DOE/EV-0057/2-Volume 1 (of 2)

Inventory of Federal Energy-Related Environment and Safety Research for FY 1979

Volume I - Executive Summary

Published: December 1980

U.S. Department of Energy
Assistant Secretary for Environment
Office of Program Coordination
Washington, D.C. 20545

Technical Information Center
Oak Ridge, Tennessee 37830

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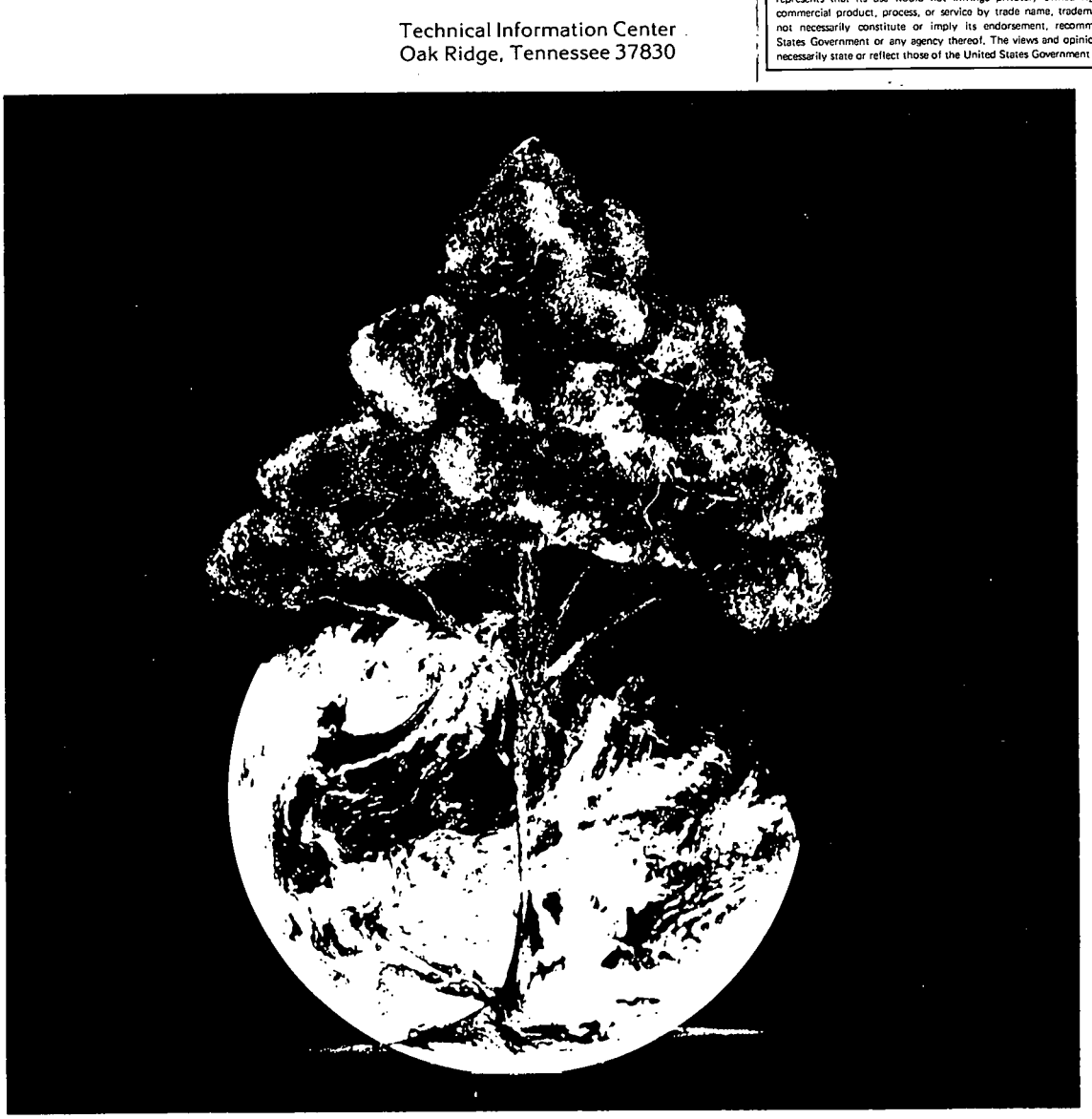

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TABLE OF CONTENTS

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LIST OF TABLES AND FIGURES

INTRODUCTION

The Federal Inventory was created in 1974 by the passage of two Congressional Acts; the Energy Reorganization Act, PL-93-438, and the Federal Non-Nuclear Energy Research and Development Act, PL-93-577. Through this legislation, the Assistant Administrator of the Energy Research and Development Administration (ERDA) now D.O.E. was required to establish programs to evaluate the adverse environmental effects of energy development and utilization and to minimize duplication of effort among federal agencies. The Inventory which began in response to the legislation stated continues as an annual effort of the Office of the Assistant Secretary for the Environment, Department of Energy (DOE). Each year since the publication of the initial Inventory in October, 1975, the Inventory has been improved in scope and content to better represent federally funded energy-related environmental and safety research.

The FY 1979 Federal Inventory contains information on 3506 federally funded energy-related environmental and safety research projects. The Inventory is published in two volumes: Volume I, an executive summary and overview of the data and Volume II, project listings, summaries, and indexes.

Project information for the FY 1979 Inventory was collected from federal agencies using the questionnaire as shown in Appendix B. This was a revision of the FY 1978 questionnaire format, designed to aid the respondent as well as provide a more accurate and meaningful expression of project data. In doing so, the research and development (R&D) categories were reorganized into three main areas; environmental and safety control technology, technology impacts overview and assessments, and biological and environmental R&D and assessments. Federal offices submitting project data were:

Council of Environmental Quality
Department of Agriculture
Department of Commerce
Department of Defense
Department of Energy
Department of Health, Education, and Welfare
Department of Housing and Urban Development
Department of the Interior
Department of Transportation
Environmental Protection Agency
National Aeronautics and Space Administration
Nuclear Regulatory Commission
National Science Foundation
Office of Technology Assessment
Tennessee Valley Authority

In addition to providing an overview of federally-funded energy-related environmental and safety research, the Inventory also breaks out research sponsored by various federal agencies and the amount of funding provided by each in various research categories. The format and index system employed in the Inventory allows efficient access to information compiled. Users are able to identify projects by log agency, performing organization, principal investigator and subject.

The FY 1979 Federal Inventory serves as a valuable resource for the scientific community and for individuals and organizations interested in the role of the federal government in supporting energy-related environmental and safety research.

Directions for user access to the Federal Inventory Data Base are provided in Appendix A. Appendix C lists all responding, or log agencies and their corresponding Federal Inventory log number ranges, while a complete listing of responding and funding agency abbreviations is given in Appendix D. Principal agency contacts supplying Inventory information are listed in Appendix E.

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OVERVIEW OF INVENTORY DATA

The FY 1979 Federal Inventory has resulted in the collection of data on 3506 projects submitted by 15 federal agencies. These data become more meaningful when expressed as tables and figures which illustrate relationships among such factors as agency, funding, energy technology, research and development (R&D) category, and pollutant. In this way, it is possible to make comparisons, identify areas of emphasis in both funding and technology, and assess the overall picture of current energy-related environmental and safety research. Volume I of the Inventory presents the data in this format for the user.

