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**List of ERDA Radioisotope
Customers with Summary of
Radioisotope Shipments FY 1977
(Plus the Transition Quarter)**

**Compiled by
Janice L. Simmons**

July 1978

**Prepared for
Office of Program Coordination,
Office of the Assistant Secretary for
Environment and Safety
U.S. Department of Energy**

**Pacific Northwest Laboratory
Operated for the U.S. Department of Energy
by**

PNL-2572

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LIST OF ERDA RADIOISOTOPE CUSTOMERS
WITH SUMMARY OF RADIOISOTOPE SHIPMENTS
FY 1977 (Plus the Transition Quarter)

Compiled by
Janice L. Simmons

July 1978

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Prepared for
Office of Program Coordination,
Office of the Assistant Secretary for
Environment and Safety
U.S. Department of Energy
under Contract No. EY-76-C-06-1830

Pacific Northwest Laboratory
Richland, Washington 99352

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Larry E. Williams

Authorizing Official

Date: *06/13/2007*

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Argonne National Laboratory
Pacific Northwest Laboratory
Hanford Engineering Development Laboratory
Idaho Operations Office/Aerojet Nuclear Company
Los Alamos Scientific Laboratory
Mound Laboratory
Oak Ridge National Laboratory
Savannah River Plant/DOE
United Nuclear Industries, Inc.

PREVIOUS REPORTS

Previous reports in this series are:

TID-2160 (FY 1964)	ORNL-IIC-17 (FY 1968)	BNWL-1744 (FY 1972)
ORNL-IIC-6 (FY 1965)	ORNL-IIC-27 (FY 1969)	BNWL-1824 (FY 1973)
ORNL-IIC-9 (FY 1966)	ORNL-IIC-32 (FY 1970)	BNWL-1902 (FY 1974)
ORNL-IIC-13 (FY 1967)	ORNL-IIC-38 (FY 1971)	BNWL-1993 (FY 1975)
		BNWL-2147 (FY 1976)

Similar reports covering stable isotope distribution have also been prepared and are available from the National Technical Information Center, U.S. Department of Commerce, 5285 Port Royal Rd, Springfield, VA 22161.

- "Stable Isotope Customer List and Summary of Shipments, FY 1977," Oak Ridge National Laboratory, ORNL/TM-6241, April 1977 (\$4.50 printed; \$3.00 microfiche).
- "Stable Isotope Sales: Mound Laboratory Customer and Shipment Summaries, FY 1976 and 1976 A." MLM-2403, June 6, 1977 (\$4.00 printed; \$3.00 microfiche).

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NOMENCLATURE

I. CLASSIFICATIONS

Cyclotron Service Irradiations	CSI	Normal Uranium	NU
Depleted Uranium	DU	Reactor Service Irradiations	RSI
Encapsulation	Cap	Special Services	SS
Enriched Uranium	EU	Targets	Tgs
Fission Products	FP		
Miscellaneous Compound Preparations	MCP		

11. ISOTOPE SUPPLIER AND CONTACT

Argonne National Laboratory	(A)	Hanford Engineering Development Laboratory	(H)
J. C. Haugen Special Materials Division Argonne National Laboratory 9700 S. Cass Ave. Argonne, IL 60439		D. Engel, Manager Materials Management Richland, WA 99352	
FTS 972-6778 commercial 312-972-6778		FTS 444-3202 Commercial 509-942-3202	
Battelle, Pacific Northwest Laboratories(a)	(P)	Idaho Operations Office	(I)
J. V. Filsinger Safety and Nuclear Materials Management Pacific Northwest Laboratory Richland, WA 99352		R. A. Hasse Idaho National Engineering Co EG&G Idaho Inc. PO Box 1625 Idaho Falls, ID 83401	
FTS 444-2051 Commercial 509-946-2051		FTS 583-4266 Commercial 208-526-4266 Extension 4266	
Brookhaven National Laboratory	(B)	Los Alamos Scientific Laboratory	(L)
P. Colsmann Isotopes and Special Materials Group Brookhaven National Laboratory Upton, Long Island, NY 11973		C. Longmire Los Alamos Scientific Laboratory University of California PO Box 1663 Los Alamos, NM 87545	
FTS 664-4058 Commercial 516-345-3441 Extension 4058		FTS 843-4948 Commercial 505-667-4948	

(a) Battelle Memorial Institute operates Pacific Northwest Laboratory for the Department of Energy. In this report, we have identified Pacific Northwest Laboratory as Battelle, Pacific Northwest Laboratories.

NOMENCLATURE (Contd)

Mound Laboratory	(M)	Savannah River Plant	(S)
Dr. R. A. Schwind, Manager Isotope Separation Section Monsanto Research Corporation P.O. Box 32 Miamisburg, OH 45342		W. D. Sandberg, Director Technical and Production Division Department of Energy P.O. Box A Aiken, SC 29801	
FTS 774-7147 Commercial 513-866-7444 Extension 7147		FTS 239-2217 Commercial 803-824-6331 Extension 2217	
Oak Ridge National Laboratory	(O)	United Nuclear Industries, Inc.	(U)
J. E. Ratledge, Supervisor Isotope Sales/Isotope Development Ctr. Oak Ridge National Laboratory P.O. Box X Oak Ridge, TN 37830		P. A. Carlson, Manager Reactor Technology Richland, WA 99352	
FTS 850-6661 Commercial 615-483-8611 Extension 6661		FTS 444-1631 Commercial 509-942-1631	

LIST OF ERDA RADIOISOTOPE CUSTOMERS
WITH SUMMARY OF RADIOISOTOPE SHIPMENTS

FY 1977 (Plus the Transition Quarter)

INTRODUCTION

The thirteenth edition of the radioisotope customer list was prepared at the request of the Office of Program Coordination, Office of the Assistant Secretary for Environment and Safety, Energy Research and Development Administration (ERDA), now Department of Energy (DOE). The purpose of the document is to list ERDA's (now DOE) FY-1977 and transition quarter radioisotope production and distribution activities by its facilities at Argonne National Laboratory; Pacific Northwest Laboratory; Brookhaven National Laboratory; Hanford Engineering Development Laboratory; Idaho Operations Office; Los Alamos Scientific Laboratory; Mound Laboratory; Oak Ridge National Laboratory; Savannah River Laboratory; and United Nuclear Industries, Inc.

The information is divided into four sections. Section I is an alphabetical list of domestic and foreign customers and their addresses. Each customer has been assigned a number according to its alphabetical position to provide a means of cross-referencing in the following sections. The isotopes purchased are listed after the address of the customer, and the laboratory supplying each isotope is indicated by a letter set off by parentheses (see page vi, Nomenclature, Part II).^(a) Section II is an alphabetical list of isotopes that are cross-referenced to customer numbers and divided into the domestic and foreign categories. This section provides a quick idea of the number of companies purchasing a particular isotope. If more information is needed, the reader can locate the customer by number and determine the laboratory supplying the isotope. Section III is an alphabetical list of states and countries, and is also cross-referenced to customer numbers, indicating geographical concentrations of isotope users. Section IV summarizes the FY-1977 radioisotope shipment activities of laboratories in a comprehensive table providing an alphabetical listing of the isotopes and their suppliers. The shipments, quantities, and dollars are broken down for each isotope under the domestic, foreign, and project (ERDA facilities) categories, and the total figures for each isotope are also provided.

(a) All entries for Argonne, United Nuclear, and Idaho are either reactor service irradiations, cyclotron service irradiations, or both, with no processed isotopes being sold; entries for Savannah River represent material for resale and loans.

■ - ALPHABETICAL LIST OF CUSTOMERS, WITH
CONTACTS AND ISOTOPES PURCHASED

A. DOMESTIC

- 1 A.A. I. Corporation
PO Box 6767
Baltimore, MD 21204

DU(P)
- 2 Aerojet Nuclear Company
550 Second Street
PO Box 1845
Idaho Falls, ID 83401

 $^{252}\text{Cf}(0)$, $^{60}\text{Co}(0)$, $^{236}\text{Pu}(0)$, $^{239}\text{Pu}(0)$,
 $^{99}\text{Tc}(0)$, $^{133}\text{Xe}(0)$, $^{95}\text{Zr}(0)$
- 3 Airco, Inc.
Central Research Laboratories
Murray Hill, NJ 07974

 $^8_5\text{Kr}(0)$
- 4 Alabama, University of
Medical Center
1919 Seventh Avenue, South
Birmingham, AL 35486

 $^{99}\text{Tc}(0)$, $^{133}\text{Xe}(0)$
- 5 Albert Einstein College of Medicine
Eastchester Rd. & Morris Park Ave.
Bronx, NY 10461

RSI(B)
- 6 Allied-General Nuclear Services
BNFP-Osborn Road (PO Box 847)
Barnwell, SC 29812

 $^{236}\text{Pu}(0)$, $^{244}\text{Pu}(0)$
- 7 American Atomics Corporation
425 South Plumer
Tucson, AZ 85719

 $^3\text{H}(0)$, $^{85}\text{Kr}(0)$, MCP(0), $^{238}\text{U}(M)$
- 8 Amersham Corporation
Arlington Heights, IL 60005

 $^{241}\text{Am}(0)$, Cap(0), $^{244}\text{Cm}(0)$, $^{129}\text{I}(0)$
- 9 Analog Devices Semiconductor
829 Woburn Street
Wilmington, MA 01887

