

UNITED STATES
ATOMIC ENERGY COMMISSION

In Reply Refer to:
MDA:SHS

MC
Central *51-8-8 (7)*

P. O. Box 66
Miamisburg, Ohio
August 7, 1951

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Monsanto Chemical Company
Mound Laboratory
Miamisburg, Ohio

Attention: Dr. J. J. Burbage, Executive Director

SUBJECT: BUDGET ESTIMATES -- F.Y. 1953

Gentlemen:

As requested by Dr. Haring, there are attached hereto two copies each of the following pages of the F.Y. 1953 Budget Document:

Pages	1 thru	2	--	Highlight Statement
"	6	"	19	-- Summary of Operating Costs
"	24	"	37	-- Analysis of Inventories
"	48	"	86	-- Plant & Equipment - Construction
"	88	"	101	-- Plant & Equipment not Construction
"	122	"	133	-- Motor Vehicles
"	134	"	138	-- Typewriters

Yours very truly,

F. H. Belcher
F. H. Belcher,
Area Manager

Enclosures:
As Listed

SULLIVAN:mr

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When separated from enclosures, handle
this document as *unclassified*

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MOUND DECLASSIFICATION OFFICE
RAYMOND BATAV A.D. DATE *9/2/97*
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U. S. Atomic Energy Commission

DAYTON AREA

Highlight Statement

MOUND DECLASSIFICATION REVIEW	
1ST REVIEW DATE: <u>5/26/97</u>	DETERMINATION (CIRCLE NUMBER):
AUTHORITY: <u>DAOC DADC DADD</u>	1. CLASSIFICATION RETAINED
NAME: <u>L. M. FAYAN</u>	2. CLASSIFICATION CHANGED TO:
2ND REVIEW DATE: <u>9/2/97</u>	3. CONTAINS NO DOE CLASSIFIED INFO
AUTHORITY: <u>Robert</u>	4. COORDINATE WITH:
NAME: <u>Robert</u>	5. CLASSIFICATION CANCELED
	6. CLASSIFIED INFO BRACKETED
	7. OTHER (SPECIFY):

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downgrading and
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~~RESTRICTED DATA~~
This document contains restricted data as defined in the Atomic Energy Act of 1954. Its disclosure or the disclosure of its contents in any manner to an unauthorized person is prohibited.

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Highlight Statement

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During FY 1951, all production and research operations were carried on at Mound Laboratory. Scioto Laboratory was maintained in "Cold Standby;" however, the installation and modification of all process equipment is essentially complete.

The general increases in price levels, raises in wages, salaries, and related benefit plans resulted in higher costs of operation and equipment over the previous year. Approximate indices, based for the four years, 1950 to 1953, are 1.00, 1.06, 1.14, and 1.19, using 1950 as 1.00. These indices include only known increments of cost, namely, normal salary and wage improvement increases after 1951, with no allowance for price or unscheduled wage increases.

All scheduled requirements and specifications for items and product were fulfilled. During December, 1951, change-over from the urchin to the tom model was effected. For a short initial period, an unusually high number of toms did not meet specifications. However, the necessary processing adjustments were determined promptly and virtually all finished items thereafter have exceeded specifications. Compared to 1950 as 100%, the scheduled number of items for 1951 is 150%; for 1952 it is 383%; and for 1953, it is 500%. Numerous process changes of both major and minor nature have been placed in effect. All of these result in reduced labor, savings in cost, or increased production or quality. Other major process changes are under way or anticipated in 1952 and 1953, the timing dependent on production schedules or progress of research and development. The net effect of these changes is reflected in the estimated increase of 22 percent in production personnel compared to an increase in production of 233 percent, between 1951 and 1953, for Mound Laboratory.

Initiator research and development continues on polonium 210 and the substitutes polonium 208 and actinium 227. Considerable and increased effort

must be continued on polonium 210 because of the tremendously increased demands anticipated after FY 1953, together with the fact it now appears certain that requirements for polonium 210 initiators will reach large figures before either of the substitutes, if successful, can begin to take care of the bulk of the needs. In 1951, outstanding developments in the polonium 210 field included a mechanical device for removing the aluminum slug jackets, to replace present dissolving by acid; many minor but important developments in instrumentation control, multiple operations, etc., contributing to the setting up of "sequence" production lines, elimination of bottle necks and other factors improving processing methods in pace with increased schedules; a major change in the chemical process was adapted; two new processes, direct distillation of polonium from bismuth, and a recovery process for reclaiming irradiated bismuth from chemical wastes are in an advanced stage but will require further development and engineering in 1952.

Close coordination was maintained with the Oak Ridge National Laboratory and the California Research and Development groups engaged in the investigation of accelerator production of polonium 208. Essentially, all the Mound Laboratory research in these fields originate from the accelerator problems, since the polonium 210 processing methods are equally applicable to polonium 208. Mound is contributing by work on assay of targets, metal diffusion and other metallurgical, physical and chemical problems of target design, processing large bismuth volumes with low polonium content. This work will follow closely the tempo of the accelerator program.

The major responsibility for development of an actinium urchin has been assumed by Mound Laboratory. During the year, work was completed on a process for separating radium from uranium refining residues. The work on actinium was handicapped by lack of reasonable quantities of actinium as well as facilities for handling high-level gamma emitters in quantity.

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Early in FY 1952, facilities will be available for processing radium now under irradiation and this deficiency will be overcome. Considerable investigation of chemical and physical methods of isolating and deposition of lanthanum, chemically similar to actinium, was carried on. Results thus far are encouraging, but considerable research will be necessary since the chemistry of the element is both difficult and un-developed.

The reactor waste development program accomplished a co-precipitation process for scavenging fission products and polonium from liquid waste streams on evaporator design for local wastes containing fission products and other non-process plant wastes. Work in 1952 will include refinement to the co-precipitation process, through the feasibility phase; and laboratory work will

be started on wastes from the "purex" process. In 1953, similar work will continue on similar specifically designed project wastes. The group provides continuing assistance on plant waste problems and maintains a continuing program on chemical analytical methods for determinations of waste products.

Through 1951, emphasis of the biology program has been mainly on acute and sub-acute polonium poisoning studies necessary for the planning of the more important chronic studies. In FY 1952, the chronic studies will be continued at slightly increased rate and chronic studies will be initiated. During 1952, a start will be made in the study of actinium, and this will continue with increased scope in 1953. The use of longer lived experimental animals is also planned in 1953.

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Summary of Operating Costs



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3000 - Weapons

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Summary of Operating Costs

Schedule 12

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3000
Program

Activity No. (1)	Activity (2)	F. Y. 1951 (3)	F. Y. 1952 (4)	F. Y. 1953 (5)
	<u>Procurement and Production</u>			
3100	Initiators - Net Costs:			
3111	Initiators - Stockpiled	\$ 3,654,988	\$ 4,380,500	\$ 7,264,000
3111.1	Initiators - Fabrication	2,984,458	3,576,870	5,931,670
3111.2	Transfers Out	670,530	803,630	1,332,330
3112	Work in Process Inventory Changes - Initiators	0	496,000	0
	Total Initiators Net Costs	<u>3,654,988</u>	<u>4,876,500</u>	<u>7,264,000</u>
3480	Standby Costs:			
3482	Standby Costs - Scioto Laboratory	392,990	404,000	0
	Total Standby Costs	<u>392,990</u>	<u>404,000</u>	<u>0</u>
	Total Procurement and Production	<u>4,047,978</u>	<u>5,280,500</u>	<u>7,264,000</u>
	Total Program 3000	<u>\$ 4,047,978</u>	<u>\$ 5,280,500</u>	<u>\$ 7,264,000</u>

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Activity No. (1)	Activity (2)	F. Y. 1951 (3)	F. Y. 1952 (4)	F. Y. 1953 (5)
	<u>Procurement and Production</u>			
3100	Initiators - Net Costs:			
3111	Initiators - Stockpiled	\$ 3,654,988	\$ 4,380,500	\$ 4,864,000
3111.1	Initiators - Fabrication	2,984,458	3,576,870	3,971,670
3111.2	Transfers Out	670,530	803,630	892,330
3112	Work in Process Inventory Changes - Initiators	0	0	0
	Total Initiators - Net Costs	<u>3,654,988</u>	<u>4,380,500</u>	<u>4,864,000</u>
	Total Procurement and Production	<u>3,654,988</u>	<u>4,380,500</u>	<u>4,864,000</u>
	Total Program 3000 - Mound Laboratory	<u>\$ 3,654,988</u>	<u>\$ 4,380,500</u>	<u>\$ 4,864,000</u>

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Schedule 12
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Activity No. (1)	Activity (2)	F. Y. 1951 (3)	F. Y. 1952 (4)	F. Y. 1953 (5)
	<u>Procurement and Production</u>			
3100	Initiators - Net Costs:			
3111	Initiators - Stockpiled	\$ 0	\$ 0	\$ 2,400,000
3111.1	Initiators - Fabrication	0	0	1,960,000
3111.2	Transfers Out	0	0	440,000
3112	Work in Process Inventory Changes - Initiators	0	496,000	0
	Total Initiators - Net Costs	0	496,000	2,400,000
3480	Standby Costs:			
3482	Standby Costs - Scioto Laboratory	392,990	404,000	0
	Total Standby Costs	392,990	404,000	0
	Total Procurement and Production	392,990	900,000	2,400,000
	Total Program 3000 - Scioto Laboratory	\$ 392,990	\$ 900,000	\$ 2,400,000

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Summary of Operating Costs

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Program Statement

The primary functions of Mound and Scioto Laboratories are the production of alpha-active elements (currently Po 210) and the fabrication of initiators, using these alpha emitters.

Scioto is currently equipped for polonium production and is maintained in standby condition. It will remain in this status until such time as development of actinium 227 or polonium 208 processes prove successful. A small portion of the work entails the fabrication of a wide range of standard and special alpha and neutron sources for Commission uses in research and operating applications. The production of polonium is governed primarily by requirements of initiators. The relative production rates for initiators, compared to 1950 (actual rates omitted to avoid higher classification) are: 1950 - 100%; 1951 - 150%; 1952 - 383%; and 1953 - 500%.

Concurrently with the production activities, research and development activities are carried on and directed toward increased process efficiencies, greater productivity, improvement and better control of product quality. The process involves the separation of small quantities of polonium, present in the ratio of 2 parts per million, from large quantities of the irradiated bismuth. The first small quantities were produced by essentially the laboratory methods developed in the research for a feasible process. With the greatly increased requirements new and larger scale methods become both feasible and necessary to reduce requirements of personnel and capital expenditure. The net result of many major and minor process improvements now in effect, or shortly to be effected, is reflected in the increase of 233% in production, against an increase in production personnel of only 22%.

Some typical major items of this type of research selected because they do not require lengthy technical descriptions or comprehension, are included herein. These are not inclusive, as there are many more both minor and major

items which require detailed technical description and familiarity with the process. A sequence production line is being developed which will allow more continuous and productive operation, eliminating repeated transfers of material and components; this requires revision and development of new and usually simplified methods of assay and control and design of new equipment. Another example is a mechanical device to strip the aluminum jacket from the bismuth slug; this not only eliminates the cost of acid formerly used to dissolve the aluminum, but increases the capacity of the concentration cells, which are the first bottleneck in increased production.

Some 60 tons of contaminated bismuth in process waste solutions will have been accumulated by FY 1953. This is not suitable for recharge in the Hanford pile directly because of the intense alpha activity associated with it. A promising project for reclaiming this material into acceptable slugs is well developed but will need additional technological development. On the basis of current information, it appears that this metal can be recovered at a fraction of the current purchase price.

Another major process development project is the direct distillation of polonium from bismuth. This, on the basis of experimental results, would reduce costs and further simplify and cheapen the reuse of the bismuth. Some rather difficult problems of corrosion, resulting from the required high temperatures, must be solved, together with the usual development from the experimental model to the operating prototype.

Since polonium 210 has a half-life of only 138 days, much of the requirements for initiators, in increasing amount, result from the necessity of replacing each one after a limited useful life. The advantage, from this standpoint, of a longer lived active material, is obvious. In addition, further advantages and savings beyond the production cost make the development of longer lived initiator very desirable. Of the possible theoretical

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substitutes, Actinium 227, with a half-life of about 21 years, produced by irradiation of natural radium, and Polonium 208 with a half-life of about three years, produced by high energy proton bombardment of bismuth in accelerators, appears to be the most favorable at this time. The production of actinium 227 by reactor bombardment of radium is a fairly simple problem, but the chemical processing of actinium and the fabrication of urchins is extremely difficult because the element is extremely active and the chemistry knowledge is very meager and questionable. On the other hand, the principle problem with Polonium 208, will be the production of the isotope, while the chemistry and processing methods for Polonium 210 will be equally applicable to Polonium 208, except for possible lower polonium content in the bismuth.

The Actinium 227 program will be carried out largely at Mound Laboratory with the assistance and cooperation of Los Alamos scientific personnel, who will also carry on some work. Work on actinium must be isolated from that on Polonium, and specialized equipment and facilities are needed because the original facilities at Mound are designed primarily for alpha radiation, requiring little shielding, whereas the quantities of radium to be handled require essentially maximum shielding thickness and remote handling devices and methods.

In the Polonium 208 program, Mound Laboratory maintains close coordination with Oak Ridge National Laboratory and the California Research Corporation and contributes in matters of target design and research, assay of targets,

special chemical and metallurgical problems, and similar fields in which Mound Laboratory has specialized. Processing of polonium 208 will be done at Mound with possible preliminary concentration at the linear accelerator site, in order to reduce bismuth inventory and shipping weights.

The current Program 3000 cost estimate for FY 1952 has been increased over that of the original submission to Congress, by an amount of \$683,000. This represents principally the increased costs resulting from the higher cost factors (about 14%) discussed in the highlight statement, since the original 1952 estimate was based on only partial cost experience during FY 1950. No significant change in scope, other than some change in emphasis in research and development over that presented in the original submission, is contemplated.

The FY 1953 estimate represents an increased operating cost of \$1,983,500 over FY 1952. This is accounted for by an increased production cost at Mound of \$310,000 resulting from higher production rates; an increased research cost of \$173,500 as described in the sub-activity statements; and an increased operating cost at Scioto of \$1,500,000 for full scale operation throughout the year. All these estimates are based on actual staffing requirements and the most current cost experience data.

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Procurement and Production

	<u>F. Y. 1951</u>	<u>F. Y. 1952</u>	<u>F. Y. 1953</u>
3100 Initiators - Net Costs	\$ 3,654,988	\$ 4,876,500	\$ 7,264,000
3480 Standby Costs	392,990	404,000	0
Total	\$ 4,047,978	\$ 5,280,500	\$ 7,264,000
3111 Initiators - Stockpiled ...	\$ 3,654,988	\$ 4,380,500	\$ 7,264,000

FY 1952 costs in this activity are expected to be considerably higher than during FY 1951. This is due to the increased cost factors reflected only partially in FY 1951, and the addition of both direct and supporting services personnel required to reach scheduled levels of production.

The costs in FY 1953 will exceed those of FY 1952 as Scioto Laboratory is expected to be in an operating status throughout the year, plus additional costs at Mound Laboratory for increased production.

The costs in this activity include production operations, associated research and development, direct costs of materials and distributed portions of indirect costs such as utilities, plant protection, other service, supervisory, and administrative expenses.

The estimates for both FY 1952 and FY 1953 are based on FY 1951 costs to date through January as reflected in the cost accounting reports. Applied to these costs were the known factors of costs for increased personnel, insurance and pension costs, increases due to salary structure changes, and cost of living increases, to arrive at the estimated costs for FY 1952. To this amount was added merit salary increases to arrive at the FY 1953 estimated cost.

	<u>F. Y. 1951</u>	<u>F. Y. 1952</u>	<u>F. Y. 1953</u>
3112 Work in Process Inventory			
Changes - Initiators	\$ 0	\$ 496,000	\$ 0

Pending the development of actual experience based on a change in the cost accounting system and of reporting monthly and year to date costs, estimated year-end inventory changes at Mound Laboratory are not reflected. However, it is recognized that some change is likely to occur from month to month. Nevertheless, over a period of months the net amount of such changes will be insignificant.

The amount reflected in FY 1952 (\$496,000) represents the estimated production costs during the year at Scioto Laboratory. It is presently believed that shipments of significant amounts will not be made until the following year and that changes in inventory after FY 1952 will be negligible. At Mound Laboratory, this estimate is subject to some adjustment. The estimate is based on known requirements for technical and non-technical personnel, plus associated indirect charges as applied at Mound Laboratory.

The estimate of \$496,000 represents actually only the incremental costs resulting from six months operation, above the annual standby costs.

	<u>F. Y. 1951</u>	<u>F. Y. 1952</u>	<u>F. Y. 1953</u>
3482 Standby Costs - Scioto Lab.	\$ 392,990	\$ 404,000	\$ 0

These costs are expected to be slightly higher in FY 1952 and in the main will be accounted for by merit salary and wage improvement increases and cost of living adjustments. In accordance with the basic assumption, it is

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Program

Procurement and Production

3482 Standby Costs - Scioto Lab. (Cont'd)

expected that conversion to operations will be initiated during the year. It is assumed that full conversion will be accomplished as scheduled and total standby and operating cost estimates have been prepared accordingly. However, since it is quite probable that full conversion may be delayed, the standby estimate is shown for a full year. This full year estimate

for standby costs has been off-set by a corresponding reduction in the operation cost estimate. Therefore, the actual operating and standby costs at Scioto will be between \$404,000 and \$900,000, depending on the actual date operations will begin. Accordingly, costs of this activity are based on FY 1951 costs plus the estimated adjustments noted above. An estimate for this activity for FY 1953 is not reflected since it is expected that full operations will be effective throughout the entire year.

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Program

Research and Development

The costs of research for process development are incorporated in Activity 3111 - Initiators - Stockpiled. During FY 1951 this work consumed 57.5 Scientific Man-Years, costing \$957,500. In FY 1952 this is expected to rise to 76.5 Scientific Man-Years, costing ~~\$1,310,500~~ and in FY 1953 it is expected that costs of \$1,514,000 will be incurred for ~~81~~ Scientific Man-Years of work. * 7

2,213,000 80

The results of these efforts will continue to be felt in the conservation of critical and costly materials, lessening of health hazards and the accomplishment of cheaper and more expeditious methods of production.

During FY 1951 the major accomplishments in the research work of initiator refined material (including polonium 210, polonium 208, and actinium 227) and on initiators as such were as follows: In the polonium 210 field the major accomplishments were in area of polonium waste disposal. Liquid waste handling methods were successfully refined and solid waste handling process development was essentially completed. The actinium concentration process developed at Argonne was taken over by Mound. Engineering work was about completed as well as the major part of construction. A radium concentration process was developed. Several promising methods for making initiators from actinium 227 were conceived. A cooperative program with the California Research Corporation and the Oak Ridge National Laboratory on polonium 208 was instituted.

In FY 1952 the major effort will be concerned with the following: In the polonium 210 field, effort will be concentrated to develop new concentration

processes important because of future requirements for increased polonium 210 production. Also, recovery of process materials will be stressed for economic and supply reasons. Actinium 227 production will be started at a low level to insure a supply of refined material for research work on actinium initiators. An actinium initiator preparation process will be selected and developed to production scale. ~~A process for handling and processing the Mark I targets containing polonium 208 will be developed.~~ All work on substitute materials is important because of the need for longer-lived initiator.

In FY 1953, the efforts on initiator material will be about equally divided among polonium 210, polonium 208, and actinium 227. This will amount to an increase in effort on polonium 208. ~~The Mark I is scheduled for full operation early in FY 1953 and associated concentration problems at Mound must be met.~~

The FY 1951 costs are based upon the FY 1951 Fourth Quarter Review. The man-count figures are extrapolations of the March 1951 experience. The FY 1952 costs are based on man-count times cost-per-man calculations. The man-counts are derived from projected program needs and the cost-per-man is the ~~January 1951 figure for the research activities in the weapon program at Mound (\$17,500).~~ The FY 1953 costs likewise are based on man-count times cost-per-man is the January 1951 figure increased three percent to cover merit salary increases (\$18,025).

average
from July through October, ^{FY 1952} experience adjusted to account for pensions, salary increases both adjustments and merit, fixed fee increase, and union wage improvements (\$17,900). The FY 1953 costs likewise are based on man-count times cost-per-man calculations and the above figure is increased five percent to cover similar changes in FY 1953 (\$18,900).