Table I provides a listing of those federal agencies responding with questionnaire data and the number of projects reported by each. The majority of the projects listed belong to the Department of Energy and the Environmental Protection Agency, with the Department of Energy responsible for more than one third of all projects reported. Funding allocations are reported for each funding agency in Table 2, with the total funding for all agencies being $925,307,000. (The user is referred to Appendix D for complete agency names, as only abbreviations are used in most tables.) More than half of the total funding for FY 1979 projects was provided by the Department of Energy, with about another 21 percent of the total funded by the Department of the Interior. The appropriated funding for FY 1979 projects is further broken down in Table 3 into the amount reported for each of three research categories when describing the project emphasis. The designated R&D categories are: environmental and safety control technology, technology impacts overview and assessment, and biological and environmental R&D and assessments. These categories are further defined in the questionnaire. The respondent was instructed to choose the only one R&D category to which the project was directly related in an effort to more accurately define and identify the R&D activity in this year's Inventory. Table 3 provides an overview of the number of projects, the type of research, and the amount of funding supported by each agency. It should be noted that while the largest percentage of the total research budget is allocated for environmental and safety control technology, this category represents the least number of funded projects. Using funding data listed in Table 3, the average appropriation per project in each of the three research categories was calculated. Thus, the average per project for environmental and safety control technology was $700,629, while that for technology impacts overview and assessment was $290,796, and for biological and environmental R&D, $129,595. It is also apparent from Table 3 that the Department of Energy was the leading funding agency in all three research categories. The Department of the Interior played a strong role in supporting all three research areas. The Nuclear Regulatory Commission was one of the prime contributors supporting environmental and safety control technology as well as technology impacts overview and assessment. In the biological and environmental R&D category, the Environmental Protection Agency and the National Institute of Environmental Health Sciences provided major support, with 71 percent of the EPA, and 98 percent of the NIEHS budget supporting this category.

Funding within these three R&D categories as related to the various energy technologies is expressed in Table 4. Not only is Table 4 useful in assessing the total amount spent on each energy technology, but it also serves as a measure of the type of research that is being supported for each technology. The energy technology receiving the most support in the categories of environmental and safety control technology as well as technology impacts overview and assessment was nuclear fission. It is of note that in the nuclear technologies, 53 percent of the reported fission budget and 62 percent of the reported fusion total were allocated for environmental and safety control technology. In addition, approximately 44 percent of the total reported FY 1979 budget was allocated for nuclear energy technology. Research dealing with coal technology had 28 percent of the total budget, with fossil fuels technology expenditures as a whole being 42 percent of the total budget. The total funding allocated to these three defined R&D categories is further broken down as to amount per pollutant in Table 5. This table also provides funding totals allocated per pollutant, indicating which pollutants received the most appropriations and research attention. Table 5 shows the funding relationships between pollutants and the three R&D categories. For example, all funded carcinogen research fell into the category of biological and environmental R&D and assessments, as might be expected. Radionuclides received the most funding, 27.8 percent of the total, with the single largest funding effort allotted for radionuclide environmental and safety control technology. The environmental and safety control technology category accounted for the largest percentage of all pollutant-related funding, claiming 42.7 percent of the total reported budget. In addition to the strong

coverage for radionuclide reasearch, other pollutant categories receiving major support include particulates and aerosols, ionizing radiation, and hydrocarbon and other organics.

Pollutants funding as allocated by agency is expressed in Table 6. It should be noted that all funding appropriations are reported in units of thousands of dollars. Rounding off dollars into thousands for these tables has resulted in a slight difference in the final totals from table to table. Table 6 also serves as an indication of each agency's areas of interest, listing the pollutants receiving major funding support from them. We should mention that the reporting categories were a matter of individual choice; (ie DOE *does* have acid rain research listed in other categories.)

More than 51 percent of the Department of Energy's reported budget for energy-related environment and safety research was appropriated for radionuclide research. This represents the largest amount appropriated by an agency for research in any pollutant category. The major supporter of energy-related environment and safety research dealing with particulates and aerosols was the Department of the Interior, which directed 51 percent of its funding efforts into this category. The relationship between agency funding and pollutant category is often what would be expected from agency missions. As an example, the Tennessee Valley Authority devoted most of its funding to the heat/thermal, particulates/aerosols, solid/liquid wastes and residuals, and sulfur compounds categories. Likewise, the Nuclear Regulatory Commission appropriated more than 69 percent of its reported energy-related environment and safety budget for research dealing with ionizing radiation. Another approach offered by Table 6 is to identify the pollutant of interest and identify the agency or agencies providing major research support for that category. For example, pesticide funding shows support provided only by the Environmental Protection Agency. Likewise, funding for projects dealing with noxious gases was appropriated by the Department of Energy and the Department of Transportation.

Tables 7 and 8 were compiled in an effort to understand the appropriations from each funding agency for research programs in the various energy technologies. It is important to point out that the questionnaire requests the relative percent of total project funding to be devoted to each directly related technology. Each project representing more than one technology will be counted for each technology. For example, a project involved with coal, oil shale, and oil and gas technologies will be counted three times in each table, once for coal, once for oil shale, and once for oil and gas. Thus, the project totals on these tables will not agree with those of Table 1. The number of projects each agency supports for each energy technology is listed in Table 7. The funding totals allocated for each energy technology are provided in Table 8.

From Table 7 it can be seen that most of the projects were funded by the Department of Energy, the Department of the Interior, the Environmental Protection Agency and the National Institute of Environmental Health Sciences. Each of these agencies supported considerably more fossil than nuclear projects. The data illustrate the relationship between agencies and their corresponding areas of concern. For example, the Department of Transportation had listed about half their projects as energy conservation. As would be expected, 97 percent of the Nuclear Regulatory Commission's projects dealt with the nuclear technologies.

Perhaps a more precise correlation between agency support and energy technology is expressed in Table 8, in which actual funding appropriations are listed for each technology. For example, when the number of projects supported is used as a measure of agency support, as shown in Table 7, DOE, with 510 projects, would appear to be more heavily involved in coal technology than would DOI with only 143 projects. However, when funding levels are compared, as in Table 8, the reverse is true. DOI allocated almost twice as much for coal technology research ($126,768,000) than has DOE, which funded $69,606,000 for FY 1979. Using funding levels rather than project numbers can alter the relationship between agency and technology support as seen in the DOE figures. In comparing DOE involvement with fossil fuel and nuclear technologies, as only 487 nuclear projects are listed along with 836 fossil fuel projects. Tallying the funding levels listed for both in Table 8, DOE budget totals show $100,313,000 appropriated for fossil fuel research as compared to $336,459,000 for nuclear research. Another interesting comparison can be made between the two tables using figures reported by the Department of Housing and Urban Development (HUD). Table 7 credits HUD with having 8 solar and 8 conservation projects, which would seem to indicate equal interest in and support of these two technologies. In reality, as seen in Table 8, HUD allocated more than seven times as much in their reported budget for solar research than was allowed for conservation technology.

In order to determine the area of environmental concern addressed by the reported projects, the FY 1979 Federal Inventory questionnaire included an issue category. This addition, in identifying the particular areas of environmental concern, gives some indication of the present direction of energy-related environmental and safety research. Table 9 represents the funding levels for these environmental issues as addressed by the energy technologies indicated.

