



RADIOISOTOPE DISTRIBUTION PROGRAM PROGRESS REPORT FOR APRIL 1974

J. H. Gillette



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ORNL -TM-4608

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ISOTOPES DEVELOPMENT CENTER

RADIOISOTOPE DISTRIBUTION PROGRAM
PROGRESS REPORT FOR APRIL 1974

J. H. Gillette

Work Sponsored by
AEC Division of Biomedical and
Environmental Research

JUNE 1974

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Oak Ridge, Tennessee 37830
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CONTENTS

	<u>Page</u>
RADIOISOTOPE PRODUCTION AND MATERIALS DEVELOPMENT.	1
REACTOR-PRODUCED RADIOISOTOPES.	1
Reactor Products Pilot Production.	1
ACCELERATOR-PRODUCED ISOTOPES.	1
Cyclotron Products Pilot Production.	1
FISSION PRODUCTS	2
Krypton-85 Enrichment.	2
Cesium-137 Pilot Production.	2
Strontium-90 Pilot Production.	3
Short-Lived Fission Production	4
RADIOISOTOPES SALES.	4
PUBLICATIONS	6
REPORTS.	6

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RADIOISOTOPE PRODUCTION AND MATERIALS DEVELOPMENT

REACTOR-PRODUCED RADIOISOTOPES

Reactor Products Pilot Production (*R. W. Schaich*)
 (Production and Inventory Accounts)

<u>Processed Units</u>	
<u>Radioisotope</u>	<u>Amount (mCi)</u>
Calcium-47	23
Copper-67	21

ACCELERATOR-PRODUCED ISOTOPES

Cyclotron Products Pilot Production (*M. R. Skidmore*)
 (Production and Inventory Accounts)

April 1974 ORNL 86-Inch Cyclotron runs for ORNL and non-ORNL programs are given in Table 1.

Table 1. Cyclotron Irradiations and Runs for April 1974

<u>Date</u>	<u>Customer</u>	<u>Product</u>	<u>Target</u>	<u>Total Time (hr:min)</u>	<u>Total Charges</u>
<u>ORNL Programs</u>					
4-3-74	Isotopes Division	Thulium-167	Erbium-168	3:45	\$ 368
4-25-74	Isotopes Division	Bismuth-206	Lead-207	2:45	<u>221</u>
					\$ 589
<u>Sales Department Inventory</u>					
4-19-74	Isotopes Sales	Cobalt-57	Nickel	43:55	\$6385

FISSION PRODUCTS

Krypton-85 Enrichment (*R. J. Lauer*)

Shop fabrication of the six bundles of columns is complete. The cells in Building 3026-C are being prepared for installation of the columns. Instrumentation and Controls Division has completed fabrication of the four new counting chambers and the associated electronics.

The subcontractor has moved an equipment trailer to the site for the new chilled water system. One day of work was performed on the pipe for the system prior to a strike by the local construction crafts. The contract calls for the subcontractor to complete the job on July 6, 1974.

Cesium-137 Pilot Production (*R. W. Schaich*)
(Production and Inventory Accounts)

1. Process Status

The ^{137}Cs process equipment is in standby condition.

2. Operational Summary

Product Inventory

(Decay calculated through April 30, 1974)

	<u>Amount (Ci)</u>
<u>Inventory Material</u>	
Cesium-137 chloride powder	268,720
Sources in fabrication	124,900
Completed sources and special form cans	<u>12,830^a</u>
<u>Total Inventory Material</u>	<u>406,450</u>
<u>Non-Inventory Material</u>	
Material returned or stored for customer	
Puerto Rico sources	8,590
Lockheed	28,500
AECL powder	84,720
Radiation Resources	<u>36,740</u>
<u>Total Non-Inventory Material</u>	<u>158,550</u>
TOTAL INVENTORY AND NON-INVENTORY MATERIAL	565,000

^aIncludes 6,330 Ci unclaimed sources and 6,500 Ci stock powder cans.

Fabrication Summary

	<u>April 1974</u>		<u>CY 1974</u>		<u>FY 1974</u>	
	<u>No.</u>	<u>Ci</u>	<u>No.</u>	<u>Ci</u>	<u>No.</u>	<u>Ci</u>
Sources						
Fabricated	15	117,120	34	233,720	59	255,875
Shipped	14	108,720	25	116,434	43	130,975
Special Form Cans						
Fabricated	0	0	2	24,350	4	25,150
Shipped	2	24,350	2	24,350	4	25,150

3. Current Orders

Current orders for ^{137}Cs as sources or bulk powder are as follows:

<u>Customer</u>	<u>Amount (Ci)</u>	<u>Estimated Shipping Date</u>
3M Company	300	a
Isomedix Corporation	108,000	June 1974
Industrial Nucleonics Corp.	40	May & July 1974
Sandia Corporation	200,001	June 1974
Technical Operations, Inc.	25	July 1974

^aHolding for request for shipment.