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Program

Research and Development

	<u>F. Y. 1951</u>	<u>F. Y. 1952</u>	<u>F. Y. 1953</u>
Polonium 210 Research	\$ 440,250	\$ 619,500 477,900	\$ 667,000 492,000
Scientific Man-Years	25.5	35.5 27.0	37.0 26.0

During FY 1951, a consideration of the polonium 210 field shows that (1) A bismuth-polonium still was constructed and operated. The results indicated that a final satisfactory distillation procedure can be obtained. (2) A stabilization of the operation of the polonium liquid waste plant was achieved. Waste effluent counts below twenty-five c./m./ml. are consistently obtained with no dilution water necessary. (3) A pilot incinerator for polonium 210 combustible wastes was designed, constructed, and operated satisfactorily. Data are now available for designing a full plant scale unit. (4) Practical radiation detectors operating on the "radioelectric" principal were developed. (5) The mapping of the emission spectrum of polonium was nearly completed. (6) A considerable body of data on the chemical state of polonium in contact with metals was accumulated.

In FY 1952, a consideration of the Polonium 210 field shows that (1) the bismuth-polonium still project will have the objective of a producing pilot plant to prove the distillation process feasibility. This is important because this process promises (a) greater capacity in same space, (b) elimination of aqueous phase processing, and (c) easy bismuth recovery. (2) An objective of a producing bismuth recovery pilot plant operating on residues from the present aqueous process is important to (a) insure a sufficient supply of pure bismuth, and (b) eliminate the need of storage space for bismuth residues containing polonium. (3) The expansion of work effort on vapor pressure measurements on bismuth-polonium mixtures is important because of need for such basic data for design work on the bismuth still.

As a result of increased production use of materials and personnel, polonium 210 Research will increase correspondingly until substitute materials are satisfactorily developed.* During both FY 1952 and FY 1953 vigorous research will necessarily be exerted on process improvements, new process development and properties of Po 210.

	<u>F. Y. 1951</u>	<u>F. Y. 1952</u>	<u>F. Y. 1953</u>
Actinium 227 Research Costs	\$ 356,000	\$ 367,500 240,200	\$ 396,500 330,200
Scientific Man-Years	22.0	21.0 18.5	22.0 17.5

During FY 1951, a process was developed through laboratory scale for separating radium from the Mallinckrodt K-65 residues. This process was designed for high-level output, efficiency, and low operating costs. For actinium 227 (1) design work was completed on a pilot plant building structure, mechanical equipment, and laboratory apparatus for the pilot plant. Some of the mechanical equipment was completed and the processing operations partially studied with "cold" runs.

In FY 1952 for actinium 227 there are the objectives of (1) completing and operating a plant for low level production of Actinium 227 from irradiated radium important to supply the actinium initiator development work at both Mound and Los Alamos with refined material, and (2) a comprehensive survey of new Actinium 227 concentration methods important if production levels are required to rise appreciably.

In FY 1953, there will be continued effort on process improvement, new process development, and research on the properties of Actinium 227.

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Schedule 12a

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Area

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Program

Research and Development

	<u>F. Y. 1951</u>	<u>F. Y. 1952</u>	<u>F. Y. 1953</u>
Polonium 208 Research	\$ 72,500	\$ 178,500	\$ 252,250
Scientific Man-Years	4.5	10.0 11.0	11.0 9.0

During FY 1952, processing of bismuth targets from Oak Ridge National Laboratory will be completed with the objective of obtaining ~~one~~ one curie of this material for research purposes at Los Alamos. (2) (3) Research work associated with the target design of the Mark I accelerator will be essentially completed. (4) A process for handling the targets from the Mark I will be developed. *4

In FY 1953, there will be a continued effort on process improvement, new process development, and research on the properties of ~~actinium-227~~ Polonium 208. *5

	<u>F. Y. 1951</u>	<u>F. Y. 1952</u>	<u>F. Y. 1953</u>
Actinium-Items Costs	\$ 89,000	\$ 175,000	\$ 198,250
Scientific Man-Years	5.5	10.0 16.7	11.0 27.6

During FY 1951 (1) a process was conceived and developed for moving metallic lanthanum into place in an initiator by using a Shaw ion source. (2) Preliminary work was begun on several other promising processes. The most promising of these are the active metal processes, particularly the calcium reduction of bromide salts and the lithium reduction of fluoride salts.

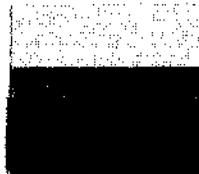
In FY 1952 an actinium initiator preparation process will be selected and developed to production scale. *6

In FY 1953 there will be continued effort on process improvement and new process development to insure more efficient production.

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4000 - Reactor Development



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Detailed Justification for Operating Costs

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4000
Program

General Reactor Research and Development

		F. Y. 1951	F.Y. 1952	F.Y. 1953
4531 Fuel Elements and Fuel Media ...	\$	0	\$ 108,600 105,000	\$ 200,000 228,000
Scientific Man-Years		0	6.5 6.0	12.5

The homogeneous type reactor offers most attractive possibilities for both the production of power and the breeding of fissionable material. The Homogeneous Reactor Experiment (HRE) has been conceived to provide the general feasibility of operation of this type reactor. The development of satisfactory fuel systems, whether solutions or slurries, is the most important immediate problem in this field. Very little data has been obtained on the physical properties of uranyl salt solutions even under normal conditions. It now becomes urgent to have these data for reactor operational calculations.

In FY 1952 the program will be directed toward the measurement of surface tension, density, and viscosity of uranyl sulfate, uranyl fluoride, and uranyl nitrate solutions in concentrations up to 500 grams per liter at a temperature range of from 200 to 300°C, and from atmospheric pressure to 2000 pounds per square inch. Uranyl sulfate will be considered first with the studies on the other salts to follow.

In FY 1953 the measurements on surface tension, density, and viscosity will be extended to uranyl fluoride and uranyl nitrate. Some work on the vapor pressure of uranyl sulfate will also be done in FY 1953. ~~The solubility of the gases oxygen and hydrogen in uranyl sulfate solutions will be treated as well as~~ Studies of thermal conductivity and oxidation - reduction potentials, ^{will be made} Work on physical measurements on thorium slurries will begin.

The FY 1952 costs are based on man-count times cost-per-man calculations. The man-counts are derived from projected program needs and the cost-per-man is the October 1951 figure for the research activities in the H.R.E. Program at Mound (\$17,000). The FY 53 costs likewise are based on man-count times cost-per-man calculations. The man-counts are derived from projected program needs and the cost-per-man is the October 1951 figure increased to take care of salary increases and associated items (\$18,200).

In FY 1952 the major effort will be to set up equipment to measure surface tension, density, and viscosity of uranyl sulfate solutions and to begin such measurements at elevated temperatures and pressures.

In FY 1953 emphasis will continue on uranyl sulfate solution measurements and the same measurements will be performed on other uranium and thorium solutions and slurries. Other physical measurements will also be stressed. *This change in emphasis will result in an increase of \$ 123,000 for FY 1953 over FY 1952.*

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Activity No.	Activity	F. Y. 1951	F. Y. 1952	F. Y. 1953
(1)	(2)	(3)	(4)	(5)
4500	<u>General Reactor Research and Development:</u>			
4580	Chemical Processing, Waste Disposal Process and Treatment, Sanitary Engineering:			
4582	Waste Treatment Systems	\$ 236,930	\$ 272,000	\$ 286,000
4580	Total Chemical Processing, Waste Disposal Processes & Treatment, Sanitary Engineering	236,930	272,000 118,000	286,000
	Total General Reactor Research & Development	236,930	272,000 118,000	286,000
	Total Program 4000	\$ 236,930	\$ 272,000 118,000	\$ 286,000

U. S. Atomic Energy Commission

Detailed Justification for Operating Costs

Schedule 12a

Dayton
Area

4000
Program

General Reactor Research and Development

	<u>F. Y. 1951</u>	<u>F. Y. 1952</u>	<u>F. Y. 1953</u>
4582 Waste Treatment Systems Costs	\$ 236,930	\$ 272,000	\$ 226,000
Scientific Man-Years	12.5	14.5	15.0
		225,000 13.0	118,000 6.5

A research project aimed at the development of techniques for treating radio-chemical waste solutions has been maintained at Mound Laboratory since FY 1949. Objectives of the program have been to study the behavior of fission products and trace amounts of uranium and plutonium in all types of waste solutions and to develop co-precipitation and scavenging techniques for removal of these substances for application to specific problems at other sites.

In FY 1951 the major accomplishment was the laboratory scale development of a co-precipitation process for scavenging fission products and plutonium from liquid waste streams resulting from the Hanford bismuth phosphate process and from the ORNL TEP Metal Recovery Process. The waste process utilizes the step-wise treatment with ferrous sulfide, ferrous hydroxide and manganese dioxide. Other accomplishments are: establishing process feasibility of concentrating local liquid wastes containing fission products by evaporation, design of a plant size evaporator unit, and development of improved analytical techniques for fission products.

In FY 1952 the program will be directed toward studies of liquid waste from the Purex process which will be used at the Savannah River Site. Laboratory development will be continued for the purpose of defining present co-precipitation and scavenging techniques and demonstration tests will be run on a scale sufficiently large to establish process feasibility. Work will continue on the improvement of analytical methods for fission product determinations. Liaison will be established with the DuPont Company in this development.

*2 In FY 1953 emphasis will continue on the establishment of process feasibility for handling liquid waste resulting from the Purex process. It is expected that other liquid waste problems will arise which this group will be qualified to attack. The group will continue on an approximately uniform level as indicated above. The man year count for FY 1951 does not represent the full strength, since some personnel were assigned at times to various plant operating problems.

The FY 1951 costs are based upon the FY 1951 Fourth Quarter Review. The man-count figures are extrapolations of the March 1951 experience. The FY 1952 costs are based on man-count times cost-per-man calculations. The man-counts are derived from projected program needs and the cost-per-man is the January 1951 figure for the research activities in the Reactor Program at Mound (\$18,500). The FY 1953 costs likewise are based on man-count times cost-per-man calculations. The man-counts are derived from projected program needs and the cost-per-man is the January 1951 figure increased three percent to take care of salary increases and associated items (\$19,055).

In FY 1952 the major effort will be refinements to the co-precipitation scavenging process. Operating variables will have to be determined, and process feasibility operation will be started after operators have been trained. When this is completed, laboratory work will be started on wastes from the Purex process. Work will continue on improvement to chemical analytical methods for fission product determinations.

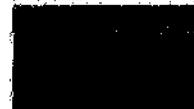
In FY 1953 emphasis will continue on process feasibility work, as related to waste streams which may become available from new processes, including the Materials Testing Reactor.

with the middle of FY 1953 being the target time for completing the work.

U. S. Atomic Energy Commission

DAYTON AREA

6000 - Biology & Medicine



[REDACTED]
U. S. Atomic Energy Commission

Summary of Operating Costs

Schedule 12

Dayton
Area

6000
Program

Activity No. (1)	Activity (2)	F. Y. 1951 (3)	F. Y. 1952 (4)	F. Y. 1953 (5)
6500	<u>Biophysics Research:</u>			
6530	Biophysics Research - General	\$ 383,550	\$ 495,000	\$ 630,000
	Total Biophysics Research	<u>383,550</u>	<u>495,000</u>	<u>630,000</u>
	Total Program 6000	<u>\$ 383,550</u>	<u>\$ 495,000</u>	<u>\$ 630,000</u>

U. S. Atomic Energy Commission

Schedule 12a

Dayton
Area

Detailed Justification for Operating Costs

6000
Program

Biophysics Research

	<u>F. Y. 1951</u>	<u>F. Y. 1952</u>	<u>F. Y. 1953</u>
<u>6530 Biophysics Research - General ...</u>	\$ 383,550	\$ 495,000	\$ 630,000

The Biophysics Research Program at Mound Laboratory has for its purpose the determination and evaluation of health hazards to which the operating personnel are exposed and the development of procedures for protection. During FY 1951 the work concern was limited to polonium and biological studies. These studies were confined to acute and chronic studies of polonium poisoning. During FY 1952 and FY 1953 the Laboratory will be processing actinium, for which no information on health hazards exists. The metabolism, toxicology, and pathology of actinium itself must be studied in the same way that polonium is now being studied and several other chemical elements are produced in the decay chain of actinium, each with its own peculiar chemical and radiological properties and the biological effects of each of these must be evaluated. The polonium studies will be continued because polonium will continue to be used for some years and the effects of chronic polonium exposures are still unknown. During FY 1952 initial quantities of actinium have become available and the program will be expanded in FY 1953 as more actinium becomes available. The studies of the chronic effects of polonium in large animals has further increased the program cost in FY 1952 and FY 1953 (as indicated in the form 189's).

The program embodies both acute and chronic poisoning studies with the latter being more important, especially in the case of the long lived actinium.

Many of the acute and sub-acute studies on polonium necessary for intelligent planning of the chronic experiments have been completed and the chronic studies have begun. In FY 1952 it is planned to continue the chronic polonium studies at a little greater than their present rate, while beginning the study of the effects of multiple injections. Studies on the cellular effects of polonium are shifting from the broad survey type of experiment to intensive, specialized, basic studies by senior research personnel. Also in FY 1952 will be added the skeleton of two new projects involving actinium. (It has been anticipated that this would occur in FY 1951; however, difficulties in staff procurement prevented this.) It is estimated that it will require 33 man years of work to carry out all of these projects. As of April 1, 1951, 31 of these 33 have been hired and replies are awaited from the other two. On the basis of current experience with a twenty-six (26) man staff, the annual cost can be expected to rise from the amount of \$383,550 in FY 1951 to a figure of \$495,000 in FY 1952. To fill out the actinium projects established in FY 1952 (in skeleton form) will require 8 additional men in FY 1953 which will increase the operating cost to approximately \$63,000 in that year.

U. S. Atomic Energy Commission

DAYTON AREA

Stores Inventories and Inventory Changes



U. S. Atomic Energy Commission

Schedule 14A

Analysis of Stores Inventories and Inventory Changes

Monsanto Chemical Company

Dayton
Area

(1)	F. Y. 1950 (2)	F. Y. 1951 (3)	F. Y. 1952 (4)	F. Y. 1953 (5)
1. Inventory at close of year:				
a. Current Use and Standby Stores Inventory	\$ 1,122,630	\$ 1,192,956	\$ 1,675,000	\$ 2,100,000
b. Excess	0	0	0	0
c. Total	1,122,630	1,192,956	1,675,000	2,100,000
2. Increase (✓) or decrease (-) during the year	XXXXX	✓ 70,326	✓ 482,044	✓ 425,000
Add:				
3. Inventory decreases including AEC excess and surplus disposal not charged to Programs 1000 to 8000	XXXXX	✓ 63,000	0	0
Deduct:				
4. Inventory increases (adjustments not credited to Programs 1000 to 8000).....	XXXXX	- 198,000	0	0
5. Net increase (✓) or net decrease (-) to be funded	XXXXX	- 64,674	✓ 482,044	✓ 425,000
6. Issues for use during year from current stores	\$ 564,866	\$ 585,000	\$ 950,000	\$ 1,250,000
7. Ratio of issues to closing current stores inventory .....	.50	.49	.57	.60

U. S. Atomic Energy Commission

Analysis of Stores Inventories and Inventory Changes

Schedule 14A
Monsanto Chemical Company

Dayton
Area

The stores inventory total is expected to increase during FY 1952 to reflect a net change, / \$ 482,044. The reasons for these increases are (1) stockpiling 50 tons of bismuth, in accordance with the basic assumptions, at an estimated cost of \$275,000, and (2) increasing the level of inventories maintained at Scioto Laboratory by approximately \$300,000, which is also predicated on the basic assumptions of going into full operations during FY 1952. The total inventory at February 28, 1951, amounted to \$1,200,000. It is anticipated that in FY 1952 issues will equal acquisitions. A program is now under way to dispose of obsolete and excess items and it now is believed such disposals in FY 1952 will approximate \$100,000, resulting in a year-end position of \$1,675,000 as total inventories of which \$500,000 will be physically located at Scioto and \$1,175,000 at Mound Laboratory.

The estimated total inventories at the end of FY 1953 reflect an increase over FY 1952 amounting to / \$425,000. Acquisitions and issues are expected to be equal during the year. It is expected the inventory in the amount of \$495,000 for 90 tons of bismuth to be stockpiled during the year in accordance with the basic assumptions. It is expected, however, this increase will be offset by a reduction of inventories by further disposal of obsolete and excess items under the program of continuous inventory screening and examination.

Estimates are not reflected in FY 1952 and FY 1953 for inventory increases or decreases not charged or credited to Programs 1000 to 8000. It is believed that such adjustments as might occur will be relatively minor due to a vigorous program started late in FY 1950 and continued throughout FY 1951 to pull supplies in outlying warehouses into central warehouse stocks.

The ratio of issues of closing current inventory continues to be low during FY 1952 and FY 1953. This is to a great extent the result of stockpiling bismuth during both years considerably above the normal inventory level requirements.