Not only is it possible to use Table 9 to provide an understanding of the relationship between the technologies and issues, but it is also useful in showing the amount of funding appropriated for each issue. For example, in considering coal technology, it appears that the greatest concern was air quality. Likewise, using the funding level as a gauge, Table 9 would indicate the safety issue as being of greatest concern to nuclear fission research. Safety, having been allocated the most funds by the various technologies, appears to be the prime issue

TABLE 1. FEDERAL AGENCY RESPONSES

RESPONDING AGENCY	NUMBER OF REPORTED PROJECTS	NUMBER OF PROJECTS WITH NO FUNDS REPORTED
Council on Environmental Quality	1	0
Department of Agriculture	151	151
Department of Commerce	54	7
Department of Defense	15	1
Department of Energy	1171	23
Department of Health, Education, and Welfare	463	50
Department of Housing and Urban Development	16	0
Department of the Interior	354	24
Department of Transportation	78	19
Environmental Protection Agency	825	240
National Aeronautics and Space Administration	5	0
Nuclear Regulatory Commission	183	4
National Science Foundation	70	11
Office of Technology Assessment	2	2
Tennessee Valley Authority	118	20
TOTAL	3506	552

TABLE 2. TOTAL REPORTED FUNDING

FUNDING AGENCY	($1000's)
AAR	0
AGA	0
CDOT	10
CEQ	10
DOC	7140
DOD	2870
DOE	481510
DOI	196534
DOT	9838
EPA	83044
EPRI	3989
GRI	120
HEW	11205
HUD	15601
INEA	10
MIT	0
NASA	4746
NIEHS	25355
NRC	65915
NSF	5646
NYDOT	2000
ORFW/POGE	200
OTA	0
PSU	0
SDSU	33
TVA	8399
UAK	11
UMD	0
UMN	17
UOP/DOE	630
USDA	460
UWI	14
UWY	0
WHOI	0
TOTAL	925307

TABLE 3. REPORTED RESEARCH CATEGORY FUNDING LEVELS

FUNDING AGENCY	ENVIRONMENTAL AND SAFETY CONTROL TECHNOLOGY ($1000's)	(Projects)	TECHNOLOGY IMPACTS OVERVIEW AND ASSESSMENT ($1000's)	(Projects)	BIOLOGICAL AND ENVIRONMENTAL R&D ($1000's)	(Projects)
AAR	0	1	0	0	0	0
AGA	0	0	0	0	0	1
CDOT	0	0	10	2	0	0
CEQ	0	0	10	1	0	0
DOC	0	1	6039	6	1101	12
DOD	1508	8	840	2	522	10
DOE	221197	156	110473	206	149840	838
DOI	112399	94	60870	181	23165	80
DOT	2952	21	5886	51	1000	8
EPA	12301	97	11646	188	59257	639
EPRI	1351	4	674	6	0	1
GRI	120	1	0	0	0	0
HEW	0	0	90	3	11099	172
HUD	0	0	15601	16	0	0
INEA	0	0	10	1	0	0
MIT	0	0	0	1	0	0
NASA	4185	5	270	2	291	2
NIEHS	0	0	510	2	24845	260
NRC	30999	80	27715	59	7201	53
NSF	1394	18	789	18	3533	35
NYDOT	0	0	2000	1	0	0
ORFW/POGE	0	0	0	0	200	1
OTA	0	0	0	1	0	0
PSU	0	0	0	1	0	0
SDSU	0	0	0	0	33	1
TVA	4240	28	3453	48	706	16
UAK	0	0	0	0	11	2
UMD	0	0	0	0	0	1
UMN	0	0	0	0	17	1
UOP/DOE	630	1	0	0	0	0
USDA	0	49	0	51	460	52
UWI	0	0	0	0	14	1
UWY	0	0	0	1	0	0
WHOI	0	0	0	1	0	0
TOTAL	395155	564	246886	849	283295	2186

TABLE 4. REPORTED ENERGY TECHNOLOGY FUNDING WITHIN R & D CATEGORIES

TECHNOLOGY	ENVIRONMENTAL & SAFETY CONTROL TECHNOLOGY ($1000's)	TECHNOLOGY IMPACTS OVER-VIEW/ASSESSMENT ($1000's)	BIOLOGICAL AND ENVIRONMENTAL R AND D ($1000's)	TOTAL ($1000's)	PERCENT OF TOTAL FUNDED
Coal	135271	28229	92918	256418	27.71
Oil & Gas	18897	55540	36736	111173	12.01
Oil Shale	2519	1430	14024	17973	1.94
Nuclear Fission	213375	111775	75442	400592	43.29
Nuclear Fusion	6443	814	3194	10451	1.13
Solar	377	16972	8464	25813	2.79
Geothermal	296	1734	2748	4778	.52
Hydroelectric	268	410	1033	1711	.18
Conservation	11487	10276	3659	25422	2.75
General Science	6221	18882	43703	68806	7.44
Medical Applications	0	825	1372	2197	.24
TOTAL	395154	246886	283293	925333	

TABLE 5. REPORTED POLLUTANT FUNDING WITHIN R & D CATEGORIES

Pollutant	Environmental & Safety Control Technology ($1000's)	Technology Impacts Over-View/Assessment ($1000's)	Biological & Environmental R & D ($1000's)	Total ($1000's)
Acid Rain	0	1	250	251
Asbestos	102	3	1051	1156
Carbon Oxides	4138	4149	8524	16811
Carcinogens	0	0	289	289
Complex Mixtures	1404	3315	3259	7978
Fire Products of Combustion	0	1160	0	1160
Heat/Thermal	14389	7134	6409	27931
Hydrocarbons and Other Organics	8192	30455	49318	87965
Inorganics	751	10	1363	2124
Microbial Agents	33	290	1013	1336
Mixtures of Defined Pollutants	762	905	9009	10676
Nitrogen Compounds	4936	3944	13705	22585
Noise/Vibration	2551	4593	2594	9738
Not Applicable	0	63	428	491
Noxious Gases	0	0	280	280
Nutrients	93	146	1556	1795
Odor	645	295	318	1258

TABLE 5 (Continued)

Pollutant	Environmental & Safety Control Technology ($1000's)	Technology Impacts Over-View/Assessment ($1000's)	Biological & Environmental R & D ($1000's)	Total ($1000's)
Other	16451	49636	19089	85176
Particulates/Aerosols	112848	4574	21223	138645
Pesticides	0	185	3188	3373
Photochemical Oxidants	845	5833	7767	14445
Radiation, Ionizing	44163	20825	39043	104031
Radiation, Nonionizing	315	1225	6349	7889
Radionuclides	148741	80547	28018	257306
Salinity	4	550	231	785
Solid/Liquid Wastes and Residuals	18964	7889	12872	39725
Sulfur Compounds	10636	6223	19794	36653
Trace and Heavy Metals	4157	12644	25842	42643
Visual Aesthetics	38	285	329	652
TOTAL	395158	246879	283111	925148

TABLE 6. POLLUTANT FUNDING BY AGENCY ($1000's)

Pollutant	CEQ	DOA	DOC	DOD	DOE	DOI	DOT	EPA	EPRI	HEW	HUD	NASA	NIEHS	NRC	NSF	OTA	TVA	Other	Total
Acid Rain	0	0	0	0	0	0	0	250	0	0	0	0	0	0	0	0	0	0	250
Asbestos	0	0	0	0	62	0	0	794	0	0	0	0	300	0	0	0	0	0	1156
Carbon Oxides	0	0	52	192	10621	1750	342	1955	0	55	0	1025	545	12	251	0	11	0	16810
Carcinogens	0	0	0	0	124	0	0	165	0	0	0	0	0	0	0	0	0	0	289
Complex Mixtures	0	0	21	16	1263	32	0	6225	0	39	0	0	298	73	0	0	11	0	7978
Fire Products of Combustion	0	0	0	0	0	0	1160	0	0	0	0	0	0	0	0	0	0	0	1160
Heat/Thermal	0	0	1131	0	18571	4505	0	1137	200	57	0	0	65	670	10	0	1549	38	27931
Hydrocarbons and Other Organics	0	0	1213	1132	23980	30152	1001	17190	0	3436	0	1025	7322	68	1377	0	70	195	88161
Inorganics	0	0	0	0	978	128	55	935	0	0	0	0	0	40	0	0	0	0	2136
Microbial Agents	0	0	0	0	220	10	0	1117	0	0	0	0	0	0	0	0	0	0	1347
Mixtures of Defined Pollutants	0	0	61	34	4355	350	266	2397	0	317	0	138	2526	0	136	0	15	0	10596
Nitrogen Compounds	0	0	178	149	10110	3542	397	5549	80	261	0	1025	929	48	122	0	195	0	22585
Noise/Vibration	0	0	984	0	2732	4278	923	103	0	39	0	0	182	267	231	0	0	0	9739
Not Applicable	0	0	0	0	428	63	0	0	0	0	0	0	0	0	0	0	0	0	491
Noxious Gases	0	0	0	0	150	0	130	0	0	0	0	0	0	0	0	0	0	0	280
Nutrients	0	0	0	0	1265	0	0	531	0	0	0	0	0	0	0	0	0	0	1596
Odor	0	0	0	0	449	3	266	139	0	0	0	138	0	56	190	0	0	0	1241
Other	0	0	605	115	34268	14858	4325	2263	175	47	15601	270	3231	5596	572	0	149	2402	84477
Particulates/Aerosols	0	0	61	326	22813	100150	364	8519	0	59	0	680	1332	1177	1396	0	1751	17	138648
Pesticides	0	0	0	0	0	0	0	3373	0	0	0	0	0	0	0	0	0	0	3373
Photochemical Oxidants	0	0	1023	48	3604	3514	203	4160	0	499	0	42	1252	12	58	0	30	0	14445
Radiation, Ionizing	5	0	186	0	49071	3353	0	1076	0	3923	0	0	371	45755	281	0	9	0	104030
Radiation, Nonionizing	0	0	39	0	4964	0	0	62	0	1499	0	0	909	240	0	0	0	175	7888
Radionuclides	5	0	186	0	246073	987	0	102	0	161	0	0	115	9636	39	0	3	0	257307
Salinity	0	0	0	0	188	491	0	50	0	0	0	0	0	56	0	0	0	0	785
Solid/Liquid Wastes and Residuals	0	0	175	466	15388	12383	55	7133	0	193	0	0	214	663	290	0	2305	460	39725
Sulfur Compounds	0	0	64	44	13286	4514	273	10291	3342	1	0	217	1073	104	531	0	2277	635	36652
Trace and Heavy Metals	0	0	1161	146	15724	11396	79	7106	0	605	0	138	4681	1432	164	0	24	0	42656
Visual Aesthetics	0	0	0	0	292	0	0	360	0	0	0	0	0	0	0	0	0	0	652
TOTALS	10	0	7140	2868	481386	196467	9839	83042	3797	11191	15601	4698	25355	65919	5648	0	8400	3922	925283