 $^8_5\text{Kr}(0)$
- 10 Argonne National Laboratory
9700 South Cass Avenue
Argonne, IL 60439

 $^{241}\text{Am}(0)$, $^{37}\text{Ar}(0)$, $^{140}\text{Ba}(H)$, ^{249}Bk ,
Cap(0), $^{144}\text{Ce}(0)$, $^{249}\text{Cf}(0)$, $^{252}\text{Cf}(0)$,
 $^{252}\text{Cs}(S)$, $^{248}\text{Cm}(0)$, $^{253}\text{Es}(0)$, $^3\text{H}(0)$,
 $^3\text{H}(P)$, $^{43}\text{K}(0)$, MCP(0), $^{237}\text{Np}(0)$, $^{238}\text{Pu}(M)$,
 $^{239}\text{Pu}(M)$, BSI(B), $^{103}\text{Ru}(0)$, $^{106}\text{Ru}(0)$,
Tgs(0), $^{230}\text{Th}(0)$, $^{233}\text{U}(0)$, $^{235}\text{U}(M)$,
 $^{235}\text{U}(0)$, $^{238}\text{U}(M)$, $^{238}\text{U}(0)$, $^{91}\text{Y}(0)$,
 $^{95}\text{Zr}(0)$
- 11 Argonne National Laboratory
PO Box 2528
Idaho Falls, ID 83401

 $^{230}\text{Th}(0)$, $^{133}\text{Xe}(0)$
- 12 Argonne National Laboratories - West
EBR Site INEL
Scoville, ID 83401

 $^{133}\text{Ba}(H)$, $^{140}\text{Ba}(H)$, $^{137}\text{Cs}(H)$, $^{60}\text{Co}(H)$,
 $^{55}\text{Fe}(H)$, $^{22}\text{Na}(H)$
- 13 Arizona Medical Center
Purchasing Dept.
Drachman St. @ Warren
Tucson, AZ 85124

 $^{127}\text{Xe}(B)$
- 14 Arizona, University of
Post Office Drawer 4100
Tucson, AZ 85721

 $^{103}\text{Ru}(0)$
- 15 Arkansas, University of
Fayetteville 11e, AR 72701

 $^{252}\text{Cf}(S)$
- 16 Atlantic Richfield Hanford Company
PO Box 250
Richland, WA 99352

 $^{241}\text{Am}(H)$, $^{243}\text{Am}(H)$, $^{139}\text{Ce}(H)$, $^{141}\text{Ce}(H)$,
 $^{137}\text{Cs}(H)$, $^{51}\text{Cr}(H)$, $^{60}\text{Co}(H)$, DU(P), EU(P)
 $^{59}\text{Fe}(H)$, $^{131}\text{I}(H)$, Pu(P), $^{236}\text{Pu}(H)$,
 $^{147}\text{Pm}(H)$, $^{103}\text{Ru}(H)$, $^{85}\text{Sr}(H)$, $^{90}\text{SrY}(H)$,
 $^{99}\text{Tc}(H)$
- 17 Atlantic Richfield Company
PO Box 15007
Los Angeles, CA 90005

 $^{140}\text{Ba}(0)$

- 18 Atomergic Chemetals Corporation
100 Fairchild Ave.
Plainview, NY 11803
 $^{236}\text{U}(\text{O})$
- 19 Atomics International
8900 Desota Ave.
Canoga Park, CA 91304
 $^{60}\text{Co}(\text{H})$, $^{54}\text{Mn}(\text{H})$, $^{182}\text{Ta}(\text{H})$
- 20 Deleted
- 21 Babcock and Wilcox Company
Research and Development Division
1562 Beeson St.
Alliance, OH 44601
 $^{243}\text{Am}(\text{O})$, $^{244}\text{Cm}(\text{O})$, $^{241}\text{Pu}(\text{O})$, $^{233}\text{U}(\text{O})$
- 22 Baker Chemical Company, J. T
Research Department
600 N. Broad St.
Phillipsburg, NJ 08865
 $\text{RSI}(\text{A})$
- 23 Battelle Memorial Institute
505 King Highway
Columbus, OH 43201
 $\text{Am}(\text{P})$, $\text{Ce}(\text{P})$, $\text{Cm}(\text{P})$, $\text{Cs}(\text{O})$, $\text{DU}(\text{P})$,
 $\text{EU}(\text{P})$, $^{85}\text{Kr}(\text{O})$, $\text{MCP}(\text{O})$, $^{237}\text{Np}(\text{O})$, $\text{Pu}(\text{P})$,
 $^{238}\text{Pu}(\text{M})$, $^{239}\text{Pu}(\text{M})$, $^{90}\text{Sr}(\text{O})$, $\text{Tgs}(\text{O})$,
 $^{232}\text{Th}(\text{M})$, $\text{U}(\text{P})$
- 24 Battelle, Pacific Northwest Laboratories
PO Box 999
Richland, WA 99352
 $^{241}\text{Am}(\text{H})$, $^{241}\text{Am}(\text{O})$, $^{133}\text{Ba}(\text{H})$, $^{210}\text{Bi}(\text{H})$,
 $^{144}\text{CePr}(\text{H})$, $^{252}\text{Cf}(\text{O})$, $^{252}\text{Cf}(\text{S})$, $^{243}\text{Cm}(\text{O})$,
 $^{137}\text{Cs}(\text{H})$, $\text{CSI}(\text{O})$, $^{60}\text{Co}(\text{H})$, $^3\text{H}(\text{H})$, $^3\text{H}(\text{O})$,
 $^{85}\text{Kr}(\text{O})$, $\text{MCP}(\text{O})$, $^{237}\text{Np}(\text{H})$, $^{237}\text{Np}(\text{O})$,
 $^{210}\text{Pb}(\text{H})$, $^{147}\text{Pm}(\text{H})$, $^{210}\text{Po}(\text{H})$, $^{238}\text{Pu}(\text{O})$,
 $^{239}\text{Pu}(\text{H})$, $^{239}\text{Pu}(\text{O})$, $^{244}\text{Pu}(\text{O})$, $\text{RSI}(\text{A})$,
 $\text{RSI}(\text{B})$, $^{106}\text{Ru}(\text{H})$, $^{106}\text{Ru}(\text{O})$, $^{151}\text{Sm}(\text{H})$,
 $^{99}\text{SrY}(\text{H})$, $^{99}\text{Tc}(\text{H})$, $^{99}\text{Tc}(\text{O})$, $\text{Tgs}(\text{O})$,
 $^{232}\text{Th}(\text{H})$, $^{170}\text{Tm}(\text{U})$, $\text{U}(\text{H})$, $^{233}\text{U}(\text{O})$,
 $^{235}\text{U}(\text{O})$, $^{95}\text{Zr}(\text{O})$
- 25 Bell Telephone Laboratories
Murray Hill, NJ 07971
 $\text{MCP}(\text{O})$, $\text{SS}(\text{O})$
- 26 Bendix Corporation, The
2000 East Bannister Rd.
Kansas City, MO 64131
 $^{147}\text{Pm}(\text{O})$, $\text{SS}(\text{O})$
- 27 Biochemical and Nuclear Corporation
(Norchem Division)
PO Box 749
Burbank, CA 91503
 $^3\text{H}(\text{O})$
- 28 Boston University
100 Cunnington St.
Boston, MA 02215
 $^{106}\text{Ru}(\text{O})$, $^{89}\text{Sr}(\text{O})$
- 29 Bowman Gray School of Medicine
Winston-Salem, NC 27103
 $^{133}\text{Xe}(\text{O})$
- 30 Brookhaven National Laboratory
Upton, Long Island, NY 11973
 $\text{Cap}(\text{O})$, $^{252}\text{Cf}(\text{S})$, $^3\text{H}(\text{O})$, $^{43}\text{K}(\text{O})$, $\text{MCP}(\text{O})$,
 $^{237}\text{Np}(\text{O})$, $^{103}\text{Ru}(\text{O})$, $\text{SS}(\text{O})$, $^{99}\text{Tc}(\text{O})$,
 $\text{Tgs}(\text{O})$, $^{230}\text{Th}(\text{O})$, $^{232}\text{Th}(\text{O})$
- 31 Brooklyn College
Brooklyn, NY 11210
 $\text{RSI}(\text{B})$
- 32 Brown University
192 Thayer St.
Providence, RI 02912
 $^{28}\text{Mg}(\text{B})$, $^{28}\text{Mg}(\text{O})$
- 33 California Institute of Technology
1201 E. California Blvd.
Pasadena, CA 91109
 $\text{Tgs}(\text{O})$, $^{230}\text{Th}(\text{O})$, $^{235}\text{U}(\text{O})$
- 34 Jet Propulsion Laboratory
California Institute of Technology
4800 Oak Grove Dr.
Pasadena, CA 91103
 $^{238}\text{Pu}(\text{M})$
- 35 California, University of
400 Sproul Hall
Berkeley, CA 94720
 $^{235}\text{U}(\text{O})$
- 36 California, University of
Lawrence Berkeley Laboratory
Berkeley, CA 94701
 $^{227}\text{Ac}(\text{M})$, $^{249}\text{Bk}(\text{O})$, $^3\text{H}(\text{M})$, $^{244}\text{Pu}(\text{O})$,
 $^{89}\text{Sr}(\text{O})$
- 37 California, University of
Davis, CA 95616
 $^{129}\text{I}(\text{O})$, $^{85}\text{Kr}(\text{O})$, $^{238}\text{U}(\text{P})$
- 38 California, University of
PO Box 109
La Jolla, CA 92037
 $^{127}\text{Xe}(\text{B})$