U. S. Atomic Energy Commission

DAYTON AREA

Special Reactor Materials Inventories and Inventory Changes

U. S. Atomic Energy Commission

Summary of Special Reactor Materials Inventories and Inventory Changes

Schedule 15

Monsanto Chemical Company

Dayton
Area

(1)	F.Y. 1950		F.Y. 1951		F.Y. 1952		F.Y. 1953	
	Quantity (2)	Cost (3)	Quantity (4)	Cost (5)	Quantity (6)	Cost (7)	Quantity (8)	Cost (9)
1. Inventory Year End Position								
a. Beryllium								
(1) Ore	0	0	0	0	0	0	0	0
(2) Oxide	0	0	0	0	0	0	0	0
(3) Pebble	0	0	0	0	0	0	0	0
(4) Vacuum Cast Billets	0	0	0	0	0	0	0	0
(5) Shapes	125.6#	\$ 11,484	126.1#	\$ 11,521	20.1#	\$ 1,832	58.1#	\$ 5,305
(6) Work in Process	0	0	0	0	0	0	0	0
(7) Scrap	0	0	0	0	0	0	0	0
(8) Total Beryllium	125.6#	\$ 11,484	126.1#	\$ 11,521	20.1#	\$ 1,832	58.1#	\$ 5,305
b. Zirconium								
(1) Crystal Bar	0	0	0	0	0	0	0	0
(2) Ingot	0	0	0	0	0	0	0	0
(3) Sponge	0	0	0	0	0	0	0	0
(4) Cl4, Refined	0	0	0	0	0	0	0	0
(5) O2, Refined	0	0	0	0	0	0	0	0
(6) Cl4, Commercial	0	0	0	0	0	0	0	0
(7) Sheets	25.5 GM	8	25.5 GM	8	0	0	0	0
(8) Shapes	0	0	0	0	0	0	0	0
(9) Work in Process	0	0	0	0	0	0	0	0
(10) Scrap	0	0	0	0	0	0	0	0
Total Zirconium	25.5 GM	\$ 8	25.5 GM	\$ 8	0	0	0	0
c. Hafnium								
d. Heavy Water								
e. Reactor Graphite								
f. Total	XXX	\$ 11,492	XXX	\$ 11,529	XXX	\$ 1,832	XXX	\$ 5,305
2. Increase or Decrease	XXX	XXX	XXX	37	XXX	- 9,697	XXX	3,473
3. Non-Fund Adjustments	XXX	XXX	XXX	0	XXX	0	XXX	0
4. Net Change	XXX	XXX	XXX	37	XXX	- 9,697	XXX	3,473
Adjustment to Agree with Financial Plan				- 2,639				
Revised Change				- 2,602				

Dayton

Area

BERYLLIUM

Product

U. S. Atomic Energy Commission

Special Reactor Material Inventory Transactions

Schedule 15a
Monsanto Chemical Company

(1)	F. Y. 1951		F. Y. 1952		F. Y. 1953	
	Quantity (2)	Cost (3)	Quantity (4)	Cost (5)	Quantity (6)	Cost (7)
1. Materials Available						
a. Beginning Inventory (7/1).....	125.6#	\$ 11,484	126.1#	\$ 11,521	20.1#	\$ 1,832
b. Production	0	0	0	0	0	0
c. Transfers from Others	50 #	2,742	20.0#	1,828	68.0#	6,215
d. Other (detail)	0	0	0	0	0	0
e. Total Materials Available	<u>155.6#</u>	<u>14,226</u>	<u>146.1#</u>	<u>13,349</u>	<u>88.1#</u>	<u>8,047</u>
2. Issues						
a. For Research	12.5#	1,145	20.0#	1,829	30.0#	2,742
b. For Construction	0	0	0	0	0	0
c. For Processing	0	0	0	0	0	0
d. Transfers to Others .....	.5#	41	106.0#	9,688	0	0
e. Other (detail)	16.5#	1,519	0	0	0	0
f. Total Issues	<u>29.5#</u>	<u>2,705</u>	<u>126.0#</u>	<u>11,517</u>	<u>30.0#</u>	<u>2,742</u>
3. Closing Inventory (6/30)	<u>126.1#</u>	<u>11,521</u>	<u>20.1#</u>	<u>1,832</u>	<u>58.1#</u>	<u>5,305</u>
4. Inventory Change	<u>/.5#</u>	<u>\$/ 37</u>	<u>- 106.0#</u>	<u>\$- 9,689</u>	<u>/.38.0#</u>	<u>\$/ 3,473</u>
Adjustment to agree with Financial Plan		- 2,639				
Revised Change		<u>\$- 2,602</u>				

Dayton
Area
ZIRCONIUM
Product

[REDACTED]

U. S. Atomic Energy Commission
Special Reactor Material Inventory Transactions

Schedule 15a
Monsanto Chemical Company

(1)	F. Y. 1951		F. Y. 1952		F. Y. 1953	
	Quantity (2)	Cost (3)	Quantity (4)	Cost (5)	Quantity (6)	Cost (7)
1. Materials Available						
a. Beginning Inventory (7/1)	25.5 GM	\$ 8.00	25.5 GM	\$ 8.00	0	0
b. Production	0	0	0	0	0	0
c. Transfers from Others	0	0	0	0	0	0
d. Other (detail)	0	0	0	0	0	0
e. Total Materials Available	<u>25.5 GM</u>	<u>\$ 8.00</u>	<u>25.5 GM</u>	<u>\$ 8.00</u>	<u>0</u>	<u>0</u>
2. Issues						
a. For Research	0	0	0	0	0	0
b. For Construction	0	0	0	0	0	0
c. For Processing	0	0	0	0	0	0
d. Transfers to Others	0	0	25.5 GM	8.00	0	0
e. Other (detail)	0	0	0	0	0	0
f. Total Issues	<u>0</u>	<u>0</u>	<u>25.5 GM</u>	<u>8.00</u>	<u>0</u>	<u>0</u>
3. Closing Inventory (6/30)	<u>25.5 GM</u>	<u>\$ 8.00</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
4. Inventory Change	<u>0</u>	<u>\$ 0</u>	<u>-25.5 GM</u>	<u>\$- 8.00</u>	<u>0</u>	<u>\$ 0</u>

U. S. Atomic Energy Commission

DAYTON AREA

Special Materials Inventories and Inventory Changes



U. S. Atomic Energy Commission

Schedule 16

Dayton
Area

Summary of Special Materials Inventories and Inventory Change

	F. Y. 1950	F. Y. 1951	F. Y. 1952	F. Y. 1953
1. Materials Available				
a. Beginning Inventory (7/1).....	\$ 105,482	\$ 98,011	\$ 266,800	\$ 461,800
b. Production	0	0	0	0
c. Purchase	17,027	11,580	31,000	31,025
d. Transfers from others	0	180,000	180,000	0
e. Other	0	114,979	0	0
f. Total Available	<u>122,509</u>	<u>404,570</u>	<u>477,800</u>	<u>492,825</u>
2. Issues				
a. For Research within Area	20,186	16,740	16,000	31,025
b. Transfers to Others	4,312	65,688	0	0
c. Other	0	55,342	0	0
d. Total Issues	<u>24,498</u>	<u>137,770</u>	<u>16,000</u>	<u>31,025</u>
3. Closing Inventory (6/30)	<u>98,011</u>	<u>266,800</u>	<u>461,800</u>	<u>461,000</u>
4. Change in Inventory (✓) or (-)	<u>XXX</u>	<u>✓ 168,789</u>	<u>✓ 195,000</u>	<u>0</u>
5. Non-Fund Adjustments	<u>XXX</u>	<u>0</u>	<u>XXX</u>	<u>XXX</u>
6. Net Change in Inventory (✓) or (-)	<u>XXX</u>	<u>✓ 168,789</u>	<u>✓ 195,000</u>	<u>\$ 0</u>

Dayton
Area
PLATINUM
Commodity

U. S. Atomic Energy Commission

Analysis of Special Materials Inventories and Inventory Changes

Schedule 16a
Monsanto Chemical Company

(1)	F.Y. 1950		F.Y. 1951		F.Y. 1952		F.Y. 1953	
	Quantity (2)	Cost (3)	Quantity (4)	Cost (5)	Quantity (6)	Cost (7)	Quantity (8)	Cost (9)
1. Materials Available								
a. Beginning Inventory (7/1)	32,943 GM	\$ 98,499	32,206 GM	\$ 96,295	29,077 GM	\$ 85,000	34,077 GM	\$ 100,000
b. Production								
c. Purchase	5,692 GM	17,019	3,585 GM	10,756	10,000 GM	30,000	10,000 GM	30,000
d. Transfers from Others								
e. Other	0	0	40,173 GM	112,840	0	0	0	0
f. Total Available	<u>38,635 GM</u>	<u>115,518</u>	<u>75,964 GM</u>	<u>219,891</u>	<u>39,077 GM</u>	<u>115,000</u>	<u>44,077 GM</u>	<u>130,000</u>
2. Issues								
a. For Research within Area	6,429 GM	19,223	4,782 GM	14,299	5,000 GM	15,000	10,000 GM	30,000
b. Transfers to Others	0	0	22,549 GM	65,250	0	0	0	0
c. Other	0	0	19,556 GM	55,342	0	0	0	0
d. Total Issues	<u>6,429 GM</u>	<u>19,223</u>	<u>46,887 GM</u>	<u>134,891</u>	<u>5,000 GM</u>	<u>15,000</u>	<u>10,000 GM</u>	<u>30,000</u>
3. Closing Inventory (6/30)	32,206 GM	96,295	29,077 GM	85,000	34,077 GM	100,000	34,077 GM	100,000
4. Change in Inventory (✓) or (-)	<u>XXX</u>	<u>XXX</u>	<u>-3,129 GM</u>	<u>- 11,295</u>	<u>✓5,000 GM</u>	<u>✓ 15,000</u>	<u>0</u>	<u>0</u>
5. Non-Fund Adjustments	<u>XXX</u>	<u>XXX</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
6. Net Change in Inventory (✓) or (-)	<u>XXX</u>	<u>XXX</u>	<u>-3,129 GM</u>	<u>\$- 11,295</u>	<u>✓5,000 GM</u>	<u>\$/ 15,000</u>	<u>0</u>	<u>\$ 0</u>

Dayton
Area
PLATINUM
Commodity

U. S. Atomic Energy Commission

Analysis of Special Materials Inventories and Inventory Changes

Schedule 16a
Monsanto Chemical Company

During FY 1951 item 1e Other, in the amount of \$112,840 represents an inventory increase for items charged off to expense in prior years and which was recovered during this fiscal year as a part of warehouse stocks. The major portion of this (\$92,471) was scrap and the remainder (\$20,369) consisted of assorted gauges now obsolete for the needs of this facility. Accordingly, these amounts plus some items previously in the inventory were declared excess and disposal was effected, being reflected in item 2b, Transfers to Others (\$65,250) and 2c Other, representing cash sales (\$53,292). In addition 2c Other, contains an inventory adjustment (\$2,050) made as the result of physical inventory.

During FY 1952 acquisitions are expected to exceed issues slightly. This is due to replenishing some gauges to more normal requirement levels. It is expected this will increase the FY 1952 ending inventory \$ 15,000 over FY 1951. Increased issues in FY 1952 is expected due to increase in production at Mound Laboratory and started up of operations of Scioto Laboratory.

The acquisitions and issues in FY 1953 are expected to be equal resulting in no change in inventory level at year end. Increased issues in FY 1953 over FY 1952 is expected as a result of further production increases at Mound and a full year of production operations at Scioto.

Dayton
 Area
 SILVER
 Commodity

U. S. Atomic Energy Commission

Analysis of Special Materials Inventories and Inventory Changes

Schedule 16a
 Monsanto Chemical Company

(1)	F.Y. 1950		F.Y. 1951		F.Y. 1952		F.Y. 1953	
	Quantity (2)	Cost (3)	Quantity (4)	Cost (5)	Quantity (6)	Cost (7)	Quantity (8)	Cost (9)
1. <u>Materials Available</u>								
a. Beginning Inventory (7/1)	20,200 GM	\$ 505	19,840 GM	\$ 496	24,000 GM	\$ 600	24,000 GM	\$ 600
b. Production								
c. Purchase	160 GM	4	4,840 GM	121	2,000 GM	50	3,000 GM	75
d. Transfers from Others								
e. Other								
f. Total Available	20,360 GM	509	24,680 GM	617	26,000 GM	650	27,000 GM	675
2. <u>Issues</u>								
a. For Research within Area	520 GM	13	680 GM	17	2,000 GM	50	3,000 GM	75
b. Transfers to Others								
c. Other								
d. Total Issues	520 GM	13	680 GM	17	2,000 GM	50	3,000 GM	75
3. Closing Inventory (6/30)	19,840 GM	496	24,000 GM	600	24,000 GM	600	24,000 GM	600
4. Change in Inventory (Δ) or (-)	XXX	XXX	Δ4,160 GM	Δ 104	0	0	0	0
5. Non-Fund Adjustments	XXX	XXX	0	0	XXX	XXX	XXX	XXX
6. Net Change in Inventory (Δ) or (-)	XXX	XXX	Δ4,160 GM	Δ 104	0	0	0	0

Dayton
Area
SILVER
Commodity


U. S. Atomic Energy Commission

Analysis of Special Materials Inventories and Inventory Changes

Schedule 16a (Continued)
Monsanto Chemical Company

No change is predicted for FY 1952 and FY 1953 Year-end levels over FY 1951. It is expected, however, that acquisition and issues during the latter two years will be considerable larger, particularly in FY 1953, as Scioto Laboratory goes into full operations.

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U. S. Atomic Energy Commission

Analysis of Special Materials Inventories and Inventory Changes

Schedule 16a
Monsanto Chemical Company

Dayton
Area
GOLD
Commodity

(1)	F.Y. 1950		F.Y. 1951		F.Y. 1952		F.Y. 1953	
	Quantity (2)	Cost (3)	Quantity (4)	Cost (5)	Quantity (6)	Cost (7)	Quantity (8)	Cost (9)
1. Materials Available								
a. Beginning Inventory (7/1)	5,733 GM	\$ 6,478	1,080 GM	\$ 1,220	1,062 GM	\$ 1,200	1,062 GM	\$ 1,200
b. Production								
c. Purchase	3.5GM	4	622 GM	703	840 GM	950	840 GM	950
d. Transfers from Others								
e. Other	0	0	184 GM	208	0	0	0	0
f. Total Available	<u>5,736.5GM</u>	<u>6,482</u>	<u>1,886 GM</u>	<u>2,131</u>	<u>1,902 GM</u>	<u>2,150</u>	<u>1,902 GM</u>	<u>2,150</u>
2. Issues								
a. For Research within Area	840 GM	950	436 GM	493	840 GM	950	840 GM	950
b. Transfers to Others	3,816 GM	4,312	388 GM	438	0	0	0	0
c. Other	0	0	0	0	0	0	0	0
d. Total Issues	<u>4,656 GM</u>	<u>5,262</u>	<u>824 GM</u>	<u>931</u>	<u>840 GM</u>	<u>950</u>	<u>840 GM</u>	<u>950</u>
3. Closing Inventory (6/30)	1,080.5GM	1,220	1,062 GM	1,200	1,062 GM	1,200	1,062 GM	1,200
4. Change in Inventory (A) or (-)	<u>XXX</u>	<u>XXX</u>	<u>- 18 GM</u>	<u>- 20</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
5. Non-Fund Adjustments	<u>XXX</u>	<u>XXX</u>	<u>0</u>	<u>0</u>	<u>XXX</u>	<u>XXX</u>	<u>XXX</u>	<u>XXX</u>
6. Net Change in Inventory (A) or (-)	<u>XXX</u>	<u>XXX</u>	<u>- 18 GM</u>	<u>- 20</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>

Dayton
Area
GOLD
Commodity

U. S. Atomic Energy Commission

Analysis of Special Materials Inventories and Inventory Changes

Schedule 16a (Continued)
Monsanto Chemical Company

During FY 1951, inventory adjustments were effected as follows:

\$208 was picked up in 1e, Other, in the materials available section, being offset by a credit to prior years Adjustment Account. \$438 is reflected in 2b, Transfers to Others, with a contra to current Account-Transfers for a shipment to U.S.A.E.C., New York on Shipping Document 21819.

The acquisition and issues during FY 1952 and FY 1953 are expected to be equal, resulting in no change in year end levels over FY 1951. Increased acquisitions and issues over FY 1951 is expected as a result of Scioto Operations and increased production.

Dayton
Area
RADIUM
Commodity

U. S. Atomic Energy Commission

Analysis of Special Materials Inventories and Inventory Changes

Schedule 16a
Monsanto Chemical Company

(1)	F.Y. 1950		F.Y. 1951		F.Y. 1952		F.Y. 1953	
	Quantity (2)	Cost (3)	Quantity (4)	Cost (5)	Quantity (6)	Cost (7)	Quantity (8)	Cost (9)
1. Materials Available								
a. Beginning Inventory (7/1)		\$ 0		\$ 0	30.00 GM	\$ 180,000	60.00 GM	\$ 360,000
b. Production		0		0	0	0	0	0
c. Purchase		0		0	0	0	0	0
d. Transfers from Others		0	30.00 GM	180,000	30.00 GM	180,000	0	0
e. Other		0	.32 GM	1,931	0	0	0	0
f. Total Available		0	30.32 GM	181,931	60.00 GM	360,000	60.00 GM	360,000
2. Issues								
a. For Research within Area		0	.32 GM	1,931	0	0	0	0
b. Transfers to Others		0	0	0	0	0	0	0
c. Other		0	0	0	0	0	0	0
d. Total Issues		0	.32 GM	1,931	0	0	0	0
3. Closing Inventory (6/30)		0	30.00 GM	180,000	60.00 GM	360,000	60.00 GM	360,000
4. Change in Inventory (A) or (-)		XXX	/30.00 GM	/180,000	/30.00 GM	/180,000	0	0
5. Non-Fund Adjustments		XXX	0	0	0	XXX	XXX	XXX
6. Net Change in Inventory (A) or (-)		XXX	/30.00 GM	/180,000	/30.00 GM	/180,000	0	0

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U. S. Atomic Energy Commission

Analysis of Special Materials Inventories and Inventory Changes

Schedule 16a (Continued)
Monsanto Chemical Company

Dayton
Area
RADIUM
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During FY 1951 it is expected that \$180,000 will be made available as a transfer from Other-Chicago and New York Operations Office. Also an inventory adjustment in the amount of \$1,931 is reflected as the result of a physical inventory. This was charged to expense in prior years and was charged back to warehouse stocks before being charged out for Research within the Area.

The inventory level is expected to increase during FY 1952. However, the magnitude of the change, which cannot be predicted at this time, depends on future developments and the success of converting Radium to Actinium 227.

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U. S. Atomic Energy Commission

DAYTON AREA

Summary of Plant and Equipment Costs Obligated and Costs Incurred



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U. S. Atomic Energy Commission

Summary of Plant and Equipment Costs Obligated and Costs Incurred

Schedule 32

Dayton
Area

Project (1)	Total Estimated Cost (2)	Costs Obligated					Costs Incurred				
		Prior to 6-30-50 (3)	F. Y. 1951 (4)	F. Y. 1952 (5)	F. Y. 1953 (6)	After F. Y. 1953 (7)	Prior to 6-30-50 (8)	F. Y. 1951 (9)	F. Y. 1952 (10)	F. Y. 1953 (11)	After F. Y. 1953 (12)
Weapons Construction	\$33,828,398	\$31,276,754	\$ 275,000	\$2,276,644	\$ 0	\$ 0	\$30,652,413	\$ 732,841	\$1,401,500	\$ 901,644	\$ 140,000
Reactor Development Construction	173,778	18,778	0	155,000	0	0	11,469	7,309	95,000	30,000	30,000
Biology & Medicine Construction	320,000	0	20,000	80,000	220,000	0	0	20,000	80,000	120,000	100,000
Undistributed Construction Costs	0	0	0	0	0	0	0	0	0	0	0
Civil Defense	200,000	0	0	200,000	0	0	0	0	100,000	100,000	0
Total Construction	34,522,176	31,295,532	295,000	2,711,644	220,000	0	30,663,882	760,150	1,676,500	1,151,644	270,000
Equipment Not Included in Construction Projects	1,235,809	174,489	563,000	89,518	408,802	0	0	198,159	628,848	408,802	0
Total Plant and Equipment	\$35,757,985	\$31,470,021	\$ 858,000	\$2,801,162	\$ 628,802	\$ 0	\$30,663,882	\$ 958,309	\$2,305,348	\$1,560,446	\$ 270,000

U. S. Atomic Energy Commission

DAYTON AREA

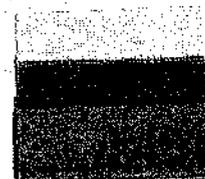
Obligations and Costs for Construction Projects



U. S. Atomic Energy Commission

DAYTON AREA

9300 Weapons



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U. S. Atomic Energy Commission

Schedule 33

Dayton
Area

Obligations and Costs for Construction Projects

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Proj. No.	Project	Total Estimated Cost	Costs Obligated				Costs Incurred					
			Prior to 6-30-50	F.Y. 1951	F.Y. 1952	F.Y. 1953	After F.Y. 1953	Prior to 6-30-50	F.Y. 1951	F.Y. 1952	F.Y. 1953	After F.Y. 1953
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
3-242-												
9005	Semi-Works Building	\$ 495,600	\$ 470,600	\$ 25,000	\$ 0	\$ 0	\$ 0	\$ 11,373	\$ 484,227	\$ 0	\$ 0	\$ 0
0002	Misc. Constr., Mound Lab. ...	233,972	145,972	68,000	20,000	0	0	52,019	161,953	20,000	0	0
0005	Mech. Decanner - "T" Bldg., Mound	60,000	8,000	0	52,000	0	0	0	8,000	52,000	0	0
0006	Bismuth Recovery Facilities, Mound	135,000	5,000	0	130,000	0	0	0	5,000	25,000	105,000	0
1001	Cafeteria, Scioto Laboratory.	311,092	0	0	311,092	0	0	0	0	150,000	161,092	0
1003	Isolated Laboratory, Scioto .	475,552	0	0	475,552	0	0	0	0	240,000	235,552	0
1004	Process Lines and Related Equipment, Scioto Lab.	215,000	0	0	215,000	0	0	0	0	215,000	0	0
1005	Modification of Steam Plant & Minor Alterations of Other Facilities, Scioto Lab. .	170,000	0	170,000	0	0	0	0	3,500	66,500	100,000	0
1006	Minor Plant Alterations & Improvements, Mound	280,000	0	0	280,000	0	0	0	0	280,000	0	0
1007	Incinerator	190,000	0	12,000	178,000	0	0	0	12,000	178,000	0	0

add 4000 in FY 1951 from
Minor Plant Alterations
1006 above

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U. S. Atomic Energy Commission