TABLE 7. NUMBER OF PROJECTS REPORTED BY FUNDING AGENCIES FOR ENERGY TECHNOLOGY

FUNDING AGENCY	COAL	OIL AND GAS	OIL SHALE	NUCLEAR FISSION	NUCLEAR FUSION	SOLAR	GEO-THERMAL	HYDRO ELECTRIC	CONSER-VATION	GENERAL SCIENCE	MEDICAL APPLIC.
AAR	1	1	1	0	0	0	0	0	1	0	0
AGA	0	1	0	0	0	0	0	0	0	0	0
CDOT	0	0	0	0	0	0	0	0	2	0	0
CEQ	0	0	0	1	0	0	0	0	0	0	0
DOC	2	5	0	2	0	1	0	0	0	9	0
DOD	3	14	3	1	0	0	0	2	2	1	0
DOE	510	180	146	445	42	65	50	15	57	189	3
DOI	143	137	20	11	0	9	4	26	36	13	0
DOT	3	17	1	1	0	2	0	0	44	19	2
EPA	400	284	38	25	2	12	16	4	52	302	0
EPRI	9	3	1	2	0	1	1	0	1	0	0
GRI	0	0	0	0	0	0	0	0	0	1	0
HEW	83	65	57	80	2	24	0	0	0	6	4
HUD	0	0	0	0	0	8	0	0	8	0	0
INEA	0	0	0	0	0	0	1	0	0	0	0
MIT	0	0	0	0	0	0	0	0	0	1	0
NASA	3	4	1	0	0	1	0	0	0	1	0
NIEHS	155	130	91	24	11	17	1	1	1	91	2
NRC	3	0	0	187	5	0	0	0	1	1	0
NSF	31	30	2	12	0	5	0	0	2	12	0
NYDOT	0	0	0	0	0	0	0	0	1	0	0

TABLE 7. NUMBER OF PROJECTS REPORTED BY FUNDING AGENCIES FOR ENERGY TECHNOLOGY (Continued)

FUNDING AGENCY	COAL	OIL AND GAS	OIL SHALE	NUCLEAR FISSION	NUCLEAR FUSION	SOLAR	GEO-THERMAL	HYDRO ELECTRIC	CONSER-VATION	GENERAL SCIENCE	MEDICAL APPLIC.
ORFW/POGE	0	0	0	0	0	0	0	0	0	1	0
OTA	0	0	0	0	0	1	0	0	0	0	0
PSU	0	0	0	0	0	0	0	0	0	1	0
SDSU	0	0	0	0	0	0	0	0	0	1	0
TVA	81	11	7	17	5	3	1	7	6	1	0
UAK	0	0	0	0	0	0	0	0	0	2	0
UMD	0	0	0	0	0	0	0	0	0	1	0
UMN	1	0	0	0	0	0	0	0	0	0	0
UOP/DOE	1	0	0	0	0	0	0	0	0	0	0
USDA	104	10	15	6	0	6	1	0	33	0	0
UWI	0	0	0	0	0	0	0	0	0	1	0
UWY	0	0	0	0	0	0	0	0	0	1	0
WHOI	0	1	0	0	0	0	0	0	0	0	0
TOTAL	1532	893	383	814	67	155	75	55	247	655	11

TABLE 8. REPORTED ENERGY TECHNOLOGY FUNDING LEVELS (THOUSANDS)

FUNDING AGENCY	COAL	OIL AND GAS	OIL SHALE	NUCLEAR FISSION	NUCLEAR FUSION	SOLAR	GEO-THERMAL	HYDRO ELECTRIC	CONSER-VATION	GENERAL SCIENCE	MEDICAL APPLIC.
AAR	0	0	0	0	0	0	0	0	0	0	0
AGA	0	0	0	0	0	0	0	0	0	0	0
CDOT	0	0	0	0	0	0	0	0	10	0	0
CEQ	0	0	0	10	0	0	0	0	0	0	0
DOC	32	5358	0	294	0	570	0	0	0	886	0
DOD	121	1010	736	29	0	0	0	200	660	115	0
DOE	69606	20705	10002	319170	9315	7974	3864	722	12224	26660	1268
DOI	126768	52710	2296	8773	0	819	454	568	1104	3043	0
DOT	58	2722	0	16	0	50	0	0	4414	2404	177
EPA	36020	17326	1216	1148	94	230	388	106	1466	25049	0
EPRI	3734	78	0	118	0	20	40	0	0	0	0
GRI	0	0	0	0	0	0	0	0	0	120	0
HEW	2324	1380	1249	4586	84	1047	0	0	0	384	135
HUD	0	0	0	0	0	13679	0	0	1922	0	0
INEA	0	0	0	0	0	0	10	0	0	0	0
MIT	0	0	0	0	0	0	0	0	0	0	0
NASA	591	3695	300	0	0	110	0	0	0	50	0

TABLE 8. REPORTED ENERGY TECHNOLOGY FUNDING LEVELS (THOUSANDS) (Continued)

FUNDING AGENCY	COAL	OIL AND GAS	OIL SHALE	NUCLEAR FISSION	NUCLEAR FUSION	SOLAR	GEO-THERMAL	HYDRO ELECTRIC	CONSER-VATION	GENERAL SCIENCE	MEDICAL APPLIC.
NIEHS	7464	4086	2076	691	333	944	19	61	53	9011	617
NRC	50	0	0	65079	469	0	0	0	92	225	0
NSF	2248	2089	43	459	0	283	0	0	99	426	0
NYDOT	0	0	0	0	0	0	0	0	2000	0	0
ORFW/POGE	0	0	0	0	0	0	0	0	0	200	0
OTA	0	0	0	0	0	0	0	0	0	0	0
PSU	0	0	0	0	0	0	0	0	0	0	0
SDSU	0	0	0	0	0	0	0	0	0	33	0
TVA	6226	199	55	220	157	87	3	55	1378	20	0
UAK	0	0	0	0	0	0	0	0	0	11	0
UMD	0	0	0	0	0	0	0	0	0	0	0
UMN	17	0	0	0	0	0	0	0	0	0	0
UOP/DOE	630	0	0	0	0	0	0	0	0	0	0
USDA	460	0	0	0	0	0	0	0	0	0	0
UWI	0	0	0	0	0	0	0	0	0	14	0
UWY	0	0	0	0	0	0	0	0	0	0	0
WHOI	0	0	0	0	0	0	0	0	0	0	0
TOTAL	256348	111358	17973	400592	10451	25813	4778	1711	25422	68648	2197