- 39 California, University of, at San Diego
Chemistry Department
3175 Miramar Rd.
LaJolla, CA 92093

RSI(A)
- 40 California, University of
Lawrence Livermore Laboratory
PO Box 808
Livermore, CA 94550

 $^{241}\text{Am}(\text{O})$, $^{249}\text{Bk}(\text{O})$, $\text{Cap}(\text{O})$, $^{252}\text{Cf}(\text{O})$,
 $^{246}\text{Cm}(\text{O})$, $\text{DU}(\text{P})$, $^{253}\text{Es}(\text{O})$, $^3\text{H}(\text{O})$,
 $^{85}\text{Kr}(\text{O})$, $\text{MCP}(\text{O})$, $^{237}\text{Np}(\text{M})$, $^{237}\text{Np}(\text{O})$,
 $^{231}\text{Pa}(\text{O})$, $\text{Pu}(\text{P})$, $^{238}\text{Pu}(\text{M})$, $^{239}\text{Pu}(\text{O})$,
 $^{240}\text{Pu}(\text{O})$, $^{241}\text{Pu}(\text{O})$, $^{244}\text{Pu}(\text{O})$, $^{151}\text{Sm}(\text{O})$,
 $\text{Tgs}(\text{O})$, $^{230}\text{Th}(\text{O})$, $^{232}\text{Th}(\text{O})$, $^{232}\text{U}(\text{O})$,
 $^{234}\text{U}(\text{O})$, $^{235}\text{U}(\text{O})$, $^{236}\text{U}(\text{O})$, $^{238}\text{U}(\text{O})$
- 41 California, University of
Los Alamos Scientific Laboratory
PO Box 1663
Los Alamos, NM 87544

 $^{241}\text{Am}(\text{O})$, $\text{Cap}(\text{O})$, $^{252}\text{Cf}(\text{O})$, $^{252}\text{Cf}(\text{S})$,
 $^{51}\text{Cr}(\text{H})$, $^{60}\text{Co}(\text{H})$, $^{253}\text{Es}(\text{O})$, $^{257}\text{Fm}(\text{O})$,
 $^{129}\text{I}(\text{O})$, $^{54}\text{Mn}(\text{H})$, $\text{MCP}(\text{O})$, $^{238}\text{Pu}(\text{M})$,
 $^{238}\text{Pu}(\text{O})$, $^{238}\text{Pu}(\text{P})$, $^{239}\text{Pu}(\text{M})$, $^{241}\text{Pu}(\text{O})$,
 $^{89}\text{Sr}(\text{O})$, $^{99}\text{Tc}(\text{O})$, $\text{Tgs}(\text{O})$, $^{232}\text{Th}(\text{M})$,
 $^{234}\text{U}(\text{O})$, $^{235}\text{U}(\text{M})$, $^{235}\text{U}(\text{O})$, $^{236}\text{U}(\text{O})$,
 $^{238}\text{U}(\text{O})$, $^{95}\text{Zr}(\text{O})$
- 42 California, University of
405 Hilgard Ave.
Los Angeles, CA 90024

 $^{241}\text{Am}(\text{O})$, $^{47}\text{Ca}(\text{O})$, $^{28}\text{Mg}(\text{B})$, $^{238}\text{Pu}(\text{O})$,
 $^{133}\text{Xe}(\text{O})$
- 43 California, University of, at San Diego
225 W. Dickinson St.
San Diego, CA

 $^{127}\text{Xe}(\text{B})$
- 44 California, University of
San Francisco Medical Center
San Francisco, CA 94122

 $^{252}\text{Cf}(\text{S})$, $\text{MCP}(\text{O})$, $^{133}\text{Xe}(\text{O})$
- 45 Canberra Industries Inc.
45 Gracey Ave.
Meriden, CT 06450

 $^{181}\text{Hf}(\text{O})$
- 46 Carnegie Institution of Washington
Washington, DC 20008

 $^{252}\text{Cf}(\text{O})$, $\text{Tgs}(\text{O})$
- 47 Carnegie-Mellon University
5000 Forbes
Pittsburgh, PA 15213

 $^{252}\text{Cf}(\text{O})$, $\text{Tgs}(\text{O})$, $^{230}\text{Th}(\text{O})$
- 48 Chamberlain Manufacturing Company
East 4th & Esther St.
Waterloo, IA 50705

 $\text{DU}(\text{P})$
- 49 Chevron Research Company
555 Market St.
San Francisco, CA 94120

 $^{85}\text{Kr}(\text{O})$
- 50 Chicago, University of
950 E. 59th St.
Chicago, IL 60637

 $^{252}\text{Cf}(\text{S})$
- 51 Chicago, University of
1160 East 55th St.
Chicago, IL 60615

 $^{47}\text{Ca}(\text{O})$, $^{106}\text{Ru}(\text{O})$, $^{89}\text{Sr}(\text{O})$
- 52 Chicago, University of
5641 S. Ingleside Ave.
Chicago, IL 60637

RSI(A)
- 53 Children's Hospital
300 Longwood Ave.
Boston, MA 02115

 $^{77}\text{Br}(\text{B})$
- 54 Christian Hospital Northwest
Northeast Division
11133 Dunn Rd.
St. Louis, MO 63136

 $^{133}\text{Xe}(\text{O})$
- 55 Cincinnati General Hospital
3231 Burnet Ave.
Cincinnati, OH 45202

 $^{52}\text{Fe}(\text{B})$
- 56 Cincinnati, University of
Cincinnati, OH 45221

 $^{99}\text{Tc}(\text{O})$
- 57 Cincinnati, University of
Cincinnati General Hospital
Cincinnati, OH 45267

CSI(A)

- 58 City College
136 St. and Convent Ave.
New York, NY 10031
 $^{43}\text{K}(0)$
- 59 Cleveland Metropolitan General Hospital
3395 Scranton Rd.
Cleveland, OH 44109
 $^{131}\text{I}(0)$
- 60 Cochran Veterans Administration Hospital
Nuclear Medicine
St. Louis, MO 63125
CSI(A)
- 61 Colorado, University of
Boulder, CO 80302
RSI(A)
- 62 Columbia University
PO Box 6, Low Library
New York, NY 10027
 $^{81}\text{Kr}(B)$, $^{151}\text{Sm}(0)$, $^{235}\text{U}(0)$, $^{127}\text{Xe}(B)$
- 63 Connecticut, University of
Storrs, CT 06268
RSI(B)
- 64 Continental Testing Laboratories
763 US Highway 17-92
Fern Park, FL 32730
 $^{85}\text{Kr}(0)$
- 65 Cook Electric Company
6201 Oakton St.
Morton Grove, IL 60053
 $^{85}\text{Kr}(0)$, $^{133}\text{Xe}(0)$
- 66 Cornell University
Ithaca, NY 14850
 $^{47}\text{Ca}(0)$, $^{252}\text{Cf}(S)$, $^{28}\text{Mg}(B)$, $^{133}\text{Xe}(0)$
- 67 Creighton University
2410 California
Omaha, NB 68131
 $^{47}\text{Ca}(0)$
- 68 Cryogenic Rare Gas Laboratories, Inc
730 S. 13th St.
Newark, NJ 07103
 $^3\text{H}(0)$, $^{85}\text{Kr}(0)$
- 69 Delco Electronics
General Motors Corporation
Kokomo, IN 46901
 $^{85}\text{Kr}(0)$
- 70 Department of Law Enforcement
Bureau of Identification
Joliet, IL 60432
RSI(A)
- 71 Duke University
Durham, NC 27706
 $^{252}\text{Cf}(0)$, $\text{Tgs}(0)$, $^{133}\text{Xe}(0)$
- 72 EAD Metallurgical, Inc.
71 Pearce Ave.
Tonawanda, NY 14150
 $^{241}\text{Am}(0)$, $\text{Cap}(0)$
- 73 Eberline Instrument Corporation
PO Box 279
Santa Fe, NM 87501
 $^{244}\text{Cm}(0)$, $^{236}\text{Pu}(0)$, $^{233}\text{U}(0)$
- 74 Edgerton, Germeshausen and Grier
PO Box 98
Goleta, CA 93017
MCP(0)
- 75 Edinboro State College
Edinboro, PA 16444
 $^{252}\text{Cf}(S)$
- 76 Edsel B. Ford Institute for Medical
Research
Department of Physics and Biophysics
Henry Ford Hospital
2799 West Grand Blvd.
Detroit, MI 48202
 $^{252}\text{Cf}(S)$
- 77 EG&G Idaho, Inc.
PO Box 1625
Idaho Falls, ID 83401
 $^{28}\text{Al}(I)$, ^{198}Au , $^{131}\text{Ba}(I)$, $^{139}\text{Ba}(I)$,
 $^{140}\text{Ba}(H)$, $^{80}\text{Br}(I)$, $^{82}\text{Br}(I)$, $^{49}\text{Ca}(I)$,
 $^{117}\text{Cd}(I)$, $^{38}\text{Cl}(I)$, $^{141}\text{Ce}(I)$, $^{143}\text{Ce}(I)$,
 $^{60}\text{Co}(I)$, $^{51}\text{Cr}(I)$, $^{64}\text{Cu}(I)$, $\text{EU}(P)$, $^{152}\text{Eu}(I)$,
 $^{154}\text{Eu}(I)$, $^{152}\text{Gd}(I)$, $^{159}\text{Gd}(I)$, $^{161}\text{Gd}(I)$,
 $^{73}\text{Ge}(I)$, $^{75}\text{Ge}(I)$, $^{197}\text{Hg}(I)$, $^{203}\text{Hg}(I)$,
 $^{192}\text{Ir}(I)$, $^{140}\text{La}(I)$, $^{56}\text{Mn}(I)$, $^{93}\text{Mo}(I)$,
 $^{99}\text{Mo}(I)$, $^{24}\text{Na}(I)$, $^{147}\text{Nd}(I)$, $^{149}\text{Nd}(I)$,
 $^{65}\text{Ni}(I)$, $^{142}\text{Pr}(I)$, $^{195}\text{Pt}(I)$, $^{86}\text{Rb}(I)$,
 $^{35}\text{S}(I)$, $^{122}\text{Sb}(I)$, $^{124}\text{Sb}(I)$, $^{46}\text{Se}(I)$,
 $^{123}\text{Sn}(I)$, $^{125}\text{Sn}(I)$, $^{182}\text{Ta}(I)$, $^{65}\text{Zn}(I)$,
 $^{69}\text{Zn}(I)$, $^{71}\text{Zn}(I)$, $^{95}\text{Zr}(I)$, $^{97}\text{Zr}(I)$
- 78 E. I. duPont de Nemours & Company
Savannah River Plant
Aiken, SC 29801
 $^{252}\text{Cf}(0)$, $^{252}\text{Cf}(P)$, $\text{CSI}(0)$, $^{129}\text{I}(0)$,
MCP(0), $\text{Pu}(P)$, $^{236}\text{Pu}(M)$, $^{239}\text{Pu}(M)$,
 $^{244}\text{Pu}(0)$, $^{241}\text{Pu}(0)$, $^{99}\text{Tc}(0)$, $^{232}\text{Th}(M)$,
 $\text{U}(P)$

