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Radioisotope Distribution Program Progress Report for January 1979

E. Lamb



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OPERATIONS DIVISION

RADIOISOTOPE DISTRIBUTION PROGRAM
PROGRESS REPORT FOR JANUARY 1979

Date Published - April 1979

E. Lamb

Work Sponsored by
DOE Division of Biomedical and
Environmental Research

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RADIOISOTOPE DISTRIBUTION PROGRAM
PROGRESS REPORT FOR JANUARY 1979

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SUMMARY

Information is reported on new production,
inventory status, operational problems, and
radioisotope sales.

RADIOISOTOPE PRODUCTION AND MATERIALS

REACTOR-PRODUCED RADIOISOTOPES

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

<u>Processed Units</u>	
<u>Radioisotope</u>	<u>Amount (mCi)</u>
Calcium-47	20

Iridium-192 Production (*R. W. Schaich*)

Six customer irradiation units and seven ORNL HFIR units (RB) containing 93,000 Ci of ^{192}Ir at HFIR discharge date were processed during the month of January 1979. Twenty-two shipments containing 112,000 Ci of ^{192}Ir were made during this period.

ACCELERATOR-PRODUCED ISOTOPES

Cyclotron Service Irradiations (*M. R. Skidmore*)
(Production and Inventory Accounts)

During January 1979, the ORNL 86-Inch Cyclotron operated eighteen hours for ORNL and Oak Ridge DOE Programs for total charges of \$2,710. Non-ORNL Program irradiations were for 234 hours with total charges of \$44,205.

A ^{67}Ga irradiation was interrupted twice on January 22nd. The first interruption was due to the failure of a relay in the oscillator supply and the second outage resulted from the loss of the cooling water to the building. While making repairs in the pump house a worker accidentally turned the circulating pump off that supplies the cooling water for the Cyclotron. On January 31st another ^{67}Ga irradiation was terminated prematurely due to an electrical shock between the grid and plate of the oscillator tube.

FISSION PRODUCTS

Krypton-85 Enrichment Facility (*R. W. Schaich*)

The north bank of thermal diffusion columns operated normally throughout the reporting period.

A partial unloading of the south bank of thermal diffusion columns was completed during this period. The highest cut obtained was analyzed at 27.6% and contained 347 Ci. An additional 732 Ci was removed and analyzed between 23.5 to 25.0% enrichment in ^{85}Kr .

The expected 40% ^{85}Kr was not obtained from the columns due to product removal valves leaking from lower enriched columns and a problem with shifting peak values in the columns within the limits of the detectors and the valving arrangement. It is planned to install additional valves and detectors for the removal of >30% material in the future.

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

1. Process Status

Processed one WESF container of $^{137}\text{CsCl}$ (~60,000 Ci) for J. L. Shepherd. Final data will be available in February 1979.

2. Operational Summary

Product Inventory

(Decay calculated through August 31, 1978)

<u>Inventory Material</u>	<u>Amount (Ci)</u>
Cesium-137 chloride powder	<u>7,900</u>
<u>Total Inventory Material</u>	<u>7,900</u>
<u>Non-Inventory Material</u>	<u>Amount (Ci)</u>
Reject Pellets and Sources	4,300
Special Form Cans	4,000
Material returned or stored for customer	
J. L. Shepherd	11,000
New England Nuclear Corporation	1,975
Puerto Rico Sources	7,700
Lockheed	19,100
AECL powder	36,949
Radiation Resources	16,800
Gamma Industries	8,200
Minn. Mining & Mfg. Co.	<u>12,000</u>
<u>Total Non-Inventory Material</u>	<u>122,024</u>
TOTAL INVENTORY AND NON-INVENTORY MATERIAL	129,924

Fabrication Summary

	<u>Jan. 1979</u>		<u>CY 1979</u>		<u>FY 1979</u>	
	<u>No.</u>	<u>Ci</u>	<u>No.</u>	<u>Ci</u>	<u>No.</u>	<u>Ci</u>
Sources						
Fabricated	0	0	0	0	0	0
Shipped	0	0	0	0	16	15,260
Special Form Cans						
Fabricated	0	0	0	0	0	0
Shipped	2	200	2	200	4	2,200

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

1. Process Status

The ⁹⁰Sr processing equipment has been placed in standby status.