TABLE 9. REPORTED FUNDING LEVELS FOR ENVIRONMENTAL ISSUES WITHIN ENERGY TECHNOLOGIES

ISSUE	COAL	OIL AND GAS	OIL SHALE	NUCLEAR FISSION	NUCLEAR FUSION	SOLAR	GEO-THERMAL	HYDRO ELECTRIC	CONSER-VATION	GENERAL SCIENCE	MEDICAL APPLIC.	TOTAL
Air Quality	140619	11619	1815	3812	82	241	1120	60	2604	7142	0	169114
Climate	5365	1189	72	699	150	914	0	0	151	334	0	8874
Ecology	14653	32897	1591	13434	362	1139	1368	699	1310	7596	0	75049
Health	33560	10528	7278	39020	2277	3444	81	118	2755	19608	2197	120865
Land Disturbances	10136	7878	1314	138501	768	2	1287	1	2013	773	0	162671
Multi-Issue	22698	25223	2475	32740	4784	14089	382	345	5560	18231	0	126526
Safety	7784	6327	195	162173	1357	216	98	92	4563	1969	0	184772
Societal Impacts	432	1468	187	53	0	2212	0	7	3576	260	0	8196
Water Resources	21101	14229	3048	10160	672	3557	441	389	2892	12733	0	69222
Total	256348	111358	17973	400592	10451	25813	4778	1711	25424	68646	2197	925289

addressed by FY 1979 research. Other environmental issues receiving significant reported funding were air quality, land disturbances, and health. In contrast, those issues which seem to be of least concern were climate and societal impacts.

A comparison between FY 1979 and funding levels appropriated for the previous three fiscal years for the various energy technologies is shown in Figure 1. Again, this adds to an understanding of the emphasis and direction of current energy technology support.

It can be seen that the percent of each year's total budget reserved for fossil fuel research has increased considerably during the past four years, with more than 41 percent of the FY 1979 total appropriated for fossil fuel projects. In contrast to the three previous years, during which the percent allocated for nuclear projects had increased, the FY 1979 budget showed a definite decline in nuclear funding. With the FY 1979 nuclear funding representing 44% of all support for energy-related environment and safety research, the FY 1979 budget appears to be evenly distributed between fossil and nuclear technologies. In addition, Figure 1 indicated that solar and conservation projects received more budget support in FY 1979 than in previous years. Although actual figures are not directly compared, Figure 1 offers a graphic representation of the major areas of concern and present trends in energy-related environment and safety research.

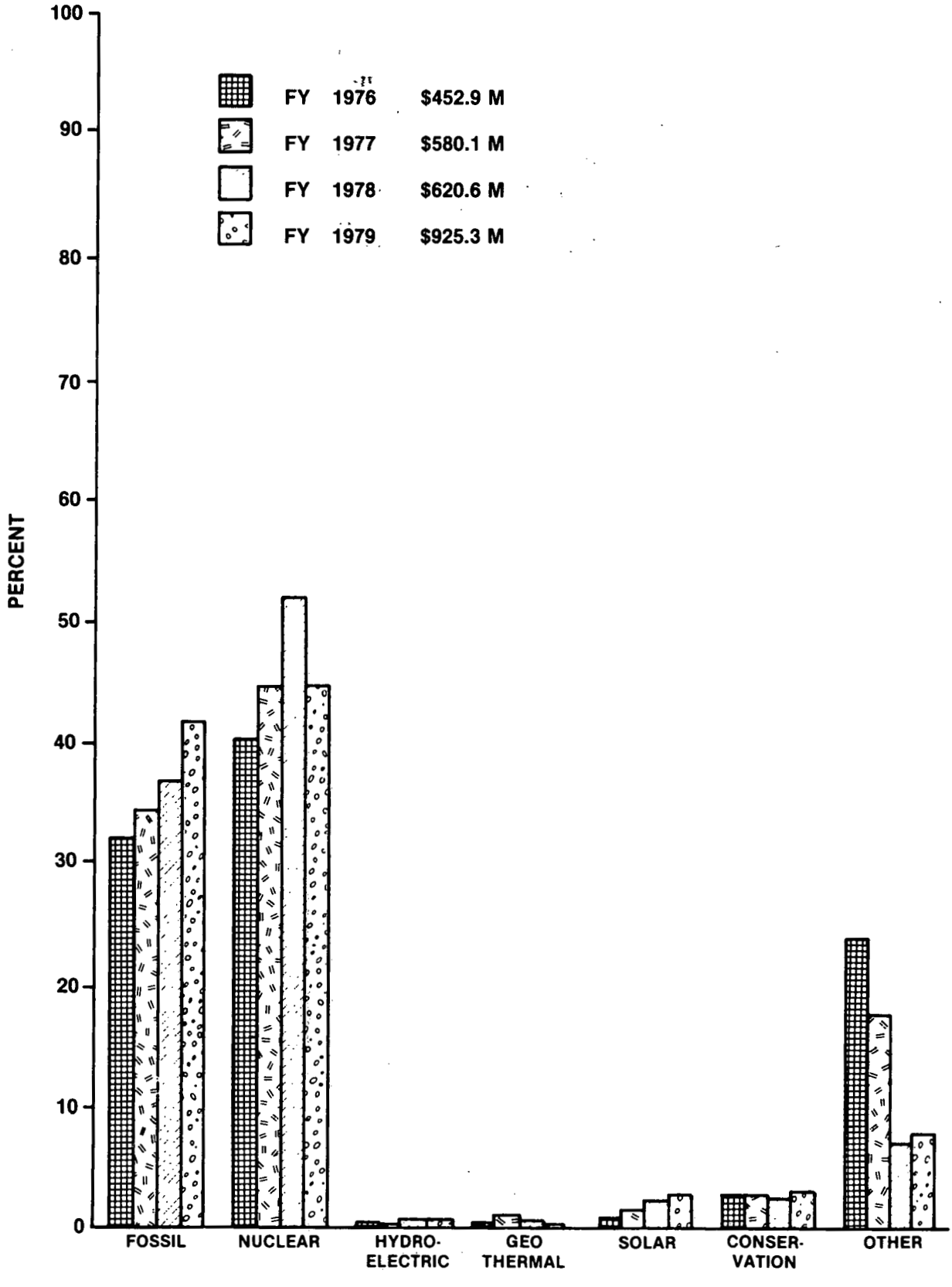

FIGURE 1. COMPARISON OF PERCENTAGES FUNDED FOR ENERGY TECHNOLOGIES IN FY 1976, 1977, 1978 AND 1979.

APPENDIX A

Access to the Federal Inventory Data Base

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ACCESS TO THE FEDERAL INVENTORY DATA BASE

The FY 1979 Federal Inventory data base is maintained on the VAX 11/780 computer at Science Applications, Inc. (SAI), Oak Ridge, Tennessee, and on RECON, the Department of Energy online retrieval system.

The Federal Inventory data base is available on RECON for online retrieval. To gain access to RECON, which is maintained by the DOE Technical Information Center, contact Mr. Thomas D. Sample, Technical Information Center, Oak Ridge, Tennessee, 615-576-1272. The Inventory is maintained as part of the Research in Progress File, and consists of two files. One file contains administrative, funding and an abstract, while the second file contains the technical environmental data.