Obligations and Costs for Construction Projects

Schedule 33

Dayton
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Sub-Program

Proj. No.	Project	Total Estimated Cost	Costs Obligated					Costs Incurred				
			Prior to 6-30-50	F.Y. 1951	F.Y. 1952	F.Y. 1953	After F.Y. 1953	Prior to 6-30-50	F.Y. 1951	F.Y. 1952	F.Y. 1953	After F.Y. 1953
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
3-242-												
2001	Minor Alterations & Other Improvements, Scioto	\$ 50,000	\$ 0	\$ 0	\$ 50,000	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 50,000	\$ 0
2002	Mod. of Process Lines & Other Plant Alterations & Improvements, Mound	100,000	0	0	100,000	0	0	0	0	0	100,000	0
2003	Pilot Plant and Lab. for Actinium Items, Mound	150,000	0	0	150,000	0	0	0	0	75,000	75,000	<i>Revised</i> 0
2004	Metal Distillation Pilot Units, Mound Laboratory	65,000 100,000	0	0	100,000	0	0	0	0	100,000	0	<i>Mc Ewen</i> 0
2006	Master Slave Manipulator and Related Equip., Mound Lab. .	65,000	0	0	65,000	0	0	0	0	0	65,000	<i>Following</i> 0
2007	Metal Distillation Units, "T" Bldg., Mound	150,000	0	0	150,000	0	0	0	0	0	10,000	140,000
Total, Active Projects		\$ 3,181,216	\$ 629,572	\$ 275,000	\$2,276,644	\$ 0	\$ 0	\$ 63,392	\$ 674,680	\$1,401,500	\$ 901,644	\$ 140,000

U. S. Atomic Energy Commission

Obligations and Costs for Construction Projects

Schedule 33

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Area

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Proj. No.	Project	Total Estimated Cost	Costs Obligated				Costs Incurred					
			Prior to 6-30-50	F.Y. 1951	F.Y. 1952	F.Y. 1953	After F.Y. 1953	Prior to 6-30-50	F.Y. 1951	F.Y. 1952	F.Y. 1953	After F.Y. 1953
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
<u>Completed Projects</u>												
3-242-9001	Runnymede Demolition	\$ 48,139	\$ 48,139	\$ 0	\$ 0	\$ 0	\$ 0	\$ 43,551	\$ 4,588	\$ 0	\$ 0	\$ 0
9002	Mound Laboratory	23,275,526	23,275,526	0	0	0	0	23,274,195	1,331	0	0	0
9003	Scioto Laboratory	6,687,758	6,687,758	0	0	0	0	6,635,516	52,242	0	0	0
9004	Replacement of Equipment	635,759	635,759	0	0	0	0	635,759	0	0	0	0
Total, Completed Projects		30,647,182	30,647,182	0	0	0	0	30,589,021	58,161	0	0	0
Total 9300 - Construction		\$33,828,398	\$31,276,754	\$ 275,000	\$2,276,644	\$ 0	\$ 0	\$30,652,413	\$ 732,841	\$1,401,500	\$ 901,644	\$ 140,000

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Construction Project Data Sheet

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1. Name and Location of Project						2. Project No. 3-242-0005		
3. Status of Construction	Directive No. and Date	Start Date	Completion Date	Previous Cost Estimate Date	Current Cost Estimate Date 3-12-51	4. Obligations and Costs		
						Fiscal Year	Obligations	Costs
A. Engineering Design and Inspection		2-5-51	6-30-52		\$ 10,000	Prior to 6-30-50	\$ 8,000	\$ 0
B. Construction Costs		8-31-51	6-30-52					
1. Land Rights						1951	0	8,000
2. Improvements to Land						1952	52,000	52,000
3. Buildings						1953		
a. Building Structures					4,500	1954		
b. Building Service Equipment					9,000	1955		
4. Other Structures								
5. Utilities					30,800			
6. Equipment								
7. Removal Costs less Salvage								
C. Contingencies					5,700			
Total					\$ 60,000		\$ 60,000	\$ 60,000

5. Project Description:

Design, fabricate, and install two (2) mechanical slug decanners for use in operations cells in "T" Building. This includes batch baler for empty cans. Installation necessitates housing in varying level risk areas with airtight walls and air locks, additional ventilation for said areas fitted with local C.W.S. filters, extension of power, lighting, air and other services. Mechanical decanner consists of loading mechanism, hydraulic cylinders and power unit, controls, valves, relays, reduction units, baling mechanisms, power rolls, etc.,

incidental to mechanically decanning slugs and subsequent batch baling of empty cans. Unit will have an operating capacity of 120 slugs per hour.

6. Detailed Justification for Project:

The mechanical slug decanner is a replacement of the present inadequate equipment, also an expansion for increased production. The reaction

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Construction Project Data Sheet

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Sub-Program

1. Name and Location of Project Mechanical Decanner - "T" Bldg., Mound Laboratory

2. Project No. 3-242-0005

6. Detailed Justification for Project (Cont'd):

tube as presently installed and operated is a bottleneck to the operation of the cell. Two separate and successive operations are carried out in this tube. First, removal of the metal jackets from the irradiated slugs by dissolving in acid, and second, solution of the slugs proper. The decanner would perform the first operation outside the reaction tube and eliminate the cost of reagents.

Pilot plant model of mechanical decanner has been thoroughly tested (see MLM-485) and proven to be workable and practical. A plant unit is recommended for the following reasons: (1) Increased capacity of operations equipment, (a direct increase of 25% and a potential increase of 100% when coupled with other equipment changes); (2) Direct savings in reagent use; (3) Eliminate one activity handling problem by substitution of a simpler, more direct method; (4) Simplification of metal recovery work (now reaching pilot plant stage); (5) Eliminate the hazardous Hydrogen

handling, a good safety measure; and (6) Ultimate reduced maintenance costs, due to less operations equipment. All work, design, fabrication and installation to be by Monsanto, due to security and health physics requirements.

7. Details of Cost Estimate:

The cost estimate was prepared by Monsanto Chemical Company. The estimate is based in part on known equipment requirements and in part on approximate estimated additional equipment and installation costs. Part of work will be in high risk areas, necessitating high labor costs. The estimates are prepared on the following basis: Monsanto to do design of units and of installation; Monsanto to purchase all equipment and materials, and due to security requirements Monsanto to fabricate units and do all installation work.

ENR Index - March 1951, 258(1926-100)

8. Work to be performed on normal working schedule by Monsanto.

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Schedule 33a

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Construction Project Data Sheet

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Sub-Program

1. Name and Location of Project Bismuth Recovery Facilities - Mound Laboratory						2. Project No. 3-242-0006		
3. Status of Construction	Directive No. and Date	Start Date	Completion Date	Previous Cost Estimate Date	Current Cost Estimate Date 3-20-51	4. Obligations and Costs		
						Fiscal Year	Obligations	Costs
A. Engineering Design and Inspection		5-1-51	6-30-53			Prior to 6-30-50	\$ 5,000	\$ 0
B. Construction Costs		7-1-51	6-30-53					
1. Land Rights					\$ 13,500	1951	0	5,000
2. Improvements to Land						1952	130,000	25,000
3. Buildings						1953	0	105,000
a. Building Structures					38,000	1954		
b. Building Service Equipment						1955		
4. Other Structures								
5. Utilities					70,000			
6. Equipment								
7. Removal Costs less Salvage								
C. Contingencies					13,500			
Total					\$ 135,000		\$ 135,000	\$ 135,000

5. Project Description:

Pilot plant for project requires two areas. Part of "HH" Building to be adapted with minor alterations for decontamination of metal containing sludge. Part of the "SW" Building to be used for the actual metal recovery pilot plant. Pilot plant will include metal waste storage tanks, plating cell, melting furnace, slug casting equipment, instrumentation and be fitted with necessary services, ventilation, power, etc. Project to include allowance for alteration to pilot plant during process development. "HH" Building to be adapted after

completion of pilot plant work for installation of full scale metal recovery plant. Equipment will be similar to pilot plant, but of size and capacity commensurate with current operations rate.

6. Detailed Justification for Project:

Project is an expansion to include pilot plant and ultimately full scale plant program of bismuth metal recovery. (Production of new by-product).

U. S. Atomic Energy Commission

Construction Project Data Sheet

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Sub-Program

1. Name and Location of Project: Bismuth Recovery Facilities - Mound Laboratory

a. Project No. 3-242-0006

6. Detailed Justification for Project (Cont'd):

Bench scale research work is now practically completed on the approved bismuth metal recovery program. Further work requires pilot plant operation. Several years of operations at Mound Laboratory have resulted in large amounts (approximately 20 ton) of bismuth metal containing sludge now stored on the site. This sludge is grossly contaminated, but due to its strategic importance can and should be purified and reclaimed for further use. Pilot plant work is necessary before work on full scale plant is initiated. The full scale plant will produce material capable of being re-used directly for Mound operations work. This will decrease amounts of new metal required for operations. Preliminary estimates based on research work show that cost of recovered metal is little more than half the cost of new metal. The full scale plant will further eliminate handling and storage of hot metal wastes, as at present.

The work will be performed as follows: Monsanto to do design, procure or fabricate all equipment and materials, to make all alterations and

installations in connection with both pilot plant and full scale plant. Since work is totally in contaminated and restricted areas, the operating contractor is best fitted to carry out all phases of the project.

7. Details of Cost Estimate and Significant Costs:

The cost estimate was prepared by Monsanto Chemical Company. The estimate is approximate only and without design data. This estimate was based on projected research data, known equipment costs where available, and previous plant experience on projects. Work in high risk areas necessitates higher than normal labor costs.

ENR Index - March 1951, 258(1926-100)

8. All work to be by Monsanto on normal working schedule.

S. P. O. P. P.

U. S. Atomic Energy Commission
Construction Project Data Sheet

Schedule 33a

Dayton
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Sub-Program

1. Name and Location of Project Process Lines and Related Equipment, Scioto Laboratory						2. Project No. 3-242-1004		
3. Status of Construction	Directive No. and Date	Start Date	Completion Date	Previous Cost Estimate	Current Cost Estimate	4. Obligations and Costs		
				Date 5-25-50	Date 4-16-51	Fiscal Year	Obligations	Costs
A. Engineering Design and Inspection		7-1-51	6-30-53	\$ 20,000	\$ 25,000	Prior to 6-30-50		
B. Construction Costs						1951		
1. Land Rights						1952	\$ 215,000	\$ 215,000
2. Improvements to Land						1953		
3. Buildings						1954		
a. Building Structures						1955		
b. Building Service Equipment					10,000			
4. Other Structures					15,000			
5. Utilities					20,000			
6. Equipment		7-1-51	6-30-53	165,000	125,000			
7. Removal Costs less Salvage								
C. Contingencies		7-1-51	6-30-53	30,000	20,000			
Total				\$ 215,000	\$ 215,000			

5. Project Description:

Scioto Laboratory was constructed as a standby facility for Mound Laboratory. The production caves have been equipped for the separation of polonium and they must be modified for separation of actinium. Also, other minor modifications to existing equipment will be required.

6. Detailed Justification for Project:

Because of the production of new products, substitute material urchins, as prescribed by the basic assumptions, a major revamping of the presently installed polonium process at Scioto will be required. This will include the equipping of the production caves with recta-linear

S. P. O. P. P.

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U. S. Atomic Energy Commission
Construction Project Data Sheet

Schedule 33a

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Sub-Program

1. Name and Location of Project Process Lines and Related Equipment, Scioto Laboratory

2. Project No. 3-242-1004

6. Detailed Justification for Project (Cont'd):

remote control manipulators, special shielding windows, evaporation furnaces, slug can openers, special pumps, ion exchange samplers, etc. Also required will be special equipment for actinium distribution determination on urchin parts, actinium initiator fabrication equipment, automatic temperature controls, electronic plating controls, electric furnaces, and cave platforms and partitions. This can be considered an expansion because of production of new or different products. Very little replacement will be involved.

7. Details of Cost Estimate and Significant Costs:

Since process development has only recently been initiated, it is not feasible to attempt to secure price quotations at this time. The operating contractor, the Monsanto Chemical Company, has made the above estimates based on experience gained in equipping Mound Laboratory, as well as years of experience in process design in the industrial chemical field.

The greater portion of this work will be performed on contract with general contractors on piping and electrical work. Only such work of a highly technical nature and made necessary by security requirements will be performed by Monsanto personnel.

ENR Index - March 1951, 258(1926-100)

8. All work to be done by Monsanto on normal working schedule.

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 U. S. Atomic Energy Commission
 Construction Project Data Sheet

Schedule 33a

Dayton
 Area

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 Sub-Program

1. Name and Location of Project						2. Project No.		
Modification of Steam Plant & Minor Alteration - Scioto Laboratory						3-242-1005		
3. Status of Construction	Directive No. and Date	Start Date	Completion Date	Previous Cost Estimate	Current Cost Estimate	4. Obligations and Costs		
				Date 5-17-50	Date 4-16-51	Fiscal Year	Obligations	Costs
A. Engineering Design and Inspection		7-1-51	6-30-53	\$ 13,000	\$ 15,000	Prior to 6-30-50		
B. Construction Costs		7-1-51	6-30-53					
1. Land Rights						1951	\$ 170,000	\$ 3,500
2. Improvements to Land						1952	0	66,500
3. Buildings						1953	0	100,000
a. Building Structures				28,000	45,000	1954		
b. Building Service Equipment				10,000	65,000	1955		
4. Other Structures								
5. Utilities								
6. Equipment				55,000	25,000			
7. Removal Costs less Salvage								
C. Contingencies				24,000	20,000			
Total				\$ 130,000	\$ 170,000		\$ 170,000	\$ 170,000

5. Project Description:

This project consists of several parts, as follows:

a. Modification to Existing Boiler House: This project includes the addition of 2 bays to the structure to house an additional boiler, the installation of a new boiler, stoker, fans and associated equipment, the installation of coal and ash handling equipment, necessary new piping and rearrangement of existing pipe, and purchase and installation of new associated equipment by reason of

insufficient capacity of such equipment as chemical feed, condensate return, and feed water, etc. This project originally was scheduled for FY 1952 but has been deferred until FY 1953, in line with current scheduling.

b. Various modifications and alterations to Warehouses, Administration and other buildings, and changes in fencing and other plant facilities to meet the increased demand imposed in changeover from

U. S. Atomic Energy Commission

Construction Project Data Sheet

Schedule 33a

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Sub-Program

1. Name and Location of Project Modification of Steam Plant and Minor Alteration - Scioto Laboratory

2. Project No. 3-242-1005

5. Project Description (Cont'd):

"cold" standby to full operations in FY 1952.

c. This part cost covers the miscellaneous alterations and additions to various plant process and operating equipment. This will include minor changes to the Waste Disposal Plant, air conditioning and refrigeration systems and various other minor work order improvements.

standby to operations. These buildings were constructed during wartime conditions to meet the needs of a different type operations, but are considered adequate to meet the needs of standby. Upon going into operations, however, it will be necessary to effect considerable repairs and alterations to meet requirements. Also, modifications to the Administration Building will be necessitated in order to accommodate greater occupancy.

6. Detailed Justification for Project:

Fence changes, air conditioning and refrigeration system changes and changes in Waste Disposal Plant system will be required as a result of change from standby to operations.

It is expected that costs of these various additions, modifications and alterations will essentially be as follows:

This project is partly a replacement because of obsolescence and inadequacy, and partly an addition because of higher production level, addition of two other buildings, and due to changes in process since Scioto was constructed. Time of project is contingent on starting date of Scioto operations.

Modification to Boiler House	\$ 30,000
Boiler & Auxillary Equipment - 256 h.p.	40,000
Modification & Alteration to Adm. & Warehouse Bldgs	40,000
Fence Changes, approx. 3,000 ft., gates, etc.	10,000
Air Conditioning & Refrigeration Systems Changes ..	15,000
Changes in Waste Disposal Plant System	20,000
Other Misc. Capital Improvements	15,000
Total	<u>\$ 170,000</u>

When operations begin the addition of two new buildings and full load steam demands for the process will require additional capacity. The existing boilers are several years old, and when the site was rehabilitated under the original construction program, only minimum work of replacement and rehabilitation sufficient to operate the plant was done. When Scioto becomes an operating production unit, reserve capacity will be necessary to insure maintenance of schedules. Under the former concept of Scioto, as an emergency back-up for Mound, the minimum steam capacity was considered adequate.

Engineering work, design and inspection for all parts of the project are to be by Monsanto. Installation and construction of steam plant addition is to be by lump sum competitive contract. Other parts of the project, dependent on their estimated cost, security or other requirements, will be performed by Monsanto or subcontracted.

Various modifications and alterations to Warehouses and Administration Building will be required when the plant is converted from

U. S. Atomic Energy Commission

Construction Project Data Sheet

Schedule 33a

Dayton
Area

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Sub-Program

1. Name and Location of Project Modification of Steam Plant and Minor Alteration - Scioto Laboratory

2. Project No. 3-242-1005

7. Details of Cost Estimate:

The estimate is preliminary and approximate and was made by Monsanto. No comprehensive study has been made or design work done on the project. Expansion of the steam plant (265 h.p. boiler, stoker, fans, soot blower, etc.) will approximate \$40,000; building addition to house same will require approximately 40,000 cu.ft. which at the unit cost of \$0.75 per cu. ft. will approximate \$30,000. Other associated power-house equipment by reason of insufficient capacity may need to be replaced.

Changing from "cold standby" to full operation will necessitate modification to non-processing buildings and processing buildings to meet

changes in process, shop, and maintenance requirement which have become evident during operation of Mound Laboratory.

The total estimate is now higher than the amount in the previous submission by \$40,000. This is because of the addition of: (1) Air Conditioning and Refrigeration Systems changes, (2) Waste Disposal Plant System Changes, and (3) Miscellaneous Capital Improvements, totalling \$50,000 and which is offset by a decrease of \$10,000 in the estimate for Powerhouse facilities.

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8. All work to be carried out on normal working schedule.

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1. Name and Location of Project Minor Plant Alterations and Improvements - Mound						2. Project No. 3-242-1006		
3. Status of Construction	Directive No. and Date	Start Date	Completion Date	Previous Cost Estimate	Current Cost Estimate	4. Obligations and Costs		
				Date 5-17-50	Date 4-16-51	Fiscal Year	Obligations	Costs
A. Engineering Design and Inspection		7-1-51	6-30-52	\$ 19,000	\$ 26,500	Prior to 6-30-50		
B. Construction Costs								
1. Land Rights						1951		
2. Improvements to Land		7-1-51	6-30-52	28,300	30,000	1952	\$ 280,000	\$ 280,000
3. Buildings						1953		
a. Building Structures		7-1-51	6-30-52	60,000	50,000	1954		
b. Building Service Equipment		7-1-51	6-30-52	34,750	49,000	1955		
4. Other Structures		7-1-51	6-30-52		10,000			
5. Utilities		7-1-51	6-30-52	21,000	30,000			
6. Equipment					30,000			
7. Removal Costs less Salvage		7-1-51	6-30-52	7,950	22,500			
C. Contingencies		7-1-51	6-30-52	19,000	32,000			
Total				\$ 190,000	\$ 280,000			

5. Project Description:

This project covers miscellaneous plant alterations, modifications and construction covering all phases of plant operations and requirements including services, utilities, roads, building and process changes, etc. Each item of work is generally under \$20,000 and represents items that are not covered under the general plant maintenance category.