Product Inventory

(Decay calculated through August 31, 1978)

<u>Inventory Material</u>	<u>Amount (Ci)</u>
⁹⁰ Sr titanate powder (±5%)	0
Sources in fabrication	0
Stock powder cans	3,170
Stock solution	180
<u>Total Inventory Material</u>	<u>3,350</u>
<u>Non-Inventory Material</u>	<u>Amount (Ci)</u>
⁹⁰ Sr Fluoride	60,000
New England Nuclear Corporation	175
Calorimeter Standards	4,700
Weather Bureau Source	11,100
SNAP-7B	152,500
SNAP-7C	24,000
SNAP-7D	139,500
SNAP material purchase ^a	126,700
<u>Total Non-Inventory Material</u>	<u>518,675</u>
TOTAL INVENTORY AND NON-INVENTORY MATERIAL	522,025

^aStrontium-90 purchased under DRRD program.

Fabrication Summary

	<u>Jan. 1979</u>		<u>CY 1979</u>		<u>FY 1979</u>	
	<u>No.</u>	<u>Ci</u>	<u>No.</u>	<u>Ci</u>	<u>No.</u>	<u>Ci</u>
Sources						
Fabricated	0	0	0	0	4	153,000
Shipped	0	0	0	0	4	153,000
Special Form Cans						
Fabricated	0	0	0	0	0	0
Shipped	0	0	0	0	0	0

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

<u>Isotopes</u>	<u>Number of Batches</u>	<u>Amount (Ci)</u>
Xenon-133	4	1990
Iodine-131	2	125

RADIOISOTOPE SALES

J. E. Ratledge

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>		
Brandhurst Co., Ltd., England	Tritium	60,000 Ci
ICN Pharmaceuticals	Tritium	1,000 Ci
University of California, LLL	Tritium	3,333 Ci
Merz & Benteli Nuclear, Switzerland	Tritium	60,000 Ci
New England Nuclear Corporation	Tritium	8,000 Ci
Saunders-Roe Dev. Ltd., England	Tritium	20,000 Ci
Self-Powered Lighting	Tritium	18,200 Ci
University of Alberta, Canada	Tritium	100 Ci
Battelle Northwest Laboratory	Krypton-85	100 Ci
New England Nuclear Corporation	Krypton-85	100 Ci
The Radiochemical Centre, England	Krypton-85	100 Ci
Western Electric Company	Krypton-85	100 Ci

<u>Customer</u>	<u>Isotope</u>	<u>Amount</u>
<u>Withdrawn Items</u>		
Automation Industries, Inc.	Iridium-192	12,190 Ci
Gamma Industries	Iridium-192	13,055 Ci
Gulf Nuclear	Iridium-192	15,295 Ci
Source Production & Equipment	Iridium-192	14,160 Ci
Technical Operations	Iridium-192	51,348 Ci
Industrial Nuclear	Iridium-192	4,026 Ci
Mine Safety	Iodine-131	178 mCi
ORNL, Chem. Tech.	Carbon-14	2 mCi
ORNL	carbon-14	600 mCi

Items Used in Cooperative Programs

Medical Research Council	Platinum-195m	4 mCi
University of Southern California	Platinum-195m	7 mCi
University of Kentucky	Platinum-195m	20 mCi
University of Mississippi	Potassium-43	3 mCi
V. A. Center	Potassium-43	2 mCi

The radioisotope sales and shipments for the first four months of fiscal year 1978 and fiscal year 1979 are given in Table 1.