SAI will provide information from the data base by two methods:

- SAI will provide a response service to persons interested in obtaining data about specific research projects or groups of projects. Requests for Inventory information will be answered by SAI personnel. Responses will include, but not be limited to, such items as listings of projects and subsets from the data base, funding data in tabular format and summary funding information for subsets.
- SAI will also provide direct online access to the data base for persons interested in searching and retrieving data from the file. Those persons who would like direct access must submit to Ms. Susan Rose, DOE/EV, a request in writing for online access. Requests should be addressed to:

  Ms. Susan Rose
  Office of Program Coordination
  EV-40
  Department of Energy
  Washington, D.C. 20545

DOE will approve the request and forward to SAI where a user I.D. and password will be assigned. Detailed information for accessing the computer and online searching of the data base using the DRS data management system will be provided to the user at this time. These two services, responding to information requests and providing online access to the Inventory data base, will be provided at no cost to the user. Information concerning these services should be directed to:

Ms. Carole Shriner
Bldg. A, Suite 1000
Jackson Plaza Tower
800 Oak Ridge Turnpike
Oak Ridge, TN 37830
615-482-9031

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APPENDIX B

FY 1979 Inventory Questionnaire

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U.S. DEPARTMENT OF ENERGY
INVENTORY OF FEDERAL ENERGY-RELATED ENVIRONMENTAL AND SAFETY RESEARCH FOR FY 1979

INSTRUCTIONS

NOTE: If this project has been terminated, check the box for TERMINATED in question 2, and return this questionnaire and attached printouts.

1. **TITLE:** Use official title of project. Limit the length to a maximum of 100 characters plus spaces.

2. **PERFORMING ORGANIZATION CONTROL NUMBER:** A unique internal identification number used by the performing organization to facilitate project control. **PROJECT STATUS:** Check Status of project in FY 1979.

3. **CONTRACT, GRANT OR PURCHASE ORDER NUMBER:** The agency number under which the project is being performed. If no number is used, leave space blank.

4. **PRINCIPAL INVESTIGATOR:** Name of person responsible for the performance of the project. Address is the mailing address of the principal investigator. Give telephone number.

5. **(A) PERFORMING ORGANIZATION:** Name of organization providing administrative, logistic, and/or facility support. State name of smallest organizational unit performing the research.

   (B) CODE for type of performing organization. From the following list, select **ONE** and enter the two-letter code on the form.

   IN - Private industry
   NP - Foundation or laboratory not operated for profit
   TA - Trade or professional association
   US - Federal agency
   CU - College, university or trade school
   ST - Regional, state or local government facility
   EG - Electric or gas utility
   FF - Federally funded R&D centers or laboratory operated for an agency of the U.S. Government
   XX - Other (define on questionnaire)

   (C) Location where work is being performed.

   (D) Country sponsoring the project.

6. **MONITORING ORGANIZATION:** List the organization/agency and division that has direct contact with the principal investigator, the technical representative who directly monitors the work, his address and phone number, and the specific person administering the grant or contract.

7. **PROJECT SCHEDULE:** If the project is a continuation of a previous project, the start date should indicate the initiation of the prior work. The expected completion date should be entered. If the project is a continuing activity with no set completion date, enter N/A for not applicable.

8. **FUNDING:** Provide funding in **DOLLARS.** If funding is received from more than one organization, list each agency separately in the space provided. Funding should indicate budget obligations (funding level) per year. For example, if budget obligation is $20,000 for 2 years, state the funding levels as $10,000 per year. If applicable, fill in parts. D. E. F, or G.

9. **SUMMARY OF WORK:** Provide a project summary in 200 words or less. State project objectives, significance, approach, and final product expected, quantifying where possible (e.g., "demonstrates 95% of recovery of sulfur from raw gas with molten salt recycle at a rate of one gallon per minute").

10. **PUBLICATIONS:** List the five major publications from the past 12 months which are available to the public that have resulted directly from the research. Give author(s), year, title, journal reference or report number, and source from which publications may be secured.

11. **GENERAL TECHNOLOGY CATEGORY: FEDERAL INVENTORY RESPONDENTS, ANSWER QUESTION 16 IN PLACE OF QUESTION 11.** Enter the letter and number for the general technology category supported by your project as shown below. Multiple numbers may be entered when the project supports more than one category. The Multi-Technology category (Item F1) should be used only if your project has a pervasive application or influence on all, or nearly all, technology areas. Examples: R&D on instrumentation, materials research, meteorological research. The General Science category (Item F2) should be used only if your project, or a major portion of it, is basic in nature and not directly related to any specific energy technology.

Insert one or more of the following category codes:

Fossil Fuels (including synfuel)

A1 - Fossil Fuels (general)
A2 - Coal Conversion - Liquefaction
A3 - Coal Conversion - Gasification
A4 - Oil and Gas
A5 - Oil and Shale
A6 - Biomass - Pyrolysis

Nuclear

B1 - Nuclear (general)
B2 - Fission - Converters
B3 - Fission - Breeders
B4 - Fusion - Magnetic
B5 - Fusion - Laser

Geothermal

C1 - Geothermal (general)
C2 - Hydrothermal
C3 - Geopressurized
C4 - Hot Dry Rock

Solar

D1 - Solar (general)
D2 Direct Heat/Cool
D3 - Electric
D4 - Ocean, Wind
D5 - Biomass

Conservation

E1 - Conservation (general)
E2 - End Use
E3 - Improved Conversion Efficiency
E4 - Energy Storage

Other

F1 - Multi-technology
F2 - General (or Basic) Science
F3 - Medical Applications of Nuclear Technology
F4 - Hydroelectric
F5 - Other (identify on the form)

12. **TYPE OF RESEARCH ACTIVITY:** Check the **ONE** type of research activity that is most applicable to this project.

13. **KEYWORDS:** List five terms describing the technical aspects of the project. List specific chemicals and CAS number, if applicable.

14. **ANALYTICAL/PAPER STUDY:** Identify this project as being a paper or experimental study.

15. **RESPONDENT:** Name and address of person filling out the questionnaire. Give telephone number, including extension (if you have FTS number, please include it) at which respondent can be reached. Record the date the form was completed. The information in item 16 will not be published.

16. **GENERAL ENERGY TECHNOLOGY: FEDERAL INVENTORY RESPONDENTS WILL ANSWER THIS QUESTION IN PLACE OF QUESTION 11.** Provide the percent of total funding for each technology which is **DIRECTLY** related to this project. Do not enter a percent less than 10 percent for any technology. Percent must total to 100. If General Science or Medical Applications is chosen, do not choose any other technologies.

17. **STAGE OF ENERGY RESEARCH CYCLE:** Check the **ONE** type of energy research cycle stage that is most applicable to this project.

18. **POLLUTANTS:** Check the pollutant(s) which are **DIRECTLY** related to this project. If "other" is checked, also specify the pollutant.

19. **MEDIA:** Check the media to which the pollutants indicated in item 19 directly relate either through deposition, cycling, fate and/or effects.

R&D CATEGORIES: Questions 20, 21, and **22** relate to three main R&D categories: ENVIRONMENTAL AND SAFETY CONTROL TECHNOLOGY, TECHNOLOGY IMPACTS OVERVIEW AND ASSESSMENT, and BIOLOGICAL AND ENVIRONMENTAL R&D AND ASSESSMENTS. Choose the **ONE** question pertaining to the **ONE** R&D category which is **directly** related to this project and check the **ONE** applicable area within that category.

DEFINITION FOR ITEM 20: Activities directed at developmental engineering, demonstration and evaluation of processes and systems to mitigate environmental impacts from emissions, effluents, and discharges from energy systems and packaging, shipping, and disposal of energy fuels and wastes.

DEFINITION FOR ITEM 21: Assessment and information dissemination activities directed at determining the impact of environmental policies, laws and regulations of energy development and use upon the nation's environment, health, and safety.