- 79 Energy Research and Development
Administration
Health Services Laboratory
550 Second St.
Idaho Falls, ID 83041
 $^{60}\text{Co}(\text{I})$, $^{56}\text{Mn}(\text{I})$, $^{147}\text{Nd}(\text{I})$, $^{149}\text{Nd}(\text{I})$
- 80 Energy Research and Development
Administration
New Brunswick Laboratory
Building 350
9800 South Cass Ave.
Argonne, IL 60439
 $^{239}\text{Pu}(\text{M})$, $\text{DU}(\text{P})$, $\text{Pu}(\text{P})$
- 81 UT-Energy Research and Development
Administration
Comparative Animal Laboratory
1299 Bethel Valley Rd.
Oak Ridge, TN 37830
 $^{28}\text{Mg}(\text{B})$
- 82 Exxon Nuclear Company, Inc.
2101 Horn Rapids Rd.
Richland, WA 99352
 $\text{DU}(\text{P})$
- 83 Fairchild Semiconductors
333 Western Ave.
S. Portland, ME 04106
 $^{85}\text{Kr}(\text{O})$
- 84 Florida State University
Tallahassee, FL 32306
 $^{249}\text{Bk}(\text{O})$, $^{89}\text{Sr}(\text{O})$
- 85 Gamma Industries
9320 Travenor
PO Box 34526
Houston, TX 77034
 $^{241}\text{Am}(\text{O})$, $\text{Cap}(\text{O})$, $^{137}\text{Cs}(\text{O})$
- 86 GATAN, Inc.
3117 Babcock Blvd.
Pittsburgh, PA 15237
 $^{57}\text{Co}(\text{H})$, $^{60}\text{Co}(\text{H})$, $\text{RSI}(\text{H})$
- 87 Gammie Nuclear Company
3737 Mount Prospect Rd.
Franklin Park, IL 60131
 $\text{RSI}(\text{A})$
- 88 General Electric Company
21800 Tungsten Rd.
Cleveland, OH 44117
 $^3\text{H}(\text{O})$
- 89 General Electric Company
Vallecitos Nuclear Center
Ballecitos Rd.
Pleasanton, CA 94566
 $^{60}\text{Co}(\text{H})$, $\text{RSI}(\text{H})$
- 90 General Electric Company
PO Box 254
San Jose, CA 95103
 $^{243}\text{Am}(\text{O})$, $^{137}\text{Cs}(\text{O})$, $\text{MCP}(\text{O})$, $\text{Tgs}(\text{O})$,
 $^{234}\text{U}(\text{O})$, $^{238}\text{U}(\text{O})$
- 91 General Electric Company
Neutron Devices Department
Pinellas Peninsula Plant
St. Petersburg, FL 33733
 $^3\text{H}(\text{M})$, $^{238}\text{Pu}(\text{M})$
- 92 General Electric Company
Building 7
Electronics Park Laboratory
Syracuse, NY 13201
 $^{85}\text{Kr}(\text{O})$
- 93 General Electric Company
Space Division
Valley Forge, PA 19406
 $^{238}\text{Pu}(\text{M})$, $^{232}\text{Th}(\text{M})$
- 94 General Electric Company
General Electric Drive
Waynesboro, VA 22980
 $^{85}\text{Kr}(\text{O})$
- 95 General Electric Research and Development
Administration
PO Box 8
Schenectady, NY 12306
 $\text{RSI}(\text{B})$
- 96 General Motors Corporation
Frigidaire Division
Dayton, OH 45501
 $^{85}\text{Kr}(\text{O})$
- 97 General Motors Corporation
G. M. Technical Center
12 Mile and Mound Rds.
Warren, MI 48090
 $\text{CSI}(\text{O})$
- 98 George Washington University
Washington, DC 20006
 $\text{MCP}(\text{O})$, $^{99}\text{Tc}(\text{O})$

- 99 Georgia, University of
Athens, GA 30601
 $^{89}\text{Sr}(0)$
- 100 Gollob Analytical Service Corporation
47 Industrial Rd.
Berkeley Heights, NJ 07922
 $^3\text{H}(0)$
- 101 Goodyear Atomic Corporation
PO Box 628
Piketon, OH 45661
 $\text{EU}(\text{P}), \text{SS}(0)$
- 102 Gulf Energy and Environmental Systems
PO Box 608
San Diego, CA 92112
 $^{85}\text{Kr}(0), ^{103}\text{Ru}(0), ^{95}\text{Zr}(0)$
- 103 Grumman Aerospace Corporation
PO Box 177
Bethpage, NY 11714
 $\text{RSI}(\text{B})$
- 104 Harvard University
Cambridge, MA 02138
 $^{241}\text{Am}(0)$
- 105 Henry Ford Hospital
2799 West Grand Blvd.
Detroit, MI 48202
 $^{153}\text{Gd}(0)$
- 106 Herbert Lehman College of the City
University of New York
Bedford Park Blvd. West
Bronx, NY 10468
 $^{151}\text{Sm}(0)$
- 107 Hughes Aircraft Company
PO Box 92907
Los Angeles, CA 90009
 $^{85}\text{Kr}(0)$
- 108 ICI America, Inc.
Atlas Aerospace Division
Valley Forge Industrial Park
Valley Forge, PA 19481
 $^{85}\text{Kr}(0)$
- 109 ICN-NB Co
26201 Miles Rd.
Cleveland, OH 44128
 $^{241}\text{Am}(0), \text{Cap}(0), \text{CSI}(0), ^3\text{H}(0), ^{129}\text{I}(0),$
 $^{33}\text{P}(0), ^{106}\text{Ru}(0), ^{99}\text{Tc}(0)$
- 110 ICN Pharmaceuticals
C&R Division
2727 Campus Drive
Irvine, CA 92715
 $^{22}\text{Na}(\text{B})$
- 111 Indiana State University
6th and Chestnut Sts.
Terre Haute, IN 47809
 $^{140}\text{Ba}(0)$
- 112 Indiana University
Bloomington, IN 47401
 $\text{RSI}(\text{A})$
- 113 Indiana University
630 W. New York St.
Indianapolis, IN 46202
 $^{47}\text{Ca}(0)$
- 114 Intelcom Rad Tech
PO Box 80817
San Diego, CA 92138
 $^{239}\text{Pu}(0), \text{Tgs}(0)$
- 115 Interex Corporation
66 Woerd Ave.
Waltham, MA 02154
 $^{85}\text{Kr}(0)$
- 116 International Nutronics, Inc.
1237 N. San Antonia Rd.
Palo Alto, CA 94303
 $^{252}\text{Cf}(\text{S})$
- 117 Iowa State University
Ames, IA 50010
 $^{241}\text{Am}(0), \text{Tgs}(0)$
- 118 Isotope Products Laboratories
1800 N. Keystone St.
Burbank, CA 91504
 $\text{InTgs}(\text{B})$
- 119 Isotope Products Laboratories
404 South Luke St.
Burbank, CA 91502
 $^{241}\text{Am}(0), \text{Cap}(0), ^{252}\text{Cf}(0), ^{244}\text{Cm}(0),$
 $^{137}\text{Cs}(0), ^{153}\text{Gd}(0), ^{161}\text{Hf}(0), ^{129}\text{I}(0),$
 $^{85}\text{Kr}(0), ^{147}\text{Pm}(0), ^{239}\text{Pu}(0), ^{242}\text{Pu}(0),$
 $^{106}\text{Ru}(0), ^{90}\text{Sr}(0), \text{Tgs}(0), ^{230}\text{Th}(0),$
 $^{235}\text{U}(0)$
- 120 Isovac Engineering Company
6220 San Fernando Rd.
Glendale, CA 91204
 $^{85}\text{Kr}(0)$