6. Detailed Justification for Project:

Because the project consists of numerous items of work in various and different locations in the plant area, the most feasible way to indicate the reason for Replacement, Expansion, Correction, etc., whatever the condition may be, is by percentage of the total estimate. This is as follows:

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Construction Project Data Sheet

Schedule 33a

Dayton
Area

9300
Sub-Program

1. Name and Location of Project Minor Plant Alterations & Improvements - Mound

2. Project No. 3-242-1006

6. Detailed Justification for Project (Cont'd):

Replacement - Normal	10%	\$ 28,000
Replacement - Because of obsolescence	20%	56,000
Replacement - Because of inadequacy	30%	84,000
Expansion - To employ new technological concept ...	20%	56,000
Expansion - Because of higher production level	10%	28,000
Correction - To eliminate bottlenecks	10%	28,000
Total	100%	\$ 280,000

New parking lot - 4,000 sq. yd.....	\$ 20,000
Alterations to present parking lots	5,000
Install exhaust stack, "WD" Bldg.	4,000
Conversion of Rooms 161 , 163 & 169, "R" Bldg.	15,000
Change Room addition "WD" Bldg.	8,000
Install Electrophoresis outfit "B" Bldg.	3,000
Other miscellaneous capital improvements & projects	68,000
Fume System for "T" Bldg. Conc. Cells	20,000
Total	\$ 280,000

7. Details of Cost Estimate:

This covers costs to be incurred in FY 1952. The total estimate is \$280,000 and covers such minor plant alterations and improvements as:

Replace ductwork (Amercoated)	\$ 15,000
Brick stacks (Waterproofing and repair)	10,000
Repair and alteration of storm sewers	10,000
Enlarge safe area, "T" Bldg.	5,000
Alter and repair temporary warehouses	6,000
Modify influent tanks, "WD" Bldg.	9,000
Modify final filter room, "WD" Bldg.	15,000
Modify Room T-8 for Electronics Section	5,000
Modify Room E-113 for Health Physics Instr. Gr.	2,000
Additions to waste collection in "GP"	5,000
Facilities for handling hot drummed wastes in "GP"	10,000
Relocation of A.D.T. cables	10,000
Pave secondary roads - three miles	15,000
New hot waste sewers	20,000

The miscellaneous above covers items not determined in detail at this time, but which past experience indicates will be necessary by FY 1952. Wherever possible, the work will be contracted for on a lump sum bid basis to general contractors. Only when reasons of security, urgency, etc. require, will plant personnel be used for this work.

The amount of the estimate is now larger by \$70,000 than the previous estimate. This represents an increase in the amount of work to be done over that previously anticipated under this project. The number of miscellaneous improvements to be accomplished is larger than previously, but those items which were included in the previous estimate are now in lesser amounts due to firmer estimates of ultimate costs. For example, it was previously expected that relocation of ADT cables would amount to \$30,000, whereas now it is believed that \$10,000 will cover cost of this work. Some of the items not previously included and of significant amounts are: Parking Lot - \$20,000; New Hot Waste Sewers - \$20,000; Modification of Influent Tanks & Final Filter Room WD Building - \$24,000;

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Construction Project Data Sheet

Schedule 33a

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Sub-Program

1. Name and Location of Project Minor Plant Alterations & Improvements - Mound

2. Project No. 3-242-1006

7. Details of Cost Estimate (Cont'd):

Change Room Addition WD Building - \$8,000; and Fume System for "T" Bldg. Concentration Cells - \$10,000. These are necessitated by increases in plant personnel and production. Present parking lot facilities are inadequate at the present time and temporarily employees' vehicles are being parked on plant roads. To alleviate this situation and accommodate expected personnel expansion, construction of additional parking space of approximately 4,000 square yards at a unit cost of \$5.00 will have to

be accomplished. Rates of production have been and will continue to increase each year. The processing of additional wastes will require modifications and additions in the WD Building to assure adequate disposal.

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8. Work to be performed by Monsanto and undesignated contractor.

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 U. S. Atomic Energy Commission
 Construction Project Data Sheet

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Sub-Program

1. Name and Location of Project Incinerator - Mound Laboratory						2. Project No. 3-242-1007		
3. Status of Construction	Directive No. and Date	Start Date	Completion Date	Previous Cost Estimate Date 1-12-51	Current Cost Estimate Date 3-1-51	4. Obligations and Costs		
						Fiscal Year	Obligations	Costs
A. Engineering Design and Inspection		4-15-51	6-30-52	\$ 20,000	\$ 20,000	Prior to 6-30-50		
B. Construction Costs						1951	\$ 12,000	\$ 12,000
1. Land Rights						1952	178,000	178,000
2. Improvements to Land						1953		
3. Buildings						1954		
a. Building Structures		10-15-51	6-30-52	60,000	60,000	1955		
b. Building Service Equipment		10-15-51	6-30-52	20,000	20,000			
4. Other Structures								
5. Utilities								
6. Equipment		10-15-51	6-30-52	75,000	75,000			
7. Removal Costs less Salvage								
C. Contingencies				15,000	15,000			
Total				\$ 190,000	\$ 190,000		\$ 190,000	\$ 190,000

5. Project Description:

Addition to Hydrolysis ("HH" Building) to match existing structure, two story reinforced concrete. Addition is approximately 25 feet in length and 49 feet in width, and has a gross floor area of approximately 1225 sq. ft. and a gross volume of 34,300 cu. ft. Space is to house a plant incinerator for radioactive waste, with gas train, and to provide future space for metal recovery process. Project includes installation of incinerator with gas train in addition to building addition.

6. Detailed Justification for Project:

Project is an expansion to employ new technological process for disposal of combustible radioactive plant wastes. Monsanto began work on overall waste disposal program in 1948. Part of this program included an alternate method to shipment and burial at Oak Ridge of all types of solid wastes. Seventy-five percent of these are combustible, so these were handled as a separate project. Monsanto's research work to date in connection with the Pilot Plant incinerator has shown that all types of

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Construction Project Data Sheet

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Sub-Program

1. Name and Location of Project Incinerator - Mound Laboratory

2. Project No. 3-242-1007

6. Detailed Justification for Project (Cont'd):

contaminated combustible plant wastes can be burned, with the resultant gaseous wastes decontaminated to a satisfactory level. Plant size incinerator is preferred for handling all plant combustible wastes to eliminate present trucking to other site for disposal. No such plant is in existence. This addition will provide local handling for all such material and will provide necessary space for future metal recovery work. A survey of plant facilities indicates that this location is the most economical and the best suited for this project. The plant incinerator will be designed for a change of approximately four times the pilot plant unit capacity, or 120 #/hour and to operate on normal working schedule.

The plant unit will require more height and space than is now existant in this building. Space is required for loading equipment, segregation of risk areas, added ventilation, filter banks, etc. Remote control operations are required. No firm figure is available on present handling costs; operating costs on incinerator are estimated at approximately \$25,000 per year. Local handling of combustible wastes will eliminate trucking and burial at Oak Ridge, possible contamination spillage enroute, extra handling by working personnel of contaminated wastes, etc., and make Mound operations independent of outside waste disposal. It is proposed to do this work as follows: Design and inspection by Monsanto, process equipment purchased and/or fabricated by Monsanto, building construction by lump sum competitive contract.

7. Details of Cost Estimate:

This preliminary estimate was prepared by Monsanto Chemical Company, who performed the basic research and development work. Estimate is based on preliminary survey of plant for selection of location, rough estimate of materials and equipment, known costs of pilot plant equipment, and present material and labor rates for construction work in this area. Estimate is approximate only, without benefit of design data, except material estimate based on approximate building addition of 25 ft. by 49 ft., and of gross volume of 34,300 cu. ft., and projected costs of pilot plant equipment.

The unit cost of \$2.33 per cubic foot, including building service equipment, is based on original costs of the "HH" Building adjusted for the differentials in periods of construction. This addition, as was the original building, will of necessity be of complex construction in order to accommodate specialized equipment peculiar to the operations.

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8. Installation and construction work on normal working schedule.

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Sub-Program

1. Name and Location of Project Pilot Plant and Laboratory for Actinium Items - Mound Laboratory						2. Project No. 3-242-2003				
3. Status of Construction			Directive No. and Date	Start Date	Completion Date	Previous Cost Estimate Date	Current Cost Estimate Date	4. Obligations and Costs		
							3-22-51	Fiscal Year	Obligations	Costs
A. Engineering Design and Inspection				7-1-51	6-30-52			Prior to 6-30-50		
B. Construction Costs				7-1-51	6-30-52					
1. Land Rights								1951		40,000
2. Improvements to Land								1952	\$ 150,000	\$ 75,000
3. Buildings								1953	115,000	75,000
a. Building Structures								1954		225,000
b. Building Service Equipment								1955		
4. Other Structures										
5. Utilities										
6. Equipment										
7. Removal Costs less Salvage										
C. Contingencies										
Total										
									\$ 265,000	\$ 150,000

5. Project Description:

Design and construct pilot plant to be located in ^{"CP"} Building for the preparation of actinium metal items. Pilot plant to consist of specially designed process equipment, induction heater, high vacuum system, remote control apparatus, and instrumentation and process piping. Pilot plant to require lead shielding and a 5-ton crane to move shielding for decontamination. The research program for the preparation of this metal has already been approved.

Design and construct research laboratory for the preparation of metal and metal items. Laboratory to consist of shielded dry boxes with attendant experimental apparatus, laboratory furniture and special ventilation.

OR LEAD EQUIVALENT

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U. S. Atomic Energy Commission
Construction Project Data Sheet

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Sub-Program

1. Name and Location of Project Pilot Plant and Laboratory for Actinium Items - Mound Laboratory

2. Project No. 3-242-2003

6. Detailed Justification for Project:

Project is an expansion because of research on the preparation of new and different products. Due to metal radiation hazards, remote control operation and complete shielding is required. Special ventilation will be required. The research program for the preparation of this metal and related items has already been approved. Schedule calls for the bench scale work to be ^{essentially} complete ^{early} in the fiscal year 1953.

Research laboratory required for developing new methods and/or increasing efficiency of existing method. Laboratory should be in "R" Building to ~~prevent cross-contamination in existing structures.~~
WHEREAS "SW" BUILDING SPACE AND REDUCE COSTS

The work will be performed as follows: Monsanto to do design, to procure or fabricate all equipment and materials, to install all equipment in connection with laboratory and pilot plant. For security

reasons, the operating contractor is best fitted to carry out all phases of the project with possible exception of the cave installation.

7. Details of Cost Estimate and Significant Costs:

The cost estimate was prepared by Monsanto Chemical Company and is approximate only. It is based on projected research data, known equipment and material costs where available, and previous experience at this plant.

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Work is to be done on normal working schedule.

8. Work to be done by Monsanto and undesignated contractor.

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Construction Project Data Sheet

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Area

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Sub-Program

1. Name and Location of Project <u>Metal Distillation Pilot Units - Mound Laboratory</u>						2. Project No. <u>3-242-2004</u>		
3. Status of Construction	Directive No. and Date	Start Date	Completion Date	Previous Cost Estimate	Current Cost Estimate	4. Obligations and Costs		
						Fiscal Year	Obligations	Costs
A. Engineering Design and Inspection		7-1-51	6-30-52	10 000	\$ 10,000	Prior to 6-30-50		
B. Construction Costs		7-1-51	6-30-52			1951		35 000
1. Land Rights						1952	\$ 100,000	\$ 100,000
2. Improvements to Land						1953		30 000
3. Buildings						1954		
a. Building Structures				18 000	-18,000	1955		
b. Building Service Equipment				18 000	-18,000			
4. Other Structures								
5. Utilities								
6. Equipment				44 000	44,000			
7. Removal Costs less Salvage								
C. Contingencies				10 000	10,000			
Total				100 000	\$ 100,000			

5. Project Description:

Design and construct test metal distillation unit, pilot plant metal distillation unit, and metal purification distillation unit. Test metal distillation unit will be located in "T" Building, pilot plant metal distillation unit to be located in "SW" Building. Capacity of pilot plant metal distillation unit to be equivalent to an existing purification unit employing wet method purification. All metal distillation units consist of a still with heating elements, vacuum system and power and instrument control panel. Pilot plant metal distillation unit will require a mechanical slug decanning unit.

6. Detailed Justification for Project:

Project is an expansion to employ a new technological concept and will consist of a test bismuth distillation unit, pilot plant bismuth distillation unit, and a bismuth purification distillation unit. Research data, obtained from the existing test bismuth distillation unit, has shown the feasibility of bismuth distillation for concentration of the product metal. Metal distillation has the following advantages: (1) The molten parent metal requires about one-third the volume of an equivalent amount of the parent metal in process solution. Consequently, smaller equipment is required; (2) No reagents are

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1. Name and Location of Project Metal Distillation Pilot Units - Mound Laboratory

2. Project No. 3-242-2004

6. Detailed Justification for Project (Cont'd):

required for processing as in the present wet method purification. At existing operations levels savings of approximately \$50,000 per year for reagents alone could be anticipated; (3) Processing time will be one-third of that required per batch for the present wet method of purification. Consequently, smaller equipment will be required to produce an equivalent amount compared to that by wet method purification; and (4) It may be possible to recover the parent metal of sufficiently low activity for repeated irradiation without the need of a parent metal recovery process.

Monsanto is to design, procure equipment and material, fabricate and install bismuth distillation units complete. Installation is in high

risk areas and also exclusion areas, making it necessary that the operating contractor perform all phases of the work.

7. Details of Cost Estimate and Significant Costs:

Estimate is prepared by Monsanto and is approximate only. Costs are based on known equipment and known material costs wherever possible. Labor costs are based on Monsanto experience. Some cost data obtained from small research installation units.

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Project to be accomplished at normal working schedule by Monsanto.

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Construction Project Data Sheet

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Schedule 33a

1. Name and Location of Project Master Slave Manipulator and Related Equipment - Mound Laboratory						2. Project No. 3-242-2006 3002		
3. Status of Construction	Directive No. and Date	Start Date	Completion Date	Previous Cost Estimate	Current Cost Estimate	4. Obligations and Costs		
				Date 3/22/51	Date 3-22-51				Fiscal Year	Obligations	Costs
A. Engineering Design and Inspection		7-1-52	6-30-53	5000	5000 5000	Prior to 6-30-50		
B. Construction Costs						1951		
1. Land Rights						1952	\$ 65,000	\$ 57,000
2. Improvements to Land						1953	20,000	\$ 65,000
3. Buildings						1954		28,000
a. Building Structures						1955		
b. Building Service Equipment								
4. Other Structures								
5. Utilities		7-1-52	6-30-53	50,000	67,000 55,000			
6. Equipment								
7. Removal Costs less Salvage								
C. Contingencies				5,000	10,000 5,000			
Total				65,000	85,000 65,000			

5. Project Description:

Construct and install a portable unit for cave operation, which is to consist of a Master Slave Manipulator and lead shield with window. Aforementioned unit to be portable for use in any one of the six fixed operating stations. Design, fabricate and install in cave other remote control mechanical and process equipment which is to be used for process changes and research work. Design, fabricate, and install mechanical and process equipment to be used in processing larger

batches of metal. Design, fabricate and install equipment for assaying of radium. (see insert)

6. Detailed Justification for Project:

Project is an expansion for use in research process work on actinium. Manipulator now under construction can only be used for routine

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Construction Project Data Sheet

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Sub-Program

1. Name and Location of Project Master Slave Manipulator and Related Equipment - Mound Laboratory

2. Project No. 3-242-2006

6. Detailed Justification for Project (Cont'd):

separation of metal. Work at Argonne has shown that a recovery process is required at the end of each run. This recovery process is non-routine in operation. Due to gamma radiation, it will be necessary to perform the metal recovery work behind lead shielding and by remote control. New process methods or changes in existing methods will require master slave manipulator, special lead shield with window, and varying types of remote control devices for handling such work on a routine basis. Larger and hotter batches will require additional remote control devices. No method is available here for assaying of radium. Project includes provision for equipment for such work.

Separation of metal from batches containing six times that of present size batches will require changes in existing equipment and additional new equipment as defined by process development.

Monsanto is to design, purchase, fabricate, and install all processing equipment required for this project, which is contingent upon research development program on this metal.

7. Details of Cost Estimate and Significant Costs:

Estimate is prepared by Monsanto. It is approximate only and is contingent on research program. It is based in part on known costs of similar equipment built at other sites and at Mound Laboratory.

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8. Work is all to be done on normal working schedule by Monsanto.

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Construction Project Data Sheet

Schedule 33a

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Sub-Program

1. Name and Location of Project Metal Distillation Units for "T" Building - Mound Laboratory						2. Project No. 3-242-2007		
3. Status of Construction	Directive No. and Date	Start Date	Completion Date	Previous Cost Estimate Date	Current Cost Estimate Date 3-23-51	4. Obligations and Costs		
						Fiscal Year	Obligations	Costs
A. Engineering Design and Inspection		7-1-52	6-30-54		\$ 10,000	Prior to 6-30-50		
B. Construction Costs		7-1-53	6-30-54			1951		
1. Land Rights						1952	\$ 150,000	
2. Improvements to Land						1953		\$ 10,000
3. Buildings						1954		140,000
a. Building Structures					25,000	1955		
b. Building Service Equipment					30,000			
4. Other Structures								
5. Utilities					65,000			
6. Equipment					10,000			
7. Removal Costs less Salvage								
C. Contingencies					10,000			
Total					\$ 150,000		\$ 150,000	\$ 150,000

5. Project Description:

Design and construction of a metal distillation unit. Metal distillation unit to be installed in "T" Building. Capacity to be equal to that of the present wet method purification unit. Metal distillation unit to consist of mechanical slug decanning unit, loading mechanism, a still with heating elements, high vacuum system, and a power and control panel. Project includes dismantling of a wet method purification unit and the installation of the entire metal distillation assembly; with building alterations and revisions necessary to house and service still equipment. Project is for one cell only.

6. Detailed Justification for Project:

Project is an expansion to employ new technological concept. Project is contingent upon completion date of pilot plant distillation unit research work. The installation of a metal distillation unit has the following advantages: (1) The molten metal has about one-third the volume of an equivalent amount of the parent metal in process solution; consequently, smaller equipment is required; (2) No reagents are required for processing as in the present wet method purification; (3) Processing time will be one-third of that required per batch for the present wet method of purification; consequently, smaller equipment will

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Construction Project Data Sheet

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Sub-Program

1. Name and Location of Project Metal Distillation Units for "T" Building - Mound Laboratory 2. Project No. 3-242-2007

6. Detailed Justification for Project (Cont'd):

be required to produce an equivalent amount comparable to that of wet method purification; and (4) it may be possible to install a slug casting unit to recover the parent metal of sufficiently low activity for repeated irradiation without need of a parent metal recovery process.

Monsanto to do design, procure and/or fabricate and install bismuth distillation unit complete for "T" Building operations. Due to the work being done in a contaminated and restricted area, the operating contractor is best suited to handle the project.

7. Details of Cost Estimate and Significant Costs:

Cost estimate was prepared by Monsanto and is preliminary and approximate only. Present research work is not far along enough to estimate material or labor requirements. Work to date indicates a project of the scope outlined in line with schedule shown.

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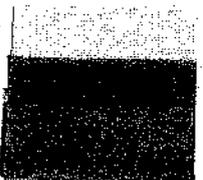
8. Project is to be carried out at normal working schedule by Monsanto and undesignated contractor.

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U. S. Atomic Energy Commission

DAYTON AREA

9400 - Reactor Development



U. S. Atomic Energy Commission

Schedule 33

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Area

Obligations and Costs for Construction Projects

9400
Sub-Program

Proj. No.	Project	Total Estimated Cost	Costs Obligated				Costs Incurred					
			Prior to 6-30-50	F.Y. 1951	F.Y. 1952	F.Y. 1953	After F.Y. 1953	Prior to 6-30-50	F.Y. 1951	F.Y. 1952	F.Y. 1953	After F.Y. 1953
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
4-242-9006	Alteration for Waste Treatment Project, Mound Lab. ...	\$ 18,778	\$ 18,778	\$ 0	\$ 0	\$ 0	\$ 0	\$ 11,469	\$ 7,309	\$ 0	\$ 0	\$ 0
2009	Facilities for Reactor Waste Disposal Process Feasibility Studies, Mound ...	155,000	0	0	155,000	0	0	0	0	95,000	30,000	30,000
Total 9400 - Construction		\$ 173,778	\$ 18,778	\$ 0	\$ 155,000	\$ 0	\$ 0	\$ 11,469	\$ 7,309	\$ 95,000	\$ 30,000	\$ 30,000

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Construction Project Data Sheet

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Sub-Program

1. Name and Location of Project Facilities for Reactor Waste Disposal Process Feasibility Studies - Mound Laboratory						2. Project No. 4-242-2009		
3. Status of Construction	Directive No. and Date	Start Date	Completion Date	Previous Cost Estimate Date	Current Cost Estimate Date 3-20-51	4. Obligations and Costs		
						Fiscal Year	Obligations	Costs
A. Engineering Design and Inspection		7-1-51	6-30-52		\$ 15,000	Prior to 6-30-50		
B. Construction Costs		7-1-51	6-30-52					
1. Land Rights						1951		
2. Improvements to Land						1952	\$ 155,000	\$ 95,000
3. Buildings						1953		30,000
a. Building Structures					17,000	1954		30,000
b. Building Service Equipment					10,000	1955		
4. Other Structures								
5. Utilities								
6. Equipment					98,000			
7. Removal Costs less Salvage								
C. Contingencies					15,000			
Total					\$ 155,000		\$ 155,000	\$ 155,000

5. Project Description:

Process feasibility studies concerning handling larger amounts of general types of reactor wastes, based on previous research work, is to be located in the G.P. Building. Increase in work levels requires considerable shielding. Project includes allowance for alterations during future research work to test adaptability to different types of wastes. Project also includes storage tanks, pumps, shielding, reaction vessels, etc. necessary for storage of hot wastes incidental to such studies.

6. Detailed Justification for Project:

Project is an expansion because of research work on processing different types of reactor wastes. Monsanto has been assigned by the A.E.C. as part of its waste disposal work, the development of processes for handling reactor wastes to a point of determining feasibility of processes. Several processes for one particular type of reactor wastes have now been developed on a laboratory scale. To complete the program, the work has to be carried through a larger stage to prove feasibility. As other wastes are investigated and processes developed for

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Sub-Program

1. Name and Location of Project Facilities for Reactor Waste Disposal Process Feasibility Studies - Mound Laboratory 2. Project No. 4-242-2009

6. Detailed Justification for Project (Cont'd):

them, they must also be studied and perfected through this level. The same equipment will be used with varying alterations and additions for the separate phases of the entire reactor waste program. Special ventilation and shielding will be required due to increased levels of operations. Project will make use of standard equipment, adapted and modified to meet needs of individual wastes as they are carried in the Reactor Waste Disposal Program.

The work will be performed as follows: Monsanto to do all design and process engineering, to procure and/or fabricate all equipment and materials, to do installation of all phases of the program, including original work and alterations as the program progresses. Since the work is to be in restricted and contaminated areas, the installation

of the pilot plant, storage areas, and the alterations can best be carried out by the operating contractor.

7. Details of Cost Estimate and Significant Costs:

The budget estimate was prepared by Monsanto. It is approximate only, without benefit of design data. Costs are based on known equipment and material requirements projected from previous work.

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8. Work is to be done on normal work schedule by Monsanto and undesignated contractor.

U. S. Atomic Energy Commission

DAYTON AREA

9600 - Biology and Medicine Construction



U. S. Atomic Energy Commission

Schedule 33

Dayton

Obligations and Costs for Construction Projects

9600

Area

Sub-Program

Proj. No.	Project	Total Estimated Cost	Costs Obligated				Costs Incurred					
			Prior to 6-30-50	F.Y. 1951	F.Y. 1952	F.Y. 1953	After F.Y. 1953	Prior to 6-30-50	F.Y. 1951	F.Y. 1952	F.Y. 1953	After F.Y. 1953
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
6-242-1008	Alterations and Modifications, "B" Bldg., Mound Lab.	\$ 100,000	\$ 0	\$ 20,000	\$ 80,000	\$ 0	\$ 0	\$ 0	\$ 20,000	\$ 80,000	\$ 0	\$ 0
3001	Addition to "B" Building, Mound Laboratory	\$ 220,000	0	0	0	220,000	0	0	0	0	120,000	100,000
Total 9600 - Construction		\$ 320,000	\$ 0	\$ 20,000	\$ 80,000	\$ 220,000	\$ 0	\$ 0	\$ 20,000	\$ 80,000	\$ 120,000	\$ 100,000

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U. S. Atomic Energy Commission

Construction Project Data Sheet

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Sub-Program

1. Name and Location of Project Alterations and Modification - "B" Building, Mound Laboratory						2. Project No. 6-242-1008		
3. Status of Construction	Directive No. and Date	Start Date	Completion Date	Previous Cost Estimate Date	Current Cost Estimate Date 3-12-51	4. Obligations and Costs		
						Fiscal Year	Obligations	Costs
A. Engineering Design and Inspection		5-1-51	6-30-52		\$ 5,200	Prior to 6-30-50		
B. Construction Costs								
1. Land Rights						1951	\$ 20,000	\$ 20,000
2. Improvements to Land						1952	80,000	80,000
3. Buildings						1953		
a. Building Structures		7-1-51	6-30-52		23,500	1954		
b. Building Service Equipment		7-1-51	6-30-52		2,500	1955		
4. Other Structures								
5. Utilities								
6. Equipment		7-1-51	6-30-52		62,000			
7. Removal Costs less Salvage								
C. Contingencies					6,800			
Total					\$ 100,000		\$ 100,000	\$ 100,000

5. Project Description:

Revision of "B" Building laboratories as follows: (1) Remove partitions between Rooms 106 and 107; 116 and 117; remove wall between Rooms 139 and 138; 139 and 137, and 138 and 137; (2) Remove doors between Rooms 105A and 106, 106 and 109A and replace with plastered wall; (3) Relocate gas, vacuum, water, drains, electrical, ventilation systems as required by items 1, 2, and 4; (4) Installation of approximately 130 linear feet of new laboratory furniture, 120 linear feet of new wall cabinets, and

30 linear feet of special hoods. Revision required for approved additional and separate Biological Research program and a more efficient utilization of existing space.

Purchase and install a 250 KV X-Ray machine in "B" Building. Remove walls between Rooms 144 and 145, 145 and 151, and doors between Rooms 144 and 151, and 145 and 151. X-Ray machine to be installed in the resultant room. Walls to be lead lined for protection of personnel from X-radiation.

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U. S. Atomic Energy Commission

Construction Project Data Sheet

Schedule 33a

Dayton

Area

9600

Sub-Program

1. Name and Location of Project Alterations and Modification - "B" Building, Mound Laboratory

2. Project No. 6-242-1008

6. Detailed Justification for Project:

Project may be defined as an expansion because of Biological Research involving new and different project materials, and partially as a correction to provide better utilization of existing space. Revisions described above are due to a requirement of complete segregation of an approved new and expanded Biological Program involving alpha, beta, and gamma emitters in order to prevent cross contamination with the existing program.

There is a gross amount of waste space at present. The addition of technical personnel and equipment required by the new program will further crowd the building. However, the proposed changes will convert wasted space to a greater advantage so as to meet requirements of the expanded Biological Program.

At present, above tolerance air-borne contamination exists in part of the building for which space for the new program has been allotted. Transfer of the work causing the excessive contamination to a more efficient arrangement in a separate area is necessary and can be accomplished at the same time the other building revisions are in process. Laboratory equipment, of the amounts and types specified, are required to carry out new work and to rectify contamination problems. The work is to be done on the following basis: Monsanto is to design, purchase, and install all work items specified for this project. Due to health physics and security requirements, operating contractor is best fitted to do this work.

The Project is an expansion to provide accepted controls for Biological Research work. In nearly all of the radiation biological studies made

in the AEC work, the use of X-rayed animals as controls has become accepted. The best information on the effects of radiation on human beings comes from X-radiation of human beings. The use of radium data is very questionable and it has been necessary to fall back upon data gathered by x-radiation of human beings. The point that may be used for extrapolating to human beings is the x-ray point. When making studies on animals with some internal emitter, the x-radiation of animals makes it possible to extrapolate the results to human beings. The x-ray machine permits the delivery of precisely controlled amounts of radiation over a wide range of amounts and intensities.

Monsanto will do all work in connection with this project, including design, purchase of X-ray machine and incidental equipment, and installation and building alterations. Vendor is to furnish supervision for equipment installation.

7. Details of Cost Estimate and Significant Costs:

The estimate was prepared by Monsanto and is approximate only, being based on average estimated costs for laboratory furniture installed during original construction, estimated average costs for special hood installation, and costs for building alterations by Monsanto personnel based on past job experience.

ENR Index - March 1951, 258 (1926=100)

8. Work to be done on normal working schedule by Monsanto.

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U. S. Atomic Energy Commission
Construction Project Data Sheet

Schedule 33a

Dayton
Area

9600
Sub-Program

1. Name and Location of Project Addition to "B" Building - Mound Laboratory						2. Project No. 6-242-3001		
3. Status of Construction	Directive No. and Date	Start Date	Completion Date	Previous Cost Estimate Date	Current Cost Estimate Date 3-20-51	4. Obligations and Costs		
						Fiscal Year	Obligations	Costs
A. Engineering Design and Inspection		7-1-52	6-30-54		\$ 20,000	Prior to 6-30-50		
B. Construction Costs		7-1-53	6-30-54					
1. Land Rights						1951		
2. Improvements to Land						1952		
3. Buildings					145,000	1953	\$ 220,000	\$ 120,000
a. Building Structures					15,000	1954		100,000
b. Building Service Equipment						1955		
4. Other Structures								
5. Utilities					30,000			
6. Equipment								
7. Removal Costs less Salvage								
C. Contingencies					10,000			
Total					\$ 220,000		\$ 220,000	\$ 220,000

5. Project Description:

Addition to Biological ("B") Building to match existing structure two story steel truss and brick veneer construction. Addition is approximately 75 feet in length and 30 feet in width, and has a gross floor area of approximately 4500 sq. ft. and a gross volume of 67,500 cu. ft. Building addition to house a large animals colony, laboratories for the approved new program, involving the study of alpha, beta, and gamma emitters, and ventilating and air conditioning equipment.

6. Detailed Justification for Project:

The project is an expansion because of an expanded Biological Research Program. Biological Division has at present an approved project from the Atomic Energy Commission to include the study of larger animals in their present program. No space is available for the conduct of such larger scale experimentation. Ventilating and air conditioning equipment is required in order to keep the colony in a controlled environment to reduce the number of variables which may cause extraneous

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U. S. Atomic Energy Commission

Construction Project Data Sheet

Schedule 33a

Dayton
Area

9600
Sub-Program

1. Name and Location of Project Addition to "B" Building - Mound Laboratory

2. Project No. 6-242-3001

6. Detailed Justification for Project (Cont'd):

biological effects. Chronic exposure experiments are necessarily long-lived and loss of animals at any stage may partially or completely jeopardize the experiment.

In order to carry out the new approved program, involving alpha, beta, and gamma emitters, in similar magnitude to that of the existing program, additional laboratory space will be necessary to accommodate additional required personnel. No such space is available. Complete segregation of the new and approved program must be achieved to prevent cross contamination with the present program.

7. Details of Cost Estimate and Significant Costs:

The estimate was prepared by Monsanto and is preliminary only and on the basis of a gross volume of approximately 67,500 cu. ft. based on an estimated cost of \$2.15 per cu. ft.

ENR Index - March 1951, 258(1926=100)

8. Work to be done at a normal working schedule by Monsanto and undesignated contractor.

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U. S. Atomic Energy Commission

Civil Defense



U. S. Atomic Energy Commission

Obligations and Costs for Construction Projects

Schedule 33

Dayton
Area

Civil Defense
Sub-Program

Proj. No.	Project	Total Estimated Cost	Costs Obligated				Costs Incurred					
			Prior to 6-30-50	F.Y. 1951	F.Y. 1952	F.Y. 1953	After F.Y. 1953	Prior to 6-30-50	F.Y. 1951	F.Y. 1952	F.Y. 1953	After F.Y. 1953
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
-242-												
2005	Alterations & Additions for Security & Safety, Mound ...	\$ 160,000	\$ 0	\$ 0	\$ 160,000	\$ 0	\$ 0	\$ 0	\$ 0	\$ 90,000	\$ 70,000	\$ 0
2008	Alterations & Additions for Security & Safety, Scioto ..	40,000	0	0	40,000	0	0	0	0	10,000	30,000	0
	Total Civil Defense	\$ 200,000	\$ 0	\$ 0	\$ 200,000	\$ 0	\$ 0	\$ 0	\$ 0	\$ 100,000	\$ 100,000	\$ 0

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U. S. Atomic Energy Commission
Construction Project Data Sheet

Schedule 33a

Dayton
Area

Civil Defense
Sub-Program

1. Name and Location of Project Alterations and Additions for Security and Safety - Mound Laboratory						2. Project No. -242-2005		
3. Status of Construction	Directive No. and Date	Start Date	Completion Date	Previous Cost Estimate Date	Current Cost Estimate Date 4-17-51	4. Obligations and Costs		
						Fiscal Year	Obligations	Costs
A. Engineering Design and Inspection					\$ 10,000	Prior to 6-30-50		
B. Construction Costs						1951		
1. Land Rights						1952	\$ 160,000	\$ 90,000
2. Improvements to Land						1953		70,000
3. Buildings						1954		
a. Building Structures					60,000	1955		
b. Building Service Equipment					15,000			
4. Other Structures					45,000			
5. Utilities					15,000			
6. Equipment								
7. Removal Costs less Salvage								
C. Contingencies					15,000			
Total					\$ 160,000		\$ 160,000	\$ 160,000

5. Project Description:

Miscellaneous items required as a part of the overall programs for anti-sabotage and civil defense and consisting of reinforcing parts of certain buildings, improving building service equipment facilities, intrusion alarms, fencing, lighting, blackout, etc. Constructing other structures such as air raid shelters and improvements to utility systems.

6. Detailed Justification for Project:

This estimate covers costs of extraordinary requirements of security and safety beyond the normal scope of such in peacetime. These costs will arise as the result of extra-special precautions deemed necessary under increasing degrees of national emergency conditions.

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U. S. Atomic Energy Commission

Construction Project Data Sheet

Schedule 33a

Dayton
Area

Civil Defense
Sub-Program

1. Name and Location of Project Alterations and Additions for Security and Safety - Mound Laboratory

2. Project No. -242-2005

7. Details of Cost Estimate and Significant Costs:

The estimate at this time is necessarily of a very preliminary nature. It is not known that the total amount is sufficient, since such measures are entirely dependent on the continuing evaluation of the situation. After such a study has been made and a decision arrived at to the requirements, this preliminary estimate will be superseded by an estimate based on quantities, availability of materials, time element involved, etc.

Typical Items

Reinforce floor over communications room	\$ 10,000
Stairways to "T" Bldg. tunnel entrances	8,000
Alterations to "T" Bldg. for use of tunnel air raid shelter	10,000
Protection "T" Bldg. vent pipes	12,000
Dugout air raid shelters 2 each	2,000
Fencing changes, additions, miscellaneous	6,000
Blackout measures	10,000
Intrusion alarms	20,000
Miscellaneous	12,000
Total	<u>\$ 90,000</u>

This is a typical list for FY 1952, and the FY 1953 estimate would cover similar types of work.

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U. S. Atomic Energy Commission

Construction Project Data Sheet

Schedule 33a

Dayton
Area

Civil Defense
Sub-Program

1. Name and Location of Project Alterations and Additions for Security and Safety - Scioto Laboratory						2. Project No. -242-2008		
3. Status of Construction	Directive No. and Date	Start Date	Completion Date	Previous Cost Estimate Date	Current Cost Estimate Date 4-17-51	4. Obligations and Costs		
						Fiscal Year	Obligations	Costs
A. Engineering Design and Inspection					\$ 4,000	Prior to 6-30-50		
B. Construction Costs								
1. Land Rights						1951		
2. Improvements to Land						1952	\$ 40,000	\$ 10,000
3. Buildings						1953		30,000
a. Building Structures					15,000	1954		
b. Building Service Equipment					8,000	1955		
4. Other Structures					5,000			
5. Utilities					4,000			
6. Equipment								
7. Removal Costs less Salvage								
C. Contingencies					4,000			
Total					\$ 40,000		\$ 40,000	\$ 40,000

5. Project Description:

Miscellaneous items required as a part of the overall programs for anti-sabotage and civil defense and consisting of reinforcing parts of certain buildings, improving building service equipment facilities, intrusion alarms, fencing, lighting, blackout, etc. Constructing other structures such as air raid shelters, and improvements to utility systems.

6. Detailed Justification for Project:

This estimate covers costs of extraordinary requirements of security and safety beyond the normal scope of such in peacetime. These costs will arise as the result of extra-special precautions deemed necessary under increasing degrees of emergency conditions.

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U. S. Atomic Energy Commission
Construction Project Data Sheet

Dayton
Area

Schedule 33a
Civil Defense
Sub-Program

1. Name and Location of Project Alterations and Additions for Security and Safety - Scioto Laboratory

2. Project No. -242-2008

7. Details of Cost Estimate and Significant Costs:

The estimate at this time is necessarily of a very preliminary nature. It is not known that the total amount is sufficient, since such measures are entirely dependent on the continuing evaluation of the situation. After such a study has been made and a decision arrived as to the requirements, this preliminary estimate will be superseded by an estimate based on quantities, availability of materials, time element involved, etc.

Air Raid Shelters	\$ 10,000
Air Raid Alarm	4,000
Blackout Provisions	10,000
Intrusion Alarms	10,000
Miscellaneous	<u>6,000</u>
Total	<u>\$ 40,000</u>

U. S. Atomic Energy Commission

DAYTON AREA

Summary of Obligations and Costs for Equipment Not Included in Construction Projects

U. S. Atomic Energy Commission

Schedule 34a

Dayton
Area

Obligations and Costs for Equipment Not Included in Construction Project

Monsanto -- Mound Laboratory

Equipment Categories (1)	Inventory 6-30-50 (2)	On Order 6-30-50 (3)	Obligations			Costs Incurred			On Order 6-30-53 (10)
			F.Y. 1951 (4)	F.Y. 1952 (5)	F.Y. 1953 (6)	F.Y. 1951 (7)	F.Y. 1952 (8)	F.Y. 1953 (9)	
Heavy Mobile.....	\$ 28,191	\$ 2,000	\$ 13,375	\$ ^{acking 13,000} 16,128 0	\$ ^{20,500} 7,500	\$ 2,000	\$ 13,375	\$ 7,500	\$ 0
Hospital and Medical.....	32,704	200	1,650	0	¹⁰⁰⁰ 0	200	1,650	0	0
Laboratory.....	1,344,441	62,586	160,400	0	103,360	62,586	160,400	103,360	0
Motor Vehicles and Aircraft.....	68,851	0	14,670	9,184	3,936	14,670	9,184	3,936	0
Office Furniture and Machines...	275,800	7,450	8,000	20,000	23,000	15,450	20,000	23,000	0
Process.....	1,258,161	77,939	110,345	0	94,220	77,939	110,345	94,220	0
Railroad Rolling Stock.....	0	0	0	0	0	0	0	0	0
Reactors and Accelerators.....	0	0	0	0	0	0	0	0	0
Security and Protection.....	14,701	0	1,000	2,720	0	1,000	2,720	0	0
Shop.....	322,480	9,900	27,820	0	18,000	9,900	27,820	18,000	0
Miscellaneous.....	2,894,244	14,414	48,290	11,710	25,000	14,414	60,000	25,000	0
Total.....	\$6,239,273	\$ 174,489	\$ 385,550	\$ 43,614	\$ 275,016	\$ 198,159	\$ 405,494	\$ 275,016	\$ 0

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U. S. Atomic Energy Commission

Schedule 34b

Dayton
Area

Justification for Equipment Not Included in Construction Projects

Monsanto - Mound Laboratory

Heavy Mobile

\$ 7,500

Replacements:

\$ 7,500

Replacement of one 210 C.F.M. Air Compressor used regularly in general maintenance work will be required. There is every indication, including several major breakdowns during the past year, that, during FY 1953 at the latest, it will become impracticable to continue this compressor in use without completely rebuilding and overhauling and that it will be more economical to replace the item.

Laboratory

\$103,360

Replacements:

Item 1

\$ 30,000

Personnel monitoring functions of the Health Physics Program result in an extremely heavy workload in connection with urinalysis in the Low Activity Counting Room. The replacement of existing equipment with twenty Four-Pi Alpha counters of improved design at a cost of \$30,000 during the FY 1953 will greatly expedite and improve the accuracy of this work. Experiments relative to the use of this equipment indicate that the new machines, utilizing a cylinder rather than two discs as the source of plating will provide sufficiently greater accuracy to permit substitution of a single run in place of the double run now used in the urinalysis without any corresponding impairment of final accuracy.

Item 2

\$ 1,500

Specialized electronic test equipment consisting of six Multimeters costing a total of \$300, one Radio City model Vacuum Tube Voltmeter at a cost of \$300, one Oscillosynchroscope at a cost of \$845, and one Condenser Decade at \$55 will require replacement in FY 1953. These items receive continuous use in the repair and maintenance of electronic equipment and under such use have a limited life expectancy which will be exhausted during FY 1953.

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Schedule 34b

Justification for Equipment Not Included in Construction Projects

Dayton
Area

Monsanto - Mound Laboratory

Also obsolescence plays a significant but not controlling part in limiting the useful life of the equipment due to continuous rapid advancement in the development of electronics metering and measuring devices.

Total Replacement - Laboratory

\$31,500

Expansion:

The requirements for additional equipment at Mound Laboratory are based on two factors, (1) acceleration of the Substitute Materials Research Program, and (2) additional research and development activity in support of the expanding operations at Scioto Laboratory.

✓ Item 1

~~\$6,000~~

One Beta Ray Spectrometer will be required to provide for the increased volume of Beta counting in the research program on Actinium and the daughter elements. This equipment will also be utilized in calibration work requiring measurements of absolute energy.

✓ Item 2

~~\$4,000~~

✓ Six Channel Pulse Height Analyzers costing \$4,000 each will be required in connection with the initial research on pulse height coincidence for Beta particles. Basically the purpose of this equipment is to speed the work and allow spectrum spanning without repeated runs on the existing equipment. These instruments will become an integral part of the Beta identification program and will have particularly valuable application in determining the relative quantities of mixed Beta sources.

✓ Item 3

~~\$20,000~~

This amount will be required for the addition of High-Voltage X-Ray Equipment to be used in analysis of Actinium initiator for uniform distribution. This equipment has been selected as providing the best possible approach to the problem; in addition this equipment will have considerable application to the present polonium initiator work.

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Schedule 34b

Dayton
Area

Justification for Equipment Not Included in Construction Projects

Monsanto - Mound Laboratory

Item 4

\$ 4,610

Research

Special equipment for use in Counting Research problems of Beta analysis and identification of mixtures and in the development and improvement of techniques will be required. The following equipment will be used to equip a separate space set aside for this type of work: Final circuiting for Standard Chamber, \$1,500; one Coincidence Analyzer and the power supply for the Analyzer, \$1,095; one Fast Scaler, \$450; Ratemeters and Timing Devices, ~~\$825~~ 700; one Baker and one Wave Front Amplifier, \$545; ~~and~~ one Top-Bottom Discriminator, \$195;

Item 5

~~\$ 3,875~~

Research for development

The following additional equipment will be required for work in the development of special instruments for Beta and Gamma measurement in connection with Health Physics and for Radium-Actinium research: One Single Channel Scanning Pulse Height Analyzer, ~~and one Pulse Generator, \$1,550; one Hypervac Pump, \$275; one High Voltage Power Supply and one Regulated Laboratory Power Supply, \$825, and a Wide Band Amplifier and other smaller items of equipment having general application in the instrument development work, \$1,225.~~

Item 6

~~\$ 4,375~~

Research

Instrumentation Research for the solution of numerous special problems in the detection and measurement of Alpha, Gamma and Neutron radiation, as well as Beta identification will require the following additional equipment: one 10-20 MC Oscilloscope, \$1,700; one Pulse Height Analyzer, \$1,000; non-overloading Amplifier and Preamplifier, ~~\$525~~ 450; one Fast Scaler, \$450; ~~and Timing Devices and a Power Supply for a Scintillation Tube, \$650.~~

Item 7

\$ 5,000

An Ultracentrifuge will be required for colloidal studies involved in Waste Disposal Research. These studies will involve the removal of fine particles from liquids, flocculation, and phenomena associated with filter mechanisms.

Item 8

\$ 5,500

One Quartz Fiber Micro-Balance costing ~~\$4,500~~ 5,500 will be needed for cold work research and development requirements of the Laboratory as a whole. All balances of this type now on hand are used in the Operations Division on risk operations and cannot be utilized on cold work.

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U. S. Atomic Energy Commission

Schedule 34b

Dayton
Area

Justification for Equipment Not Included in Construction Projects

Monsanto - Mound Laboratory

Item 9

\$ 3,000

One Precision ^{ESSION} Camera (X-Ray) will be required in the study of crystal structure. This equipment will either eliminate, or greatly simplify, many of the problems involved in the characterization of crystalline forms.

Item ~~10~~ 17

\$15,000

Additional general purpose laboratory equipment not identified with specific major items and not limited in application to specific groups or programs will be required in connection with the work of the additional personnel to be employed during FY 1953.

Motor Vehicles and Aircraft

\$ 3,936

Justification for motor vehicles appears on Schedule 81b.

Office Furniture and Machines

\$23,000

Replacements:

Item 1

\$15,740

Twenty large calculating machines costing a total of \$15,740 (out of the total inventory of 75 such machines) will require replacement during FY 1953. Most of the 75 machines are used by scientific personnel in laboratory calculations which call for frequent utilization of virtually the full machine capacity. Experience at Mound Laboratory indicates that this produces excessive wear on certain parts and that under this type of use machine errors begin to occur fairly early in the normal life of the machines. These deficiencies generally can be corrected only at the factory and, following such repair, the same or similar errors tend to reappear relatively soon. The cost of personnel time lost due to machine failure and the slow-down of work, as well as the cost of checking the accuracy of calculations after machine errors have begun to occur, strongly indicate the desirability of replacing the machines at that time or soon thereafter. In evaluating costs due to machine errors, consideration should be given to the relationship frequently existing between several major series of calculations which may destroy the value of a great deal of work done after the occurrence of an error.

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U. S. Atomic Energy Commission

Schedule 34b

Dayton
Area

Justification for Equipment Not Included in Construction Projects

Monsanto - Mound Laboratory

Item 2 \$ 2,275

Minimum replacement of file cabinets, adding and posting machines, copy holding devices and other general office equipment costing a total of \$2,275 will be necessary during FY 1953. No replacement of office furniture is included in this estimate.

Item 3 \$ 4,985

Typewriters

Justification for typewriter replacements appears on Schedule 82b.

Total Replacement - Office Furniture and Machines \$23,000

Process \$94,220

Replacement:

This category consists of special process equipment in the "T," "HH," and "WD" buildings. The total figure of \$77,720 is based on replacement experience to date with allowances for the volume of operation expected in FY 1953. However, the items which have required replacement in the past are in the main not of types for which either a check of wear and physical condition, or a comparison of age with reliably predictable useful life will furnish a true indication of the time when replacement will be necessary. Consequently the following itemization should be regarded more as typical of the equipment likely to require replacement than as a listing of items specifically earmarked for replacement in FY 1953, although the latter is true of a part of the items.

Item 1 \$ 9,800

Pfautler Kettles and Topheads.

Item 2 \$13,375

Nash Vacuum Pumps and Dur-Seal Hy-Vac Pumps, \$5,925; Transfer and Sludge Pumps, \$4,000; Weinman, 20 gpm, and Wilfleg Pumps, \$1,250; and Steam Jets and Durichlor Valves, \$2,200.

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U. S. Atomic Energy Commission

Schedule 34b

Dayton
Area

Justification for Equipment Not Included in Construction Projects

Monsanto - Mound Laboratory

Item 3		\$14,140
Gamma Chamber and Probe Controllers, \$3,800; Tubes and Batteries, \$2,190; Glass Systems (Canning, Holddown, Distillation, etc.) and Canning Frames and Accessories, \$3,700; Droppage Counters and Electronic Heater, \$450; and Counting Circuit and Assembly, \$4,000.		
Item 4		\$ 6,940
Console Modification and Accessory Cabinet, \$3,440; and Conversion of line to Sequence Type, \$3,500.		
Item 5		\$ 1,400
Camera Adapters, \$150; B-Wall Tubes, Monitoring, \$1,000; and Hydraulic Press and Electric Furnace, \$250.		
Item 6		\$13,450
Air Samplers and Neutron Monitors, \$4,350; Scintillation Meters and Scaler, \$5,100; and 1000 gallon plastic lined Tank with Agitator and Pump, \$4,000.		
Item 7		\$18,615
Mechanical and general purpose process equipment.		
Total Replacement - Process		\$77,720

Expansion:

The following requirements for additional equipment are based on the increase in production personnel planned for FY 1953 and on the requirements in connection with the development work on Neutron sources.

Item 1		\$ 3,000
Six Calorimeters		

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U. S. Atomic Energy Commission

Schedule 34b

Dayton
Area

Justification for Equipment Not Included in Construction Projects

Monsanto - Mound Laboratory

Item 2
Counting instruments and glass systems, \$4,700; and general purpose process equipment, \$1,800. \$ 6,500

Item 3
Remote Control Apparatus. \$ 7,000

Total Expansion - Process \$16,500

Shop \$18,000

Replacements: \$18,000

While the overall condition of the Mound shop equipment is good, a number of comparatively minor items such as "V" precision blocks, machine attachments, chucks, etc., show considerable wear and it is anticipated that these will require replacing during FY 1953 in the amount of \$18,000.

Miscellaneous \$25,000

This category consists of utilities, services, storage, distribution systems, plus several minor classifications. The inventory at 6/30/50 was as follows:

Water supply and storage, water treatment, and water distribution lines	\$ 584,773
Sewage disposal equipment and sewage lines	485,588
Steam generating and air compressing equipment	220,866
Brine cooling equipment and steam, air, brine and oil lines	531,736
Electric substation equipment, electric distributing system and fire alarm system	439,823
Railroad spur	63,338
Emergency service equipment - "T" Building	328,965
Cafeteria Equipment	60,599
Other, miscellaneous	178,556
Total Inventory	\$2,894,214

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U. S. Atomic Energy Commission

Schedule 34b

Dayton
Area

Justification for Equipment Not Included in Construction Projects

Monsanto - Mound Laboratory

Replacements:

Item 1	\$10,000
Sewage disposal equipment and repairs beyond the scope of maintenance.	
Item 2	\$10,000
Stationary air compressing equipment.	
Item 3	\$ 5,000
Cafeteria, janitorial, and general maintenance equipment.	

U. S. Atomic Energy Commission

Schedule 34a

Dayton
Area

Obligations and Costs for Equipment Not Included in Construction Projects

Monsanto - Scioto Laboratory

Equipment Categories (1)	Inventory 6-30-50 (2)	On Order 6-30-50 (3)	Obligations			Costs Incurred			On Order 6-30-53 (10)
			F.Y. 1951 (4)	F.Y. 1952 (5)	F.Y. 1953 (6)	F.Y. 1951 (7)	F.Y. 1952 (8)	F.Y. 1953 (9)	
Heavy Mobile.....	\$ 18,740	\$ 0	\$ 17,000	\$ 0	\$ 15,000	\$ 0	\$ 17,000	\$ 15,000	\$ 0
Hospital and Medical.....	1,650	0	5,000	0	1,000	0	5,000	1,000	0
Laboratory.....	0	0	10,000	0	500	0	10,000	500	0
Motor Vehicles and Aircraft.....	15,370	0	0	6,804	9,286	0	6,804	9,286	0
Office Furniture and Machines....	70,226	0	0	33,100	4,500	0	33,100	4,500	0
Process.....	1,083,697	0	90,450	0	59,500	0	90,450	59,500	0
Railroad Rolling Stock.....	0	0	0	0	0	0	0	0	0
Reactors and Accelerators.....	0	0	0	0	0	0	0	0	0
Security and Protection.....	3,759	0	0	6,000	4,000	0	6,000	4,000	0
Shop.....	150,651	0	15,000	0	10,000	0	15,000	10,000	0
Miscellaneous.....	858,444	0	40,000	0	30,000	0	40,000	30,000	0
Total.....	\$ 2,202,537	\$ 0	\$ 177,450	\$ 45,904	\$ 133,786	\$ 0	\$ 223,354	\$ 133,786	\$ 0

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U. S. Atomic Energy Commission

Schedule 34b

Dayton
Area

Justification for Equipment Not Included in Construction Projects

Monsanto - Scioto Laboratory

Heavy Mobile

\$15,000

Replacement:

\$ 2,000

A snow plow attachment at a cost of \$2,000 for the Motor Grader mentioned below will be required to replace the present light attachment mounted on a truck which has served during the standby period, but will not be adequate during full operation.

Expansion:

\$13,000

Conversion from standby to full operation will necessitate systematic maintenance of roads and trafficways in the area and a Motor Grader at a cost of \$13,000 will be required for that purpose.

Hospital and Medical

\$ 1,000

Expansion:

\$ 1,000

While the basic equipping of necessary first aid facilities will be largely completed in FY 1952, additional equipment costing \$1,000 will be added in FY 1953 to permit adequate accommodation of a greater number of employees. This consists of lamps, cabinets, stools, cots, stretchers, etc.

Laboratory

\$ 500

Expansion:

\$ 500

The addition of \$500 worth of general utility laboratory equipment for work related to process analysis and control will be required in FY 1953. The exact nature of this equipment will be determined by process characteristics which develop in the initial phases of operation.

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U. S. Atomic Energy Commission

Justification for Equipment Not Included in Construction Projects

Schedule 34b

Dayton
Area

Monsanto - Scioto Laboratory

Office Furniture and Machines

\$ 4,500

Expansion:

\$ 4,500

The addition of six large calculating machines at a cost of \$4,500 will be necessary in FY 1953 for operating functions in connection with process analysis and control and for related laboratory work.

Process

\$59,500

Replacements:

\$46,600

The requirements for this category are based on the assumption of full operation throughout FY 1953, plus a projection of the replacement experience at Mound Laboratory. Due to the indeterminate nature of the factors affecting replacements of this equipment, the following itemization of anticipated replacements should be regarded as typical of items most likely to require replacement rather than a listing of items earmarked for replacement in FY 1953.

Item 1

\$ 7,650

Pfaunder Kettles and Topheads.

Item 2

\$ 3,300

Steam Jets and Steam Jet Condensers, \$1,700; Wilfleg Pumps, \$1,600.

Item 3

\$ 4,000

One 500 gallon plastic lined Tank with Agitator and Pump, \$3,000; Calorimeters, \$1,000.

Item 4

\$ 9,895

B-Wall Tubes and Batteries, Gamma Scaler, and Potentiometer Controller, \$3,795; Air Samplers, Neutron Monitors, Scintillation Meters, and Probe Controllers, \$6,100.

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U. S. Atomic Energy Commission

Schedule 34b

Dayton
Area

Justification for Equipment Not Included in Construction Projects

Monsanto - Scioto Laboratory

Item 5 \$12,000

Equipment for the "Y" section line conversion, consisting of counting instruments, \$3,000; Glass Systems (Canning, Holddown, etc.) Droppage Counters and Canning System Frames and Accessories, \$8,000; and Hy-Vac Pumps, \$1,000.

Item 6 \$ 9,755

Mechanical and general purpose process equipment.

Total Replacements - Process \$46,600

Expansion: \$12,900

Additional items of equipment required to develop full process capacity during FY 1953 are 50 Foil Holders, \$3,750; one Calorimeter, \$500; Automatic Timers, three Bradley Chambers, and one Sheffield Gage, \$3,900; cleaning equipment, \$1,750; and miscellaneous process equipment, \$3,000.

Security and Protection

\$ 4,000

Expansion:

The following items will be required in order to complete the equipping of the guard force for the physical security and protection of the facility under full operation.

Item 1 \$ 1,075

Fifteen 45 Cal. Revolvers

Item 2 \$ 425

Five Shotguns

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U. S. Atomic Energy Commission

Schedule 34b

Dayton
Area

Justification for Equipment Not Included in Construction Projects

Monsanto - Scioto Laboratory

Security and Protection (cont'd)

Expansion:

Item 3

\$ 2,500

Radio Equipment.

Total Expansion - Security and Protection

\$ 4,000

Shop

Expansion:

\$10,000

While all requirements for major shop equipment will be completed during FY 1952, it is anticipated that operating developments during FY 1953 will produce requirements for additional minor items such as anvils, benches, chucks, cranes, dollies, etc., in order to more fully adapt to operating needs.

\$10,000

Miscellaneous

\$30,000

Replacements:

\$30,000

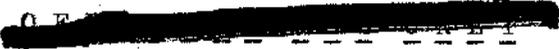
As at Mound Laboratory the equipment in this category includes Water Supply and Distribution Systems, Sewage Lines, Steam Generating Equipment, Electrical Substation and Distribution Lines, etc. Most of this equipment was acquired as a part of the site purchase, having been constructed during wartime and in many cases of substitute materials. It is therefore likely that following the start-up of operations, some component parts of these will have to be replaced to insure uninterrupted plant operations. At the present time it is expected that replacements in the water distribution system will amount to \$10,000; replacements to the electrical distribution lines, \$10,000; poles and hangers for steam distribution lines, \$5,000; and sewage lines, \$5,000. These replacements are not covered as specific projects or miscellaneous construction elsewhere in the Budget due to their being classed as miscellaneous equipment for accounting purposes.

U. S. Atomic Energy Commission

DAYTON AREA

Motor Vehicles and Aircraft Statement

Schedule 81


 U. S. Atomic Energy Commission
 Motor Vehicle and Aircraft Statement

Schedule 81

Dayton
Area

Type of Vehicle	Estimated Inventory 6/30/51 (Including on Order)	F. Y. 1952 Number			Estimated Inventory 6/30/52 (Including on Order)	F. Y. 1953 Number			Estimated Inventory 6/30/53 (Including on Order)	Basis of Dollar Est. for 52 & 53		
		Acquisitions	Trade-ins	Disposals		Acquisitions	Trade-ins	Disposals		Av. Gross Unit Cost of Acquisitions	Less Av. Unit Value of Trade-ins & Disposals	Plus Av. Unit Freight Cost
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Part I												
Operations												
Passenger Carrying Automobiles												
Light	14	7	4	0	17	3	3	0	17	\$1,400	\$ 200	\$ 112
Medium	3	0	0	0	3	0	0	0	3			
Station Wagons												
Light	0	0	0	0	0	0	0	0	0			
Medium	0	0	0	0	0	0	0	0	0			
Ambulances												
Metropolitan Type ..	1	0	0	0	1	0	0	0	1			
Other	1	0	0	0	1	0	0	0	1			
Busses for 11 or more Passengers												
City	0	0	0	0	0	0	0	0	0			
Inter-City	0	0	0	0	0	0	0	0	0			
School (body on truck chassis)	0	0	0	0	0	0	0	0	0			
Total Passenger Carrying	<u>19</u>	<u>7</u>	<u>4</u>	<u>0</u>	<u>22</u>	<u>3</u>	<u>3</u>	<u>0</u>	<u>22</u>			

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U. S. Atomic Energy Commission

Schedule 81

Dayton
Area

Motor Vehicle and Aircraft Statement

Type of Vehicle (1)	Estimated Inventory 6/30/51 (Including on Order) (2)	F. Y. 1952 Number			Estimated Inventory 6/30/52 (Including on Order) (6)	F. Y. 1953 Number			Estimated Inventory 6/30/53 (Including on Order) (10)	Basis of Dollar Est. for 52 & 53		
		Acquisitions (3)	Trade-ins (4)	Disposals (5)		Acquisitions (7)	Trade-ins (8)	Disposals (9)		Av. Gross Unit Cost of Acquisitions (11)	Less Av. Unit Value of Trade-ins & Disposals (12)	Plus Av. Unit Freight Cost (13)
Part I												
Operations (Cont'd)												
Trucks, nominal capacities												
Carry-all-suburban ..	1	0	0	0	1	0	0	0	1			
Standard body 1½ ton & under	17	3	3	0	17	3	2	0	18	\$2,100	\$ 200	\$ 168
Other 1½ ton & under.	2	0	0	0	2	0	0	0	2			
2-5 ton dump	4	0	0	0	4	1	1	0	4	2,900	250	232
2-5 ton other	4	0	0	0	4	0	0	0	4			
Total Trucks	28	3	3	0	28	4	3	0	29			
Trailers	0	0	0	0	0	0	0	0	0			
Aircraft	0	0	0	0	0	0	0	0	0			

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U. S. Atomic Energy Commission

Schedule 81

Dayton
Area

Motor Vehicle and Aircraft Statement

Summary of Funds for Motor Vehicles and Aircraft not Included in Construction

(1)	6/30/50		Obligations			Costs Incurred			On Order 6/30/53 (10)
	Book Value of Inventory (2)	On Order (3)	1951 (4)	1952 (5)	1953 (6)	1951 (7)	1952 (8)	1953 (9)	
Part II									
Total Net (Gross less trade-ins and disposals)	\$ 84,221	0	\$ - 1,819	\$ 15,988	\$ 13,222	\$ - 1,819	\$ 15,988	\$ 13,222	0

Other Supplemental Information

(1)	1951 (2)	1952 (3)	1953 (4)
Part III			
Type of Vehicle and Aircraft			
Passenger-carrying automobiles			
Cost of Hire	0	0	0
Automobiles			
Number of replacements	0	4	3
Within age standards	0	0	0
Not within age standard but within mileage standard	0	4	3
Not within either standard	0	0	0

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U. S. Atomic Energy Commission

Motor Vehicle and Aircraft Statement

Other Supplemental Information

Dayton
Area

Schedule 81

	1951	1952	1953
(1)	(2)	(3)	(4)
<u>Part III</u>			
Type of Vehicle and Aircraft (Cont'd)			
Busses	0	0	0
Trucks			
1½ ton and under, standard body			
Number of replacements	2	2	2
Within age standard	<u>2</u>	<u>0</u>	<u>2</u>
Not within age standard but within mileage standard	0	2	0
Not within either standard	0	0	0
Other			
Number of replacements	2	0	1

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U. S. Atomic Energy Commission

Dayton
Area

Analysis of Motor Vehicle and Aircraft Requirements

Schedule 81a

Monsanto - Mound Laboratory

Type of Vehicle (1)	Estimated Inventory 6/30/51 (Including on Order) (2)	F. Y. 1952 Number			Estimated Inventory 6/30/52 (Including on Order) (6)	F. Y. 1953 Number			Estimated Inventory 6/30/53 (Including on Order) (10)	Basis of Dollar Est. for 52 & 53		
		Acquisitions (3)	Trade-ins (4)	Disposals (5)		Acquisitions (7)	Trade-ins (8)	Disposals (9)		Av. Gross Unit Cost of Acquisitions (11)	Less Av. Unit Value of Trade-ins & Disposals (12)	Plus Av. Unit Freight Cost (13)
Part I												
Operations												
Passenger carrying Automobiles												
Light	10	4	4	0	10	3	3	0	10	\$1,400	\$ 200	\$ 112
Medium	3	0	0	0	3	0	0	0	3			
Ambulances												
Metropolitan Type ..	1	0	0	0	1	0	0	0	1			
Busses for 11 or more Passengers	0	0	0	0	0	0	0	0	0			
Total Passenger Carrying	<u>14</u>	<u>4</u>	<u>4</u>	<u>0</u>	<u>14</u>	<u>3</u>	<u>3</u>	<u>0</u>	<u>14</u>			
Trucks, Nominal Capacities												
Carry-all-suburban .	1	0	0	0	1	0	0	0	1	2,100	200	168
Standard body 1½ ton and under	11	2	3	0	9a/	0	0	0	9			
2-5 ton dump	2	0	0	0	2	0	0	0	2			
2-5 ton other	4	0	0	0	3a/	0	0	0	3			
Total Trucks	<u>18</u>	<u>2</u>	<u>3</u>	<u>0</u>	<u>15b/</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>15</u>			

Note:
a/ 1 transferred to Scioto
b/ Total of 2 transferred to Scioto.

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U. S. Atomic Energy Commission

Analysis of Motor Vehicle and Aircraft Requirements

Schedule 81a

Dayton
Area

Monsanto - Mound Laboratory

Summary of Funds for Motor Vehicles and Aircraft not Included in Construction

(1)	6/30/50		Obligations			Costs Incurred			On Order 6/30/53 (10)
	Book Value of Inventory (2)	On Order (3)	1951 (4)	1952 (5)	1953 (6)	1951 (7)	1952 (8)	1953 (9)	
Part II									
Total Net (Gross less trade-ins and disposals)	\$ 68,851.68	0	\$ - 3,801	\$ 9,184	\$ 3,936	\$ - 3,801	\$ 9,184	\$ 3,936	0

Other Supplemental Information

(1)	1951 (2)	1952 (3)	1953 (4)
Part III			
Type of Vehicle and Aircraft			
Automobiles			
Number of replacements	0	4	3
Within age standards	0	0	0
Not within age standard but within mileage standard	0	4	3
Not within either standard	0	0	0
Trucks			
1½ ton & under, standard body			
Number of replacements	2	2	0
Within age standard	2	0	0
Not within age standard but within mileage standard	0	2	0
Not within either standard	0	0	0
Other			
Number of replacements	3	0	0
Within age standard	3	0	0
Not within age standard but within mileage standard	0	0	0
Not within either standard	0	0	0

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U. S. Atomic Energy Commission

Dayton
Area

Analysis of Motor Vehicle and Aircraft Requirements

Schedule 81a
Monsanto Chemical Co. - Scioto Lab.

Type of Vehicle (1)	Estimated Inventory 6/30/51 (Including on Order) (2)	F. Y. 1952 Number			Estimated Inventory 6/30/52 (Including on Order) (6)	F. Y. 1953 Number			Estimated Inventory 6/30/53 (Including on Order) (10)	Basis of Dollar Est. for 52 & 53		
		Acquisitions (3)	Trade-ins (4)	Disposals (5)		Acquisitions (7)	Trade-ins (8)	Disposals (9)		Av. Gross Unit Cost of Acquisitions (11)	Less Av. Unit Value of Trade-ins & Disposals (12)	Plus Av. Unit Freight Cost (13)
Part I												
Operations												
Passenger Carrying Automobiles												
Light	4	3	0	0	7	0	0	0	7	\$1,400	\$ 200	\$ 112
Ambulances												
Other	1	0	0	0	1	0	0	0	1			
Busses for 11 or more Passengers	0	0	0	0	0	0	0	0	0			
Total Passenger Carrying	<u>5</u>	<u>3</u>	<u>0</u>	<u>0</u>	<u>8</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>8</u>			
Trucks, nominal capacities												
Carry-all-suburban .	0	0	0	0	0	0	0	0	0			
Standard body 1½ ton & under	6	1	0	0	8 ^{a/}	3	2	0	9	2,100	200	168
Other 1½ ton & under	2	0	0	0	2	0	0	0	2			
2-5 ton dump	2	0	0	0	2	1	1	0	2	2,900	250	232
2-5 ton other	0	0	0	0	1 ^{a/}	0	0	0	1			
Total Trucks	<u>10</u>	<u>1</u>	<u>0</u>	<u>0</u>	<u>13</u>	<u>4</u>	<u>3</u>	<u>0</u>	<u>14</u>			
Note:												
a/ Transferred from Mound.												

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U. S. Atomic Energy Commission

Dayton
Area

Analysis of Motor Vehicle and Aircraft Requirements

Schedule 81a
Monsanto Chemical Co. - Scioto Lab.

Type of Vehicle (1)	Estimated Inventory 6/30/51 (Including on Order) (2)	F. Y. 1952 Number			Estimated Inventory 6/30/52 (Including on Order) (6)	F. Y. 1953 Number			Estimated Inventory 6/30/53 (Including on Order) (10)	Basis of Dollar Est. for 52 & 53		
		Acquisitions (3)	Trade-ins (4)	Disposals (5)		Acquisitions (7)	Trade-ins (8)	Disposals (9)		Av. Gross Unit Cost of Acquisitions (11)	Less Av. Unit Value of Trade-ins & Disposals (12)	Plus Av. Unit Freight Cost (13)
<u>Part I</u>												
Operations (Cont'd)												
Trailers	0	0	0	0	0	0	0	0	0			
Aircraft	0	0	0	0	0	0	0	0	0			

Summary of Funds for Motor Vehicles and Aircraft not Included in Construction

(1)	6/30/50		Obligations			Costs Incurred			On Order 6/30/53 (10)
	Book Value of Inventory (2)	On Order (3)	1951 (4)	1952 (5)	1953 (6)	1951 (7)	1952 (8)	1953 (9)	
<u>Part II</u>									
Total Net (Gross less trade-ins and disposals)	\$ 15,369	0	\$ 1,981	\$ 6,804	\$ 9,286	\$ 1,981	\$ 6,804	\$ 9,286	0

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U. S. Atomic Energy Commission

Analysis of Motor Vehicle and Aircraft Requirements
Other Supplemental Information

Schedule 81a
Monsanto Chemical Co. - Scioto Lab.

Dayton
Area

(1)	1951 (2)	1952 (3)	1953 (4)
<u>Part III</u>			
Type of Vehicle and Aircraft			
Trucks			
1½ ton & under, standard body			
Number of replacements	0	0	2
Within age standard	0	0	2
Not within age standard but within mileage standard	0	0	0
Not within either standard	0	0	0
Other			
Number of replacements	0	0	1
Within age standard	0	0	1
Not within age standard but within mileage standard	0	0	0
Not within either standard	0	0	0

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U. S. Atomic Energy Commission

Justification for Motor Vehicles and Aircraft

Dayton
Area

Schedule 81b

Program Statement

The fleet is adequate for transportation requirements during Fiscal Year 1951 without the anticipated replacement of two 1½ ton stake trucks budgeted for Fiscal Year 1951 which will not be required. This replacement has been rescheduled for Fiscal Year 1953. The general condition of the vehicles is above average due to careful handling, regular servicing and adherence to the established preventive maintenance program.

The most significant change in Fiscal Year 1953 will be the addition of one stake truck and one dump truck for the operation of Scioto Laboratory. It is contemplated that this equipment will not be required until 1953 since the bulk of work requiring this equipment, prior to this time, will be done by outside forces. It is anticipated that the full impact of maintenance work will not be felt until Fiscal Year 1953 at that location.

The most significant change in Fiscal Year 1952 will be the addition of three passenger cars and one power wagon. The passenger cars will be required for additional travel between Mound and Scioto Laboratories during the conversion of the latter location from stand-by to operating condition. The additional passenger cars will be required thereafter at Scioto during operations. The power wagon will be required for additional security patrol work at Scioto during the conversion period and also during operations.

Replacements for Fiscal Years 1952 and 1953 are within the replacement standards. Earlier replacement of vehicles is not anticipated at the present time.

Detailed Justification

Operations

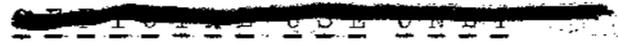
Passenger carrying vehicles

Replacements	\$ 3,936
Additions	
Disposals	

Trucks

Replacements	7,018
Additions	2,268
Disposals	

Total \$ 13,222



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U. S. Atomic Energy Commission

Justification for Motor Vehicles and Aircraft

Schedule 81b

Dayton
Area

Monsanto - Scioto Laboratory

Detailed Justification

Operations

Passenger carrying vehicles

Replacements	\$ 0
Additions	0
Disposals	0

Trucks

Replacements	7,018
Additions	2,268
Disposals	

Total \$ 9,286

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U. S. Atomic Energy Commission

Justification for Motor Vehicles and Aircraft

Schedule 81b

Dayton
Area

Monsanto - Mound Laboratory

Detailed Justification

Operations

Passenger carrying vehicles

Replacements	\$ 3,936
Additions	0
Disposals	0

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U. S. Atomic Energy Commission

DAYTON AREA

Typewriter Statement - Summary



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U. S. Atomic Energy Commission

Typewriter Statement - Summary

Dayton
Area

Schedule 82

Type of Machine (1)	Estimated 6/30/51			1952 Number			Estimated 6/30/52			1953 Number			Estimated 6/30/53		
	Inventory (Incl. on Order) (2)	No. in Use (3)	Av. Age in Use (4)	Acquisi- tions (5)	Trade- ins (6)	Dispo- sals (7)	Inventory (Incl. on Order) (8)	No. in Use (9)	Av. Age in Use (10)	Acquisi- tions (11)	Trade- ins (12)	Dispo- sals (13)	Inventory (Incl. on Order) (14)	No. in Use (15)	Av. Age in Use (16)
Part I															
Operations	Length of Writing Line														
Standard	13" or Under														
	27	27	9	5	15	0	17	17	7	5	5	0	17	17	5
	Over 13"														
	104	104	9	53	20	0	137	137	6	30	30	0	137	137	6
Electric	13" or Under														
	8	8	8	0	5	0	3	3	8	0	0	0	3	3	9
	Over 13"														
	9	9	8	7	0	0	16	16	6	5	5	0	16	16	6
Varitype Special ^{a/}	.....													
	3	3	1	0	0	0	3	3	2	0	0	0	3	3	3
Total, Operations	151	151	9	65	40	0	176	176	6	40	40	0	176	176	6

Summary of Funds for Typewriters not Included in Construction

(1)	Book Value 6/30/50 (2)	On Order 6/30/50 (3)	Obligations			Costs Incurred			On Order 6/30/53 (10)
			1951 (4)	1952 (5)	1953 (6)	1951 (7)	1952 (8)	1953 (9)	
Part II									
Total (Gross less trade-ins and disposals)	\$ 18,077	0	\$ 3,183	\$ 8,669	\$ 4,985	\$ 3,183	\$ 8,669	\$ 4,985	

Note:
a/ 1 with margin justifier, 3 with carbon ribbon attachment - mathematical attachment - electronic shielding.

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U. S. Atomic Energy Commission

Typewriter Statement

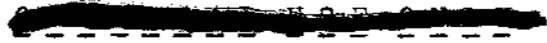
Schedule 82a

Monsanto - Mound Laboratory
Contractor

Dayton
Area

Type of Machine (1)	Estimated 6/30/51			1952 Number			Estimated 6/30/52			1953 Number			Estimated 6/30/53		
	Inventory (Incl. on Order) (2)	No. in Use (3)	Av. Age in Use (4)	Acquisi- tions (5)	Trade- ins (6)	Dispo- sals (7)	Inventory (Incl. on Order) (8)	No. in Use (9)	Av. Age in Use (10)	Acquisi- tions (11)	Trade- ins (12)	Dispo- sals (13)	Inventory (Incl. on Order) (14)	No. in Use (15)	Av. Age in Use (16)
Part I															
<u>Operations</u>															
<u>Length of Writing Line</u>															
Standard 13" or Under	20	20	9	5	15	0	10	10	7	5	5	0	10	10	5
Over 13"	93	93	9	30	20	0	103	103	6	30	30	0	103	103	6
Electric 13" or Under	6	6	8	0	5	0	1	1	8	0	0	0	1	1	0
Over 13"	9	9	8	5	0	0	14	14	6	5	5	0	14	14	6
Varitype	3	3	1	0	0	0	3	3	2	0	0	0	3	3	3
<u>Total, Operations</u>	<u>131</u>	<u>131</u>	<u>9</u>	<u>40</u>	<u>40</u>	<u>0</u>	<u>131</u>	<u>131</u>	<u>6</u>	<u>40</u>	<u>40</u>	<u>0</u>	<u>131</u>	<u>131</u>	<u>6</u>

Summary of Funds for Typewriters not Included in Construction									
(1)	Book Value 6/30/50 (2)	On Order 6/30/50 (3)	Obligations			Costs Incurred			On Order 6/30/53 (10)
			1951 (4)	1952 (5)	1953 (6)	1951 (7)	1952 (8)	1953 (9)	
Part II									
Total (Gross less trade-ins and disposals)	\$ 13,957	0	\$ 3,183	\$ 4,985	\$ 4,985	\$ 3,183	\$ 4,985	\$ 4,985	



U. S. Atomic Energy Commission
 Justification for Typewriters

Schedule 82b

Dayton
 Area

Monsanto - Mound Laboratory
 Contractor

Program Statement

The general condition of typewriters located at Mound Laboratories is considered substandard due to the fact that replacements with new machines have not

been made for the past several years. The replacements scheduled during FY 1952 and FY 1953 will bring the inventory of typewriters up to an acceptable standard of operating condition.

Detailed Justification

Operations

Replacements \$ 4,985

<u>Number</u>	<u>Type of Machine and Length of Writing Line</u>	<u>Age</u>	<u>Estimated Repair Cost Justifying Replacement</u>	<u>Gross Unit Cost</u>	<u>Trade-In Value</u>	<u>Replacement Cost</u>
5	Standard 13" or under	12	\$ 140	\$ 610	\$ 150	\$ 460
15	Standard 15"	10	450	1,920	525	1,395
14	Standard 15"	11	378	1,792	490	1,302
1	Standard 15"	12	27	128	30	98
1	Electric 18"	10	105	365	25	340
3	Electric 18"	11	210	1,095	60	1,035
1	Electric 18"	12	65	365	10	355
Total						\$ 4,985

Additions \$ 0

Disposals \$ 0



U. S. Atomic Energy Commission

Typewriter Statement

Schedule 82a

Dayton
Area

Monsanto - Scioto Laboratory
Contractor

Type of Machine (1)	Estimated 6/30/51			1952 Number			Estimated 6/30/52			1953 Number			Estimated 6/30/53		
	Inventory (Incl. on Order) (2)	No. in Use (3)	Av. Age in Use (4)	Acquisitions (5)	Trade-ins (6)	Disposals (7)	Inventory (Incl. on Order) (8)	No. in Use (9)	Av. Age in Use (10)	Acquisitions (11)	Trade-ins (12)	Disposals (13)	Inventory (Incl. on Order) (14)	No. in Use (15)	Av. Age in Use (16)
Part I															
<u>Operations</u>															
	Length of Writing Line														
Standard	13" or Under	7	7	7	0	0	7	7	8	0	0	0	7	7	9
	Over 13"	11	11	9	23	0	34	34	5	0	0	0	34	34	6
Electric	13" or Under	2	2	7	0	0	2	2	8	0	0	0	2	2	9
	Over 13"	0	0	0	2	0	2	2	1	0	0	0	2	2	2
Total, Operations		<u>20</u>	<u>20</u>	<u>8</u>	<u>25</u>	<u>0</u>	<u>45</u>	<u>45</u>	<u>5</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>45</u>	<u>45</u>	<u>6</u>

Summary of Funds for Typewriters not Included in Construction									
(1)	Book Value 6/30/50 (2)	On Order 6/30/50 (3)	Obligations			Costs Incurred			On Order 6/30/53 (10)
			1951 (4)	1952 (5)	1953 (6)	1951 (7)	1952 (8)	1953 (9)	
Part II									
Total (Gross less trade-ins and disposals)	\$ 4,120	0	\$ 0	\$ 3,684	\$ 0	\$ 0	\$ 3,684	\$ 0	

U. S. Atomic Energy Commission

Schedule 82b

Dayton
Area

Justification for Typewriters

Monsanto - Scioto Laboratory
Contractor

Program Statement

Most of the typewriters in use at Scioto Laboratories are in very good mechanical condition. Several are over ten years old; however, routine maintenance keeps them in satisfactory operation at a reasonable maintenance cost. The

acquisition of additional machines during FY 1952 will result in a typewriter inventory well adapted to the full operating requirements both as to type and to carriage length. For this reason no further additions or replacements are scheduled for FY 1953.

Detailed Justification

Operations

Replacements	\$	0
Additions	\$	0
Disposals	\$	0