DEFINITION FOR ITEM 22: Research directed towards developing the information required for an understanding of possible short-term or long-term consequences to man and his environment of the various energy technologies associated with the production, utilization or conservation of energy.

23. **ISSUES:** Check the **ONE** issue which this project **directly** addresses.

INVENTORY OF FEDERAL ENERGY-RELATED ENVIRONMENTAL AND SAFETY RESEARCH FY 1979

FOR OFFICE USE ONLY

LOG NUMBER

1. DESCRIPTIVE TITLE

2. PERFORMING ORGANIZATION CONTROL NUMBER _____

STATUS OF WORK: ☐ NEW ☐ CONTINUING ☐ TERMINATED

3. CONTRACT OR GRANT NUMBER _____

4. PRINCIPAL INVESTIGATOR AND ADDRESS

A. NAME (LAST, FIRST, MI) _____ B. PHONE FTS _____

C. RESEARCH ORGANIZATION _____ COM _____

BUSINESS ADDRESS: STREET _____ D. CITY _____

E. STATE _____ F. ZIP _____

5. A. PERFORMING ORGANIZATION:

_____ _____

ORGANIZATION DEPARTMENT

B. CIRCLE ONE CODE FOR TYPE OF ORGANIZATION PERFORMING R & D (SEE INSTRUCTIONS)

CU EG FF IN NP ST TA US XX

C. LOCATION WHERE WORK IS BEING PERFORMED _____

D. COUNTRY SPONSORING PROJECT _____

6. A. MONITORING ORGANIZATION, PROGRAM DIVISION, OR OFFICE (FULL NAME)

_____

B. TECHNICAL MONITOR (LAST, FIRST, MI) _____ C. PHONE FTS _____

D. ADDRESS (IF DIFFERENT FROM HQS.) _____ COM _____

E. ADMINISTRATIVE MONITOR (LAST, FIRST, MI) _____

7. PROJECT SCHEDULE

A. START DATE _____ _____ B. EXPECTED COMPLETION DATE _____

MONTH YEAR MONTH YEAR

INVENTORY OF FEDERAL ENERGY-RELATED ENVIRONMENTAL AND SAFETY RESEARCH

ORGANIZATION CONTROL NUMBER _____

8. FUNDING IN DOLLARS, i.e., $10,000 (FUNDS REPRESENT BUDGET OBLIGATION)

	FUNDING ORGANIZATION(S)	FY 1979	ESTIMATED FY 1980
A.			
B.			
C.			

D. FOR DOE PROJECTS. ENTER BUDGETING AND REPORTING CLASSIFICATION CODE _____

E. INTERAGENCY AGREEMENT (SPECIFY FUNDING AGENCY) _____

F. AGENCY IN-HOUSE EFFORT (CHECK IF APPLICABLE) ☐

G. EPA "PASS-THRU" FUNDING (CHECK IF APPLICABLE) ☐

9. DESCRIPTIVE SUMMARY OF WORK (LIMIT TO 200 WORDS. INCLUDE OBJECTIVE, APPROACH, RESULTS TO DATE AND THEIR SIGNIFICANCE, AND EXPECTED PRODUCT. QUANTIFY WHERE POSSIBLE).

ORGANIZATION CONTROL NUMBER _____

10. LIST THE FIVE MAJOR PUBLICATIONS FROM THE LAST 12 MONTHS WHICH ARE AVAILABLE TO THE PUBLIC AND HAVE RESULTED DIRECTLY FROM THE PROJECT. GIVE A COMPLETE BIBLIOGRAPHIC CITATION.

11. GENERAL TECHNOLOGY CATEGORIES (ENTER APPLICABLE CODE FROM CODES IN THE INSTRUCTIONS).
FEDERAL INVENTORY RESPONDENTS *DO NOT* ANSWER THIS QUESTION.

☐☐ ☐☐ ☐☐ ☐☐ ☐☐ ☐☐ ☐☐ ☐☐ ☐☐ ☐☐ ☐☐ ☐☐ ☐☐

12. TYPE OF RESEARCH ACTIVITY (CHECK ONE ACTIVITY)

A.	☐	Basic Research	H.	☐	Mathematical Model Development
B.	☐	Applied Research	I.	☐	Data Analysis / Assessments
C.	☐	Laboratory Scale R & D	J.	☐	Information Systems Management
D.	☐	Technology Transfer	K.	☐	Policy Analysis
E.	☐	Field Study	L.	☐	Socioeconomic
F.	☐	Pilot Plant Scale R & D	M.	☐	Other (Specify) _____
G.	☐	Full Scale Demonstration	N.	☐	Not Applicable

13. KEYWORDS (Please list 5 keywords)

14. IS THIS RESEARCH PROJECT SOLELY AN ANALYTICAL / PAPER STUDY?
(NON-EXPERIMENTAL, PAPER AND PENCIL, COMPUTER ANALYSIS, ETC.) _____YES _____NO

15. RESPONDENT'S NAME _____ PHONE _____ DATE _____
BUSINESS ADDRESS:
STREET _____
CITY _____ STATE _____ ZIP _____

ORGANIZATION CONTROL NUMBER _____

16. **GENERAL ENERGY TECHNOLOGY PROGRAM CATEGORIES (PROVIDE PERCENT OF TOTAL FUNDING FOR EACH TECHNOLOGY DIRECTLY RELATED TO THE PROJECT). IF GENERAL SCIENCE OR MEDICAL APPLICATIONS IS CHOSEN, DO NOT CHOOSE ANY OTHER TECHNOLOGIES. PERCENT MUST TOTAL 100.**

DIRECT

- A. ☐ Coal
- B. ☐ Oil and Gas
- C. ☐ Oil Shale
- D. ☐ Nuclear Fission
- E. ☐ Nuclear Fusion
- F. ☐ Solar
- G. ☐ Geothermal
- H. ☐ Hydroelectric
- I. ☐ Conservation

SUPPORTIVE OR INDIRECT

- J. ☐ General Science
- K. ☐ Medical Applications

17. **STAGE OF ENERGY RESEARCH CYCLE** (CHECK ONE CYCLE)

- A. ☐ Exploration
- B. ☐ Extraction
- C. ☐ Secondary Recovery
- D. ☐ Tertiary Recovery
- E. ☐ Combustion in situ
- F. ☐ Conversion in situ
- G. ☐ Transportation / Transmission
- H. ☐ Storage
- I. ☐ Processing
- J. ☐ Conversion
- K. ☐ Combustion - Utilization
- L. ☐ Waste Management
- M. ☐ Decontamination / Decommissioning
- N. ☐ Not Applicable

18. **POLLUTANTS** (CHECK APPLICABLE POLLUTANTS)

- A. ☐ Sulfur Compounds
- B. ☐ Nitrogen Compounds
- C. ☐ Carbon Oxides (CO, CO_2)
- D. ☐ Hydrocarbons and Other Organics
- E. ☐ Photochemical Oxidants
- F. ☐ Particulates/Aerosols
- G. ☐ Trace and Heavy Metals
- H. ☐ Mixtures of Defined Pollutants
- I. ☐ Radiation. Ionizing (electromagnetic)
- J. ☐ Radiation. Nonionizing (U.V.. electric. magnetic. etc.)
- K. ☐ Radionuclides
- L. ☐ Noise/Vibration
- M. ☐ Heat / Thermal
- N. ☐ Odor
- O. ☐ Complex Mixtures (e.g..process steam materials)
- P. ☐ Solid/Liquid Wastes and Residuals
- Q. ☐ Other (Specify)_____
- R. ☐ Not Applicable

ORGANIZATION CONTROL NUMBER _____

19. MEDIA TO WHICH POLLUTANTS RELATE (CHECK APPLICABLE BIOMES)

A.	☐	Atmospheric	D.	☐	Estuarine
B.	☐	Terrestrial	E.	☐	Marine
C.	☐	Freshwater	F.	☐	Not Applicable

20. ENVIRONMENTAL AND SAFETY CONTROL TECHNOLOGY R & D. IF DIRECTLY RELATED TO THIS PROJECT, CHECK THE **ONE** APPLICABLE AREA. IF THIS QUESTION IS ANSWERED, DO NOT ANSWER QUESTION 21 OR 22.