- 121 ITT Semiconductors
A Division of Int'l Telephone and
Telegraph
3301 Electronics Way
W. Palm Beach, FL 33407
 $^{85}\text{Kr}(\text{O})$
- 122 Jewish Hospital of St. Louis, The
216 S Kings Highway Blvd.
St. Louis, MO 63110
 $^{47}\text{Ca}(\text{O})$
- 123 Johns Hopkins University
Baltimore, MD 21218
 $^{47}\text{Ca}(\text{O})$, $^{127}\text{Xe}(\text{B})$
- 124 Johns Hopkins Hospital
Radiation Safety
615 N. Wolfe St.
Baltimore, MD 21205
 $^{127}\text{Xe}(\text{B})$
- 125 Kaman Sciences Corporation
1500 Garden of the Gods Rd.
PO Box 7463
Colorado Springs, CO 80933
 $^3\text{H}(\text{M})$, $^3\text{H}(\text{P})$, $^3\text{H}(\text{O})$, $\text{Tgs}(\text{O})$
- 126 Kentucky, University of
Lexington, KY 40506
 $^{252}\text{Cf}(\text{S})$, $\text{MCP}(\text{O})$, $^{127}\text{Xe}(\text{B})$
- 127 King/Seeley
301 West Ohio St.
Keendallville, IN 46755
 $^{85}\text{Kr}(\text{O})$
- 128 KMS Fusion, Inc.
3941 S. Research Park Dr.
PO Box 1567
Ann Arbor, MI 48106
 $^3\text{H}(\text{O})$
- 129 Lehigh University
Department of Chemistry
Bethlehem, PA 18015
 $^{252}\text{Cf}(\text{S})$
- 130 Lenoir-Rhyne College
Hickory, NC 38601
 $^{252}\text{Cf}(\text{S})$
- 131 LFE, Environmental Laboratory Division
2030 Wright Ave.
Richmond, CA 94804
 $^{236}\text{Pu}(\text{O})$, $^{244}\text{Am}(\text{P})$, $^{244}\text{Cm}(\text{P})$, $^{237}\text{Np}(\text{P})$,
 $^{238}\text{Pu}(\text{P})$, $^{239}\text{Pu}(\text{P})$, $^{241}\text{Pu}(\text{P})$
- 132 L.I. Metal, Inc.
Garvis Point Rd.
Glen Cove, NY 11542
 $\text{RSI}(\text{B})$
- 133 Litton Industries
Guidance and Control Systems
5500 Canoga Ave.
Woodland Hills, CA 91367
 $^{85}\text{Kr}(\text{O})$
- 134 Loma Linda University
25271 Mound St.
Loma Linda, CA 92354
 $^{127}\text{Xe}(\text{B})$
- 135 Lovelace Clinic
4800 Gibson Blvd, SE
Albuquerque, NM 87108
 $^{144}\text{Ce}(\text{O})$, $^{236}\text{Pu}(\text{O})$, $^{127}\text{Xe}(\text{B})$
- 136 Lovelace Foundation
Inhalation Toxicology Res. Inst.
Bldg. 9217, Area Y
Kirkland Airbase East
Albuquerque, NM 87117
 $^{127}\text{Xe}(\text{B})$
- 137 Lunar Science Institute
3303 NASA Rd. No. 1
Houston, TX 77058
 $^{95}\text{Nb}(\text{O})$
- 138 Mallinkrodt Institute of Radiology
Washington University School of Medicine
510 South Kings Highway
St. Louis, MO 63110
 $^{252}\text{Cf}(\text{S})$
- 139 Marine Biological Laboratory
Whitman 419 - Radiation Laboratory
Woods Hole, MA 02543
 $^{28}\text{Mg}(\text{B})$
- 140 Mary Hitchcock Memorial Hospital
Radiation Therapy Department
Hanover, NH 03755
 $\text{MCP}(\text{O})$

- 141 Maryland, University of
Chemical Engineering Department
College Park, MD 20742

RSI(A)
- 142 Mayo Foundation
Rochester, MN 55901

 $^{47}\text{Ca}(0)$, $^{153}\text{Gd}(0)$, SS(0)
- 143 Massachusetts General Hospital
32 Fruit
Boston, MA 02114

 $^{47}\text{Ca}(0)$, $^{127}\text{Xe}(B)$
- 144 Massachusetts Institute of Technology
77 Massachusetts Ave.
Box 69
Cambridge, MA 02139

 $^{28}\text{Mg}(B)$, $^{28}\text{Mg}(0)$, $^{89}\text{Sr}(0)$, GsS(0),
 $^{232}\text{Th}(0)$, $^{238}\text{U}(0)$
- 145 Medical Center of Central Georgia
777 Hamlock St.
Macon, GA 31201

 $^{89}\text{Sr}(0)$
- 146 Medical College of Virginia
Radiation Safety Vault
Medical Education Building Dock
Richmond, VA 23298

 $^{28}\text{Mg}(B)$
- 147 Memorial Hospital
Department of Nuclear Medicine
1400 East Boulder
Colorado Springs, CO 80909

 $^{133}\text{Xe}(0)$
- 148 Memphis Hospital, City of
860 Madison Ave.
Memphis, TN 38103

 $^{133}\text{Xe}(0)$
- 149 Methodist Hospital
6720 Bertner
Houston, TX 77025

 $^{133}\text{Xe}(0)$
- 150 Methodist Hospital
1604 N Capitol
Indianapolis, IN 46202

 $^{127}\text{Xe}(B)$
- 151 Miami University
Oxford, OH 45056

 $^{106}\text{Ru}(0)$
- 152 Michael-Reese Hospital
29th St. and Ellis Ave.
Chicago, IL 60616

 $^{133}\text{Xe}(0)$
- 153 Michigan, University of
Ann Arbor, MI 48104

 $^{252}\text{Cf}(S)$, $^{133}\text{Xe}(0)$
- 154 Michigan, University of
Department of Natural Sciences
4901 Evergreen Rd.
Dearborn, MI 48128

 $^{239}\text{Pu}(M)$
- 155 Micro-Rel, Inc.
2340 West 10th Place
Tempe, AZ 85281

 $^{85}\text{Kr}(0)$
- 156 Mine Safety Appliance Company
201 North Braddock Ave.
Pittsburgh, PA 15208

 $^{131}\text{I}(0)$
- 157 Mini-Dose Laboratories, Inc.
1825 Emerson St.
Denver, CO 80218

 $^{133}\text{Xe}(0)$
- 158 Minnesota Mining and Manufacturing
Company
PO Box 3121
St. Paul, MN 55101

 $^{137}\text{Cs}(0)$, $^{85}\text{Kr}(0)$, MCP(0), $^{95}\text{Nb}(0)$
 $^{90}\text{Sr}(0)$, SS(0), $^{99}\text{Tc}(0)$, $^{95}\text{Zr}(0)$
- 159 Mississippi, University of
Jackson, MI 39205

 $^{43}\text{K}(0)$, $^{85}\text{Kr}(0)$
- 160 Monsanto Company
PO Box 1311
Texas City, TX 77591

 $^{133}\text{Xe}(0)$
- 161 Monsanto Research Corporation
Dayton Laboratory
1515 Nicholas Rd.
Dayton, OH 45407

 $^{241}\text{Am}(0)$, Cap(0), $^{252}\text{Cf}(S)$
- 162 Monsanto Research Corporation
Mound Laboratory
PO Box 32
Miamisburg, OH 45342

Cap(0), $^{244}\text{Cm}(0)$, $^3\text{H}(0)$, $^{237}\text{Np}(0)$,
 $^{229}\text{Th}(0)$, $^{233}\text{U}(0)$