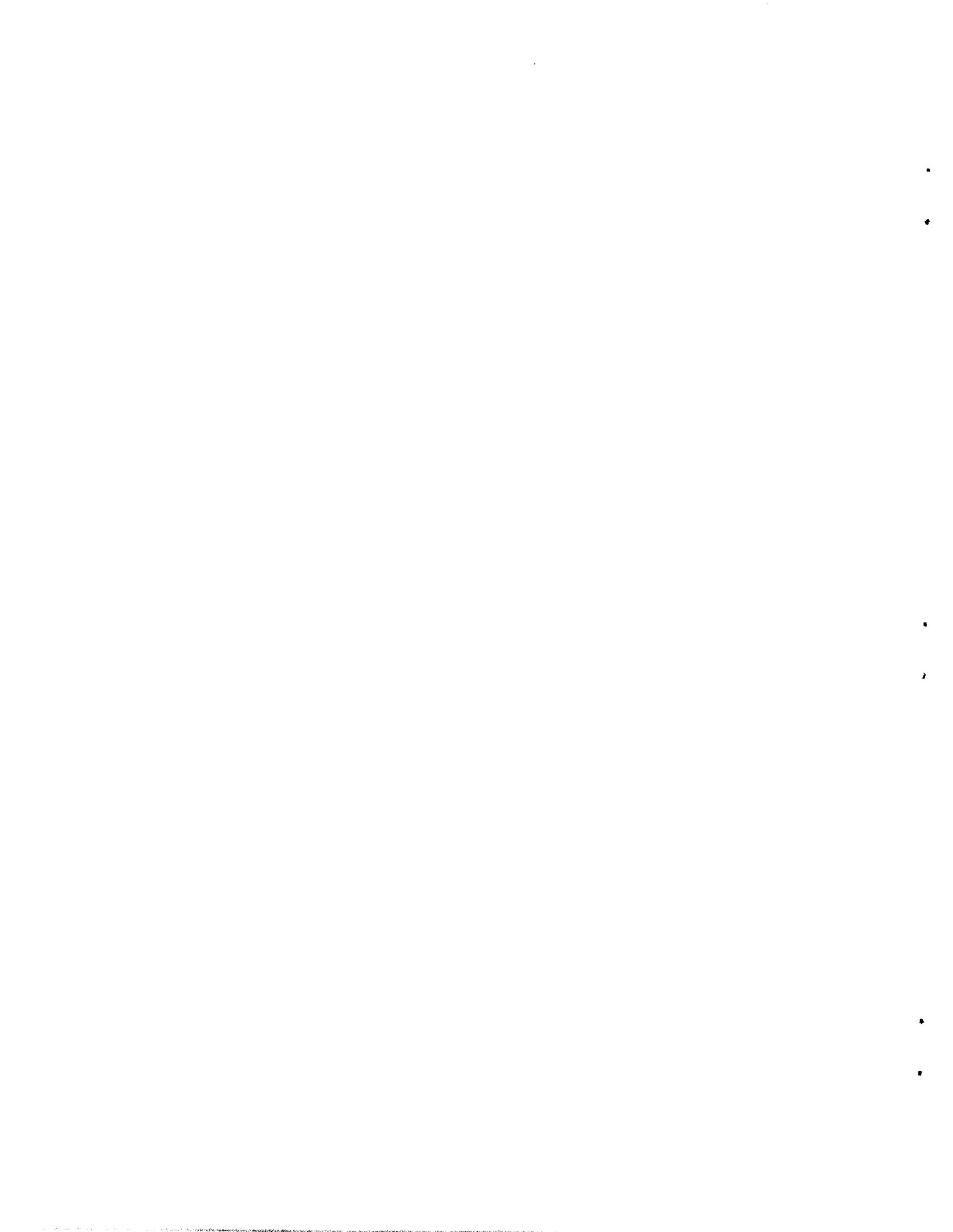
Table 1. Radioisotope Sales and Shipments

Item	10-1-77 thru 1-31-78	10-1-78 thru 1-31-79
Inventory Items	\$ 52,757	\$ 117,009
Tritium		701,730
Major Products	267,000	130,899
Iridium-192		441,087
Radioisotope Services	89,476	145,620
Cyclotron Irradiations	116,143	138,774
Miscellaneous Processed Materials	2,312	4,935
Packing and Shipping	<u>65,335</u>	<u>66,975</u>
Total	\$ 593,023	\$1,747,030
Number of Shipments	788	794

PUBLICATIONS

REPORTS

E. Lamb, *Radioisotope Distribution Program Progress Report for December, 1978*, ORNL/TM-6769, Oak Ridge National Laboratory (March 1979).



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