A.	☐	Air Emission Controls	D.	☐	Decontamination / Disposal of Equipment and Facilities
B.	☐	Solid Waste Management and Land Reclamation	E.	☐	Energy Fuels and Wastes Containment and Transport
C.	☐	Water Control and Protection	F.	☐	Plant/Mine Operational Safety

21. TECHNOLOGY IMPACTS OVERVIEW AND ASSESSMENT. IF DIRECTLY RELATED TO THIS PROJECT, CHECK THE **ONE** APPLICABLE AREA. IF THIS QUESTION IS ANSWERED, DO NOT ANSWER QUESTION 20 OR 22.

A. ☐ **Policy analysis** (Energy-related implications of proposed and existing federal and regional environmental health and safety policies and laws.)

B. ☐ **Technology Assessment** (Environmental research planning and review documentation to address concerns of specific technologies and processes.)

C. ☐ **Environmental Impacts Evaluation** (Determining, evaluating, and assessing environmental impacts of energy development, including NEPA process.)

D. ☐ **Regional Assessment** (Regional evaluation of energy resources and uses.)

E. ☐ **Social Impacts** (Including economic, institutional, political and resource utilization.)

F. ☐ **Information Dissemination** (Publications, meetings, information systems, coordination and public participation activities.)

G. ☐ **Standards Development** (Criteria, guidelines and regulations.)

22. BIOLOGICAL AND ENVIRONMENTAL R & D AND ASSESSMENTS. IF DIRECTLY RELATED TO THIS CATEGORY, CHOOSE THE **ONE** APPLICABLE AREA WITHIN THE RELATED MAIN SUBJECT. IF "H" IS CHOSEN, CHECK THE APPLICABLE SUBCATEGORIES. IF THIS QUESTION IS ANSWERED, DO NOT ANSWER QUESTION 20 OR 21.

Pollutant Characterization, Measurement and Monitoring

A. ☐ Characterization and Analysis

B. ☐ Monitoring (Workplace or Environment)

C. ☐ Measurements Technology

D. ☐ Physical/Chemical Mechanisms of Pollutant Interactions

Health Studies

E. ☐ Clinical Studies in Humans

F. ☐ Epidemiological Studies

G. ☐ Health Protection, Safety and Industrial Hygiene

H. ☐ Biological Effects in Experimental Systems
(Identify most applicable objective in each column.)

BIOLOGICAL CONCERN	RESEARCH OBJECTIVE
1. ☐ Carcinogenesis	4. ☐ Screening for Hazardous Agents
2. ☐ Mutagenesis	5. ☐ Metabolism and Fate
3. ☐ Systems Damage	6. ☐ Mechanism of Damage
	7. ☐ Dose Effects Data

I. ☐ Health Effects Assessments

Environmental Studies

J. ☐ Environmental Transport and Conversion of Pollutants

K. ☐ Ecological Effects of Pollutants or Physical Disturbances

L. ☐ Environmental Effects Assessments

---

23. ISSUE CATEGORY. CHECK THE AREA OF ENVIRONMENTAL CONCERN TO WHICH THIS RESEARCH PROJECT APPLIES MOST DIRECTLY

A. ☐ Air Quality

B. ☐ Water Resources (Quality, Quantity)

C. ☐ Land Disturbances (Include waste management and reclamation.)

D. ☐ Ecology

E. ☐ Climate

F. ☐ Health (Public, Occupational)

G. ☐ Safety (Public, Occupational)

H. ☐ Societal Impacts

I. ☐ Multi-Issue

APPENDIX C

FY 1979 Federal Inventory Log Numbers

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FY 1979 FEDERAL INVENTORY LOG NUMBER RANGES

DEPARTMENT OF AGRICULTURE	000001-009999
DEPARTMENT OF COMMERCE	010000-019999
Asst. Sec. Science and Technology	010000-010999
National Bureau of Standards	011000-011999
Asst. Adminst. Research & Development	012000-012999
National Oceanic and Atmospheric Administration	013000-013999
DEPARTMENT OF DEFENSE	020000-029999
DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE	030000-039999
H.E.W. General	030000-030999
Asst. Sec. - Health	031000-031999
National Institute of Health	032000-032999
National Institute of Occupational Safety and Health	033000-033999
National Institute of Environmental Health Sciences	034000-034999
Off. Assoc. Dir. for Genetics	034000-034049
Biometry Branch	034050-034099
Environmental Biol. & Chem. Branch	034100-034149
Off. of Health Hazards Assessment	034150-034199
Lab. of Biochemical Genetics	034200-034239
Lab. of Behavioral and Neurological Toxicology	034240-034279
Lab. of Environmental Biophysics	034280-034319
Lab. of Animal Genetics	034320-034359
Lab. of Molecular Genetics	034360-034399
Lab. of Environmental Toxicology	034400-034449
Lab. of Pharmacology	034450-034499
Lab. of Pulmonary & Functional Toxicology	034500-034549
Lab. of Pharmacokinetics	034550-034599
Extramural Program - RO1ES Series	034600-034799
Extramural Program - 1RO1ES Series	034800-034899
Extramural Program - P01ES Series	034900-034949
Extramural Program - R23ES Series	034950-034999
National Cancer Institute	035000-035999
National Institute of Dental Research	036000-036199
National Institute of General Medical Sciences	036200-036399
National Institute of Neurological and Communicative Disorders & Stroke	036400-036499
National Institute of Child Health & Human Development	036500-036699
National Heart, Lung, & Blood Institute	036700-036899
National Institute on Aging	036900-036999
National Institute of Arthritis, Metabolism & Digestive Disease	037000-037199
Food and Drug Administration	037200-037399
National Center for Toxicological Research	037400-037599
Center for Disease Control	037600-037799
National Institute of Allergy & Infectious Diseases	037800-037999
National Eye Institute	038000-038099
National Library of Medicine	038100-038199
Division of Research Resources	038200-038299

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT	040000-049999
DEPARTMENT OF THE INTERIOR	050000-059999
DOT - General	050000-050999
Bureau of Mines	051000-051999
Fish and Wildlife Service	052000-052999
U.S. Geological Survey	053000-053999
Bureau of Land Management	054000-054999
Water and Power Resources Service	055000-055999
Water Research and Technology	056000-056999
Office of Surface Mining	057000-057999
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APPENDIX D
Agency Abbreviations

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AGENCY ABBREVIATIONS

ABBREVIATIONS	*Agency*
AAR	Association of American Railroads
AGA	American Gas Association
CDOT	California Department of Transportation
CEQ	Council on Environmental Quality
DOC	Department of Commerce
DOD	Department of Defense
DOE	Department of Energy
DOI	Department of the Interior
DOT	Department of Transportation
EPA	Environmental Protection Agency
EPRI	Electric Power Research Institute
GRI	Gas Research Institute
HEW	Department of Housing and Urban Development
INEA	Icelandic National Energy Authority
MIT	Massachusetts Institute of Technology
NASA	National Aeronautics and Space Administration
NIEHS	National Institute of Environmental Health Sciences
NRC	Nuclear Regulatory Commission
NSF	National Science Foundation
NYDOT	New York Department of Transportation
ORFW	Oregon Department of Fish and Wildlife
OTA	Office of Technology Assessment
POGE	Portland Oregon General Electric
PSU	Pennsylvania State University
SDSU	San Diego State University
TVA	Tennessee Valley Authority
UAK	University of Alaska
UMD	University of Minnesota
UOP	Universal Oil Products
USDA	Department of Agriculture
UWI	University of Wisconsin
UWY	University of Wyoming
WHOI	Woods Hole Oceanographic Institute

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