- 163 Moravek Biochemicals
15302 E Proctor Ave.
City of Industry, CA 91745
 $^3\text{H}(\text{O})$
- 164 Motorola, Inc.
3501 Ed Bluestein Blvd.
Austin, TX 78721
 $^{85}\text{Kr}(\text{O})$
- 165 Motorola, Inc.
5005 East McDowell Rd.
Phoenix, AZ 85008
 $^{85}\text{Kr}(\text{O})$
- 166 Mount Sinai Medical Center
4300 Alton Rd.
Miami Beach, FL 33140
 $^{127}\text{Xe}(\text{B})$
- 167 Nassau County Medical Center
Meadowbrook Hospital
2201 Hempstead Turnpike
East Meadow, NY 11554
 $^{47}\text{Ca}(\text{O})$
- 168 NASA
Houston, TX 77058
RSI(B)
- 169 National Aeronautics & Space Administration
John F. Kennedy Space Center
FL 32899
 $^{238}\text{Pu}(\text{M})$
- 170 National Animal Disease Center
Rural Route 2, Dayton Ave.
Ames, IA 50010
 $^{28}\text{Mg}(\text{B})$
- 171 National Bureau of Standards
Quince Orchard Rd.
Gaithersburg, MD 20760
 $^{140}\text{Ba}(\text{H}), ^{236}\text{U}(\text{M}), ^{127}\text{Xe}(\text{B})$
- 172 National Bureau of Standards
Connecticut Ave. and Van Ness St.
Washington, DC 20234
 $^{249}\text{Cf}(\text{O}), ^{252}\text{Cf}(\text{O}), ^{244}\text{Cm}(\text{O}), ^{129}\text{I}(\text{O}),$
 $\text{MCP}(\text{O}), ^{238}\text{Pu}(\text{O}), ^{241}\text{Pu}(\text{O}), \text{Tgs}(\text{O}),$
 $^{230}\text{Th}(\text{O}), ^{238}\text{U}(\text{O}), ^{133}\text{Xe}(\text{O})$
- 173 National Institute of Health
Building 21, Isotope Laboratory
Bethesda, MD 20014
 $^{123}\text{I}(\text{B}), ^{127}\text{Xe}(\text{B})$
- 174 National Lead Company of Ohio
PO Box 45239
Cincinnati, OH 45239
DU(P)
- 175 National Naval Medical Center
Material Support Services
AFRRI, DNA, Bldg. 42
Bethesda, MD 20014
 $^{127}\text{Xe}(\text{B})$
- 176 Naval Research Laboratory
4555 Overlook Ave. SW
Washington, DC 20375
 $^{60}\text{Co}(\text{H}), \text{RSI}(\text{H})$
- 177 National Semiconductor Corporation
2900 Semiconductor Dr.
Santa Clara, CA 95051
 $^{85}\text{Kr}(\text{O})$
- 178 New England Nuclear Corporation
575 Albany St.
Boston, MA 02118
 $^{241}\text{Am}(\text{O}), ^{137}\text{Cs}(\text{O}), \text{CSI}(\text{O}), ^{153}\text{Gd}(\text{O}),$
 $^3\text{H}(\text{O}), ^{129}\text{I}(\text{O}), ^{85}\text{Kr}(\text{O}), \text{MCP}(\text{O}), ^{33}\text{P}(\text{O}),$
 $^{103}\text{Ru}(\text{O}), ^{90}\text{Sr}(\text{O}), ^{99}\text{Tc}(\text{O})$
- 179 New England Nuclear Corporation
Atom Light Place
North Billerica, MA 01862
 $^3\text{H}(\text{O}), \text{In}(\text{B})$
- 180 New Hampshire, University of
Durham, NH 03824
RSI(B)
- 181 New Jersey, College of Medicine and
Dentistry
100 Bergen St.
Newark, NJ 07103
 $^{85}\text{Kr}(\text{O})$
- 182 New Mexico Institute of Mining and
Technology
Tera Group
Socorro, NM 87801
DU(P)

<p>183 New York State Department of Health
30 Russell Rd.
Albany, NY 12201</p> <p>RSI(B)</p> <p>184 New York, State University of
Downstate Medical Center
450 Clarkson Ave.
Brooklyn, NY 11203</p> <p>$^{99}\text{Tc}(0)$</p> <p>185 New York, State University of
Department of Earth & Space Sciences
Stony Brook, NY 11790</p> <p>RSI(B)</p> <p>186 New York, at Buffalo, State University of
Nuclear Sciences and Technology
Nuclear Building
250 Windpear Ave.
Buffalo, NY 14214</p> <p>$^{239}\text{Pu}(M)$</p> <p>187 New York University Medical Center
505 First Ave.
New York, NY 10016</p> <p>$^{229}\text{Th}(0)$, $^{230}\text{Th}(0)$</p> <p>188 New York University Medical Center
Institute of Environmental Medicine
Anthony J. Lange Research Laboratory
at University Valley
Sterling Forest, Tuxedo, NY 10987</p> <p>$^{238}\text{Pu}(M)$</p> <p>189 Nicolet Technology
145 E Dana St.
Mountain View, CA 94041</p> <p>$^{238}\text{U}(M)$</p> <p>190 North Carolina Baptist Hospital
300 S Hawthorne Rd.
Winston-Salem, NC 27103</p> <p>$^{127}\text{Xe}(B)$</p> <p>191 North Carolina Memorial Hospital
Chapel Hill, NC 27514</p> <p>$^{127}\text{Xe}(B)$</p> <p>192 North Carolina State University
PO Box 5935
Raleigh, NC 27607</p> | <p>193 Northwest Industries
125 E 34th Ave.
Albany, OR 97321</p> <p>DU(P)</p> <p>194 Northwestern Memorial Hospital
Wesley Pavilion/Nuclear Medicine
239 E Chicago Ave.
Chicago, IL 60611</p> <p>$^{127}\text{Xe}(B)$</p> <p>195 Northwestern University
619 Clark St.
Evanston, IL 60201</p> <p>$^{129}\text{I}(0)$, $\text{SS}(0)$</p> <p>196 Norwalk Hospital
24 Stephens St.
Norwalk, CT 06856</p> <p>$^{127}\text{Xe}(B)$</p> <p>197 Nuclear Environmental Engineering, Inc.
PO Box 58866
Houston, TX 77058</p> <p>$^{241}\text{Am}(0)$, $\text{Cap}(0)$, $^{137}\text{Cs}(0)$, $\text{MCP}(0)$</p> <p>198 Nuclear Pharmacy, Inc.
2101 N Oregon, Suite 1
El Paso, TX 79902</p> <p>$^{133}\text{Xe}(0)$</p> <p>199 Nuclear Radiation Development, Inc.
2937 Alt Blvd.
Grand Island, NY 14072</p> <p>$^{241}\text{Am}(0)$, $\text{Cap}(0)$</p> <p>200 Nuclear Research Corporation
Street Rd. and Second St. Pike
Southampton, PA 18966</p> <p>$^{137}\text{Cs}(0)$, $\text{MCP}(0)$</p> <p>201 Nuclear Sources and Services
PO Box 14023
Houston, TX 77021</p> <p>$^{241}\text{Am}(0)$, $\text{Cap}(0)$</p> <p>202 Nuclepore Corporation
7035 Commerce Circle
Pleasanton, CA 94566</p> <p>$\text{Tgs}(0)$, $^{235}\text{U}(0)$</p> <p>203 Oak Ridge Associated Universities
PO Box 117
Oak Ridge, TN 37830</p> <p>$\text{CSI}(0)$, $\text{MCP}(0)$</p> |
|--|---|

- 204 Occidental Oil Shale Company, Inc.
PO Box 2999
Grand Junction, CO 81501
 $^{85}\text{Kr}(0)$
- 205 Ohio State University
Research Foundation
1314 Kinnear Rd.
Columbus, OH 43212
 $^{89}\text{Sr}(0)$
- 206 Ohio University
Athens, OH 45701
 $^3\text{H}(0)$
- 207 Omnimedical Services, Inc.
16312 South Garfield
Paramount, CA 90723
 $^{133}\text{Xe}(0)$
- 208 Oregon Institute of Marine Biology
Charleston, OR 97420
 $^{28}\text{Mg}(B)$
- 209 Oregon State University
Corvallis, OR 97330
 $^{252}\text{Cf}(S)$
- 210 Oregon, University of
Eugene, OR 97403
 $^{28}\text{Mg}(0)$
- 211 Pacific Radiopharmacy
347 North Kuakini St.
Honolulu, HI 96817
 $^{85}\text{Kr}(0)$, $^{133}\text{Xe}(0)$
- 212 Palmdale General Hospital
Palmdale, CA 93550
 $^{133}\text{Xe}(0)$
- 213 Pennsylvania State University
University Park, PA 6802
 $\text{DU}(P)$
- 214 Pennsylvania, University of
3025 Walnut St.
Philadelphia, PA 19104
 $^{123}\text{I}(B)$, $^{18}\text{F}(B)$, $^{133}\text{Xe}(0)$
- 215 Penrose Hospital
2215 North Cascade
Colorado Springs, CO 80907
 $^{133}\text{Xe}(0)$
- 216 Pharm-Atomic, Inc.
2760 Fifth Ave., Suite 112
San Diego, CA 92103
 $^{133}\text{Xe}(0)$
- 217 Philadelphia General Hospital
Research Funds
700 Civic Center Blvd.
Philadelphia, PA 19104
 $^{133}\text{Xe}(0)$
- 218 Pleasant Valley Hospital
2309 Antonio Ave.
Camarillo, CA 93010
 $^{133}\text{Xe}(0)$
- 219 Polytechnic Institute
Department of Nuclear Engineering
333 Jay St.
Brooklyn, NY 11201
 $\text{RSI}(B)$
- 220 Potter and Brumfield
Princeton, IN 47570
 $^{85}\text{Kr}(0)$
- 221 Presbyterian-St. Lukes Hospital
Medical Center
1753 West Congress Parkway
Chicago, IL 60612
 $\text{CSI}(A)$
- 222 Professional Staff Association
1124 W Carson
Torrance, CA 90502
 $^{91}\text{Y}(0)$
- 223 Purdue University
Chemistry Department
W Lafayette, IN 47907
 $\text{CSI}(A)$, $\text{RSI}(A)$
- 224 RadX Corporation
PO Box 19164
Houston, TX 77024
 $^{137}\text{Cs}(0)$, $\text{CSI}(0)$
- 225 Radiation Resources, Inc.
24 Kulick Rd.
Fairfield, NJ 07006
 $^{137}\text{Cs}(0)$, $\text{MCP}(0)$
- 226 Radio Corporation of America (RCA)
Route 12, Fostoria Rd.
Findlay, OH 45840
 $^{85}\text{Kr}(0)$

