Contractor no.</u>	<u>Contractor</u>	<u>Estimated completion</u>	<u>Comments</u>
			modification is being processed to allow the contractor to submit a final report in compliance with the EPA standard format. The contract amount is \$159,970.
68-03-2207	Water Purification Association	5/78	There have been six contract modifications. The amount has risen from \$224,778 to \$385,648. The contractor is to conduct a research program to develop strategies and recommend measures to minimize water pollution and water consumption by coal conversion plants.
68-03-2233	Gannet Fleming Corddry & Carpenter, Inc.	9/77	The contractor is to demonstrate improved performance and reliability of selected biological treatment plants in the Eastern United States. The contract amount is now \$249,997. The original contract value was \$230,350.
68-03-2228	Metcalf and Eddy, Inc.	Not established	The contract calls for a state-of-the-art update on storm- and combined-sewer overflow management and treatment and an urban planning guide for the assessment of storm flow pollution. The report was expected in July 1977; however, it had



<u>Contract no.</u>	<u>Contractor</u>	<u>Estimated completion</u>	<u>Comments</u>
			not been completed at the time of our review. The contract amount increased from \$117,300 to \$129,567.
68-03-2334	Arthur D. Little, Inc.	9/78	The contract calls for an evaluation and assessment of the compatibility, capability, and adequacy of coal mines, strip mines, oceans, and other potential disposal sites for the management and disposal of raw and/or chemically stabilized flue gas-desulfurization sludges. The contract cost is now \$447,500 versus the original award amount of \$298,300.
68-03-2336	Texas Instruments, Inc.	Not established	The contract amount was reduced from \$366,733 to \$266,714 as a result of a change in scope. The contract is to meet the requirements of the Marine Protection Research and Sanctuaries Act of 1972. It is to develop a quality-control sample of digested sludge for ocean-dumping permits. A modification is being negotiated to extend the contract's completion date.
68-03-2337	Exxon Research and Engineering Co.	Not established	The contractor is to determine how to minimize water-polluting discharges from offshore

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			oil drilling and production platforms by means of existing technology. A modification is in process to delete certain phases of work. A report date is indefinite until this modification is finalized. The contract amount is \$965,500.
68-03-2338	E. D'Appolania Consulting Engineers, Inc.	Not established	The contractor is to find a method of locating and defining sources and quantities of water that will enter underground coal mines. These sources must be established to plan effective control using gravity wells, diversion, or pumping. A modification is in process to extend the contract. The contract amount is \$239,547.
68-03-2339	Radian Corp.	12/77	The contractor is to provide data, methodology, and techniques necessary for studying minimizing water use and waste water discharges from coal-fired and steam electric powerplants. The contract cost has increased from \$197,257 to \$355,079 because of modifications in the work's scope.

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<u>Contract no.</u>	<u>Contractor</u>	<u>Estimated completion</u>	<u>Comments</u>
68-03-2340	Energy Resources Co., Inc.	9/77	The contractor is to study the pyrolysis of various waste mixtures to attempt to produce a mathematical model to predict the yield of products produced under various operating conditions. The study also includes steam gasification and partial oxidations of mixed waste. The contract cost is now \$660,310.

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