Strontium-90 Pilot Production (*R. W. Schaich*)
(Production and Inventory Accounts)

1. Process Status

Strontium-90 processing was continued and ~0.15 MCi of ^{90}Sr feed solution was converted to distrontium titanate.

Product Inventory

(Decay calculated through April 30, 1974)

<u>Inventory Material</u>	<u>Amount (Ci)</u>
Feed solution ($\pm 25\%$)	290,000
Sources in fabrication	0
^{90}Sr titanate powder ($\pm 5\%$)	211,800
"AGN" liners	142,095
SNAP-7F sources	112,500
RCA source	60,650
^{90}Sr silicate powder	29,650
Recovery material	24,690
Stock powder cans	<u>6,050</u>
Total	877,435
Less SNAP material purchase ^a	<u>269,630</u>
<u>Total Inventory Material</u>	<u>607,805</u>

<u>Non-Inventory Material</u>	<u>Amount (Ci)</u>
Quehanna recovery material	46,680
Weather Bureau source	12,400
SNAP-7B	169,730
SNAP-7C	26,660
SNAP-7D	155,280
SNAP material purchase	<u>269,630</u>
<u>Total Non-Inventory Material</u>	<u>680,380</u>
TOTAL INVENTORY AND NON-INVENTORY MATERIAL	1,288,185

^aStrontium-90 purchased under DRRD program and retained in solution form.

Fabrication Summary

	<u>April 1974</u>		<u>CY 1974</u>		<u>FY 1974</u>	
	<u>No.</u>	<u>Ci</u>	<u>No.</u>	<u>Ci</u>	<u>No.</u>	<u>Ci</u>
Sources						
Fabricated	3	153,170	3	153,170	4	198,870
Shipped	3	153,170	3	153,170	4	198,870
Special Form Cans						
Fabricated	0	0	0	0	0	0
Shipped	1	9	1	9	2	509

Short-Lived Fission Production (*R. W. Schaich*)
(Production and Inventory Accounts)

<u>Isotope</u>	<u>Number of Batches</u>	<u>Amount (Ci)</u>
Xenon-133	1	350
Iodine-131	1	10

RADIOISOTOPE SALES

J. E. Ratledge

Requests for quotations were received from Teledyne Isotopes, Inc. for four ⁹⁰Sr sources each containing ~55 kilocuries, and from Comitato Nazionale per l'Energia Nucleare, Italy, for one ⁹⁰Sr source containing ~20 kilocuries. We presently have on hand orders totaling 2,881 curies of normal ⁸⁵Kr and 180 curies of enriched ⁸⁵Kr.

Shipments made during the month that may be of interest are listed below:

<u>Customer</u>	<u>Isotope</u>	<u>Amount</u>
<u>Large Quantities</u>		
National Bureau of Standards	Iodine-129	2,000 mg
Air Reduction Company	Krypton-85	278 Ci
New England Nuclear Corp.	Hydrogen-3	4,000 Ci
Saunders-Roe Development Ltd.	Hydrogen-3	5,000 Ci
Philips-Duphar BV	Cobalt-57	1,000 mCi
Radiochemical Centre	Cesium-137	24,350 Ci
Minnesota Mining & Mfg. Co.	Promethium-147	5,292 Ci
U.S. Navy	Strontium-90	221,030 Ci
Isomedix, Inc.	Cesium-137	108,724 Ci

<u>Withdrawn Items</u>		
Mayo Clinic	Copper-67	6.5 mCi
Cleveland Metropolitan Gen. Hosp.	Iodine-131	50 mCi
University of Rochester	Iodine-131	250 mCi
University of Pittsburgh	Iodine-131	50 mCi

<u>Items Used in Cooperative Programs</u>		
ORAU	Thulium-167	5 mCi
	Bismuth-206	15 mCi
Johns Hopkins University	Bismuth-206	10 mCi
National Institutes of Health	Potassium-43	15 mCi
Scripps Clinic and Research Fdtn.	Iron-59	0.5 mCi

The radioisotopes sales proceeds and shipments for the first nine months of FY 1973 and FY 1974 are given in Table 2.

Table 2. Radioisotope Sales and Shipments

Item	7-1-72 thru 4-30-73	7-1-73 thru 4-30-74
Inventory items	\$391,227	\$385,231
Major products	46,176	57,310
Radioisotope services	181,863	216,170
ORNL 86-Inch Cyclotron	92,872	84,747
Miscellaneous processed materials	50,158	54,161
Packing and Shipping	<u>56,688</u>	<u>60,917</u>
Total	\$818,984	\$858,536
Number of shipments	1,766	1,507

PUBLICATIONS

REPORTS

J. H. Gillette, *Radioisotope Program Progress Report for March 1974*, ORNL-TM-4537, Oak Ridge National Laboratory.

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