- 227 Radpharm, Inc.
2333 Buchanan St., Rm. 145
San Francisco, CA 94115
 $^{133}\text{Xe}(\text{O})$
- 228 Ray Industries
430 Howell Way
Edmonds, WA 98020
 $^{210}\text{Bi}(\text{H})$, $^{210}\text{Pb}(\text{H})$, $^{210}\text{Po}(\text{H})$, $^{239}\text{Pu}(\text{H})$,
 $^{230}\text{Th}(\text{H})$
- 229 Raytheon Company
350 Ellis St.
Mountain View, CA 94042
 $^{85}\text{Kr}(\text{O})$
- 230 RCA
Raritan, NJ 08869
 $^{85}\text{Kr}(\text{O})$
- 231 Reactor Experiments, Inc.
963 Terminal Way
San Carlos, CA 94070
 $\text{Tgs}(\text{O})$, $^{238}\text{U}(\text{O})$
- 232 Rensselaer Polytechnic Institute
110 8th St.
Troy, NY 12181
 $^{28}\text{Mg}(\text{B})$, $^{28}\text{Mg}(\text{O})$, $\text{RSI}(\text{B})$
- 233 Research Chemicals
PO Box 14588
Phoenix, AZ 85031
 $\text{Tgs}(\text{O})$, $^{232}\text{Th}(\text{O})$
- 234 Reuter-Stokes Electronics Components
18530 South Miles Parkway
Warrensville Heights
Cleveland, OH 44128
 $\text{Tgs}(\text{O})$, $^{235}\text{U}(\text{O})$
- 235 Reynolds Electric Engineering Company
PO Box 14400
Las Vegas, NV 89114
 $^{244}\text{cm}(\text{O})$
- 236 Richland Memorial Hospital
Nuclear Medicine
3301 Harden St.
Columbia, SC 29203
 $^{127}\text{Xe}(\text{B})$
- 237 Rockwell International
Atomics International Division
Rocky Flats Plant
PO Box 938
Golden, CO 80401
 $\text{DU}(\text{P})$, $^{238}\text{Pu}(\text{M})$, $^{239}\text{Pu}(\text{O})$, $^{230}\text{Th}(\text{O})$
- 238 Rochester, University of
601 Elmwood Ave.
Rochester, NY 14642
 $\text{RSI}(\text{B})$
- 239 Rockwell International
Atomics International Division
Rockwell Hanford Operations
PO Box 800
Richland, WA 99352
 $\text{Pu}(\text{P})$
- 240 Rush Presbyterian Saint Luke's Medical
Center
1753 West Congress Parkway
Chicago, IL 60612
 $^{52}\text{Fe}(\text{B})$, $^{89}\text{Sr}(\text{O})$
- 241 Rutgers, The State University
New Brunswick, NJ 08903
 $^3\text{H}(\text{O})$, $\text{Tgs}(\text{O})$
- 242 Sam Houston State University
Huntsville, TX 77340
 $^{236}\text{U}(\text{O})$
- 243 Sandia Corporation
PO Box 5800
Albuquerque, NM 87115
 $^{241}\text{Am}(\text{O})$, $^{243}\text{Am}(\text{O})$, $^{244}\text{Cm}(\text{O})$, $^{237}\text{Np}(\text{O})$,
 $^{238}\text{Pu}(\text{M})$, $^{238}\text{Pu}(\text{O})$, $\text{Tgs}(\text{O})$, $^{238}\text{U}(\text{O})$
- 244 Sandia Laboratories
Building 916
Livermore, CA 94550
 $\text{DU}(\text{P})$, $^{238}\text{Pu}(\text{M})$
- 245 Schlumberger Technology Corporation
Old Quarry Rd.
PO Box 307
Ridgefield, CT 06877
 $^{252}\text{Cf}(\text{S})$
- 246 Schwarz Bio-Research, Inc.
Mountain View Ave.
Orangeburg, NY 10962
 $^3\text{H}(\text{O})$
- 247 Science Applications, Inc.
1200 Prospect St.
La Jolla, CA 92037
 $^{237}\text{Np}(\text{O})$, $\text{Tgs}(\text{O})$, $^{236}\text{U}(\text{O})$
- 248 Scripps Clinic and Research Foundation
476 Prospect St.
La Jolla, CA 92037
 $^{89}\text{Sr}(\text{O})$

- 249 Self-Powered Lighting, Ltd.
8 Westchester Plaza
Elmsford, NY 10523
 $^3\text{H}(\text{O})$
- 250 Shawnee Medical Center
1102 West McArthur Rd.
Shawnee, OK 74801
 $^{133}\text{Xe}(\text{O})$
- 251 Shell Development Company
1410 45th St.
Emeryville, CA 94608
 $^{85}\text{Kr}(\text{O})$
- 252 Shepherd and Associates, J.L.
1614 Victory Blvd.
Glendale, CA 91201
 $^{137}\text{Cs}(\text{O})$, MCP(O)
- 253 Signetics Corporation
1275 South, 800 East
Orem, UT 84067
 $^{85}\text{Kr}(\text{O})$
- 254 St. John's Hospital
333 North F St.
Oxnard, CA 93030
 $^{133}\text{Xe}(\text{O})$
- 255 St. John's Mercy Medical Center
615 South New Ballas Rd.
St. Louis, MO 63147
 $^{133}\text{Xe}(\text{O})$
- 256 Sloan-Kettering Institute
425 East 68th St.
New York, NY 10021
 $^{133}\text{Xe}(\text{O})$
- 257 Southern California, University of
University Park
Los Angeles, CA 90007
MCP(O)
- 258 Southern California, University of
School of Pharmacy
1985 Zonal Ave.
Los Angeles, CA 90033
 $^{252}\text{Cf}(\text{S})$
- 259 Southern Research Institute
200 Ninth Ave. South
Birmingham, AL 35205
RSI(B)
- 260 St. Lukes Hospital
Division of Nuclear Medicine
Amsterdam & 114th St.
New York, NY 10025
 $^{127}\text{Xe}(\text{B})$
- 261 St. Patrick Hospital
524 South Ryan St.
Lake Charles, LA 70601
 $^{133}\text{Xe}(\text{O})$
- 262 St. Vincent Medical Center
3rd and Grandview
Los Angeles, CA 90057
 $^{133}\text{Xe}(\text{O})$
- 263 Statek Corporation
1200 Alvarez Ave.
Orange, CA 92668
 $^{85}\text{Kr}(\text{O})$
- 264 Swedish-American Hospital
1400 Charles St.
Rockford, IL 61101
 $^{133}\text{Xe}(\text{O})$
- 265 Syntex Corporation
3401 Hillview Ave.
Palo Alto, CA 94304
 $^3\text{H}(\text{O})$
- 266 Teledyne Energy Systems
Timonium, MD 21093
MCP(O), $^{238}\text{Pu}(\text{M})$, $^{90}\text{Sr}(\text{O})$, $^{232}\text{Th}(\text{M})$
- 267 Technical Operations
South Avenue
Burlington, MA 01803
 $^{137}\text{Cs}(\text{O})$, MCP(O)
- 268 Tempest, Inc.
1251 Grover Rd.
St. Louis, MO 63125
 $^{85}\text{Kr}(\text{O})$
- 269 Tennessee, University of
Knoxville, TN 37916
 $^{28}\text{Mg}(\text{O})$
- 270 Tennessee, University of
Health Physics
Cherokee Trail
Knoxville, TN 37920
 $^{28}\text{Mg}(\text{B})$

- 271 Tennessee Valley Authority
Wilson Dam, AL 35661
 $^{33}\text{P}(\text{O})$
- 272 Tennessee Valley Authority
Central Accounting Office
Knoxville, TN 37902
 $\text{MCP}(\text{O})$, $^{33}\text{P}(\text{O})$, $^{230}\text{Th}(\text{O})$
- 273 Texas A&M Research Foundation
PO Box H
College Station, TX 77843
 $^{99}\text{Tc}(\text{O})$
- 274 Texas A&M University
PO Box 44
College Station, TX 77843
 $^{99}\text{Tc}(\text{O})$
- 275 Texas Instruments, Inc.
Science Services Division
PO Box 5621
Dallas, TX 75222
 $^3\text{H}(\text{O})$, $^{85}\text{Kr}(\text{O})$
- 276 Texas Instruments, Inc.
PO Box 66027 M/S615
Houston, TX 77006
 $^{85}\text{Kr}(\text{O})$
- 277 Texas at Dallas, University of
PO Box 30365
Dallas, TX 75230
 $^{47}\text{Ca}(\text{O})$
- 278 Texas, University of
Nuclear Medicine Service
Galveston, TX 77550
 $^{47}\text{Ca}(\text{O})$, $^{127}\text{Xe}(\text{B})$
- 279 Texatope Pharmacy
7342 Oak Manor
San Antonio, TX 78229
 $^{133}\text{Xe}(\text{O})$
- 280 3M Company
Nuclear Products
Building 590
Twin Cities Army Ammunition Plant
New Brighton, MN 55112
 $^{210}\text{Po}(\text{P})$, $^{210}\text{Po}(\text{M})$
- 281 Transition Electronics Corporation
168 Albion St.
Wakefield, MA 01880
 $^{85}\text{Kr}(\text{O})$
- 282 Trio-Tech, Inc.
A Division of Tracer Flo
2435 N Naomi
Burbank, CA 91504
 $^{85}\text{Kr}(\text{O})$
- 283 TRW Systems Group
One Space Park
Redondo Beach, CA 90277
 $^{85}\text{Kr}(\text{O})$
- 284 Union Carbide Corporation, Nuclear
Division
Paducah Gaseous Diffusion Plant
Paducah, KY 42002
 $^{99}\text{Tc}(\text{O})$
- 285 Union Carbide Corporation, Nuclear
Division
Y-12 Plant
PO Box Y
Oak Ridge, TN 37830
 $\text{CSI}(\text{O})$, $\text{DU}(\text{P})$, $\text{EU}(\text{P})$, $^{153}\text{Gd}(\text{O})$, $^{239}\text{Pu}(\text{O})$,
 $\text{SS}(\text{O})$, $^{230}\text{Th}(\text{O})$, $^{235}\text{U}(\text{O})$
- 286 Union Carbide Corporation, Nuclear
Division
Oak Ridge Gaseous Diffusion Plant
PO Box P
Oak Ridge, TN 37830
 $^{131}\text{I}(\text{O})$, $^{85}\text{Kr}(\text{O})$, $\text{MCP}(\text{O})$, $^{238}\text{U}(\text{M})$,
 $^{133}\text{Xe}(\text{O})$
- 287 Union Carbide Corporation, Nuclear
Division
Oak Ridge National Laboratory
PO Box X
Oak Ridge, TN 37830
 $^{277}\text{Ac}(\text{M})$, $^{241}\text{Am}(\text{O})$, $^{37}\text{Ar}(\text{O})$,
 $^{60}\text{Co}(\text{H})$, $^{51}\text{Cr}(\text{H})$, $\text{Cap}(\text{O})$, $^{144}\text{Ce}(\text{O})$,
 $^{252}\text{Cf}(\text{O})$, $^{243}\text{Cm}(\text{O})$, $^{244}\text{Cm}(\text{O})$, $\text{CSI}(\text{O})$,
 $^{253}\text{Es}(\text{O})$, $^3\text{H}(\text{O})$, $^{131}\text{I}(\text{O})$, $^{85}\text{Kr}(\text{H})$,
 $^{85}\text{Kr}(\text{O})$, $\text{MCP}(\text{O})$, $^{95}\text{Nb}(\text{O})$, $^{237}\text{Np}(\text{O})$,
 $^{238}\text{Pu}(\text{O})$, $^{239}\text{Pu}(\text{O})$, $^{242}\text{Pu}(\text{O})$,
 $\text{RSI}(\text{H})$, $^{244}\text{Pu}(\text{O})$, $^{103}\text{Ru}(\text{O})$, $^{90}\text{Sr}(\text{O})$, $\text{SS}(\text{O})$,
 $^{99}\text{Tc}(\text{O})$, $\text{Tgs}(\text{O})$, $^{229}\text{Th}(\text{M})$, $^{230}\text{Th}(\text{M})$,
 $^{230}\text{Th}(\text{O})$, $^{232}\text{Th}(\text{O})$, $^{233}\text{U}(\text{O})$, $^{234}\text{U}(\text{M})$,
 $^{235}\text{U}(\text{O})$, $^{236}\text{U}(\text{M})$, $^{236}\text{U}(\text{O})$, $^{238}\text{U}(\text{M})$,
 $^{238}\text{U}(\text{O})$, $^{133}\text{Xe}(\text{O})$, $^{95}\text{Zr}(\text{O})$
- 288 Union Carbide Corporation
Sterling Forest Research Center
PO Box 324
Tuxedo, NY 10987
 $^{137}\text{Cs}(\text{O})$, $^{99}\text{Tc}(\text{O})$, $^{127}\text{Xe}(\text{B})$
- 289 Unit Process Assemblies, Inc.
53 - 15 37th Ave.
Woodside, NY 11377
 $^{147}\text{Pm}(\text{O})$, $^{106}\text{Ru}(\text{O})$, $^{90}\text{Sr}(\text{O})$

- 290 United Nuclear Corporation
Fuel Recovery Operations
Wood River Junction, RI 02894
EU(P)
- 291 United Nuclear Industries
1100 Area
Richland, WA 99352
 $^{144}\text{CePr(H)}$, $^{252}\text{Cf(O)}$, $^{137}\text{Cs(H)}$, $^{60}\text{Co(H)}$,
DU(P), EU(P), MCP(O), $^{54}\text{Mn(H)}$
- 292 United States Air Force Academy
USAF Academy, CO 80840
 $^{252}\text{Cf(S)}$
- 293 United States Army Aberdeen Proving
Grounds
Ballistic Research Laboratory
Aberdeen Proving Grounds, MD 21005
DU(P)
- 294 United States Army Medical Center &
Letterman
"Finance & Accounting"
Division - Building 102
Presidio of San Francisco, CA 94129
 $^{133}\text{Xe(O)}$
- 295 United States Department of
Agriculture, ARS
National Animal Disease Center
PO Box 70
Ames, IA 50010
 $^{28}\text{Mg(O)}$
- 236 United States Department of Energy
Chicago Operations Office
Finance Division
9800 South Cass Ave.
Argonne, IL 60439
MCP(O)
- 297 United States Department of Energy
New Brunswick Laboratory
New Brunswick, NJ 08903
 $^{241}\text{Am(O)}$
- 298 United States Department of Energy
376 Hudson St., Fifth Floor
New York, NY 10014
 $^{140}\text{Ba(O)}$, $^{236}\text{Pu(O)}$, $^{239}\text{Pu(O)}$, $^{235}\text{U(O)}$
- 299 United States Department of Energy
Richland Operations Office
PO Box 550
Richland, WA 99352
 $^{95}\text{Zr(O)}$
- 300 United States Department of Energy
Laramie Energy Research Center
9th and Lewis, PO Box 3395, University
Station
Laramie, WY 82071
 $^{85}\text{Kr(O)}$
- 301 United States Department of Energy
Washington, DC 20545
 $^{252}\text{Cf(O)}$, MCP(O)
- 302 United States Department of Interior
Geology Survey
Building 21, Denver Federal Center
Denver, CO 80225
 $^{233}\text{U(O)}$
- 303 United States Department of Interior
Geological Survey
National Center
12201 Sunrise Valley Dr.
Reston, VA 22092
 $^{252}\text{Cf(S)}$
- 304 United States Environmental Protection
Agency
Cincinnati, OH 45213
 $^{242}\text{Pu(M)}$
- 305 United States Geological Survey
Denver Federal Center
PO Box 25046
Denver, CO 80225
RSI(A)
- 306 United States Geological Survey
Financial Management
National Center, Room 1447-A
12201 Sunrise Valley Dr.
Reston, VA 22092
 $^{230}\text{Th(O)}$
- 307 United States Kirtland Air Force Base
Building 1015 P
c/o Radiological Safety Officer
Albuquerque, NM 87117
 $^{232}\text{Th(M)}$
- 308 United States National Aeronautics and
Space Administration
Lewis Research Center
21000 Brookpark Rd.
Cleveland, OH 44135
 $^3\text{H(O)}$, $^{151}\text{Sm(O)}$

- 309 United States National Aeronautics and Space Administration
Goddard Space Flight Center
Glendale Rd.
Greenbelt, MD 20771
 $^{85}\text{Kr}(\text{O})$
- 310 United States National Aeronautics and Space Administration
Ames Research Center
Moffett Field, CA 94035
 $^{47}\text{Ca}(\text{O})$
- 311 United States Navy
Naval Regional Medical Center
8750 Mountain Blvd. - Building 505
Oakland, CA 94627
 $^{47}\text{Ca}(\text{O})$
- 312 United States Public Health Environmental Protection Agency
Accounting Operations Office, Durham
Research Triangle Park, NC 27711
 $^{85}\text{Kr}(\text{O})$
- 313 United States Public Health Service
PO Box 684
4505 Maryland Parkway
Las Vegas, NV 89101
 $^{243}\text{Cm}(\text{O})$
- 314 United States Public Health Service
National Institutes of Health, Isotope Laboratory
Building 21
Bethesda, MD 20014
 $^{47}\text{Ca}(\text{O}), ^{43}\text{K}(\text{O}), ^{127}\text{Xe}(\text{B}), ^{91}\text{Y}(\text{O})$
- 315 United States Radium Corporation
4150 Old Berwick Rd.
PO Box 380
Bloomsburg, PA 17815
 $^3\text{H}(\text{O})$
- 316 United States Testing Company, Inc.
2800 George Washington Way
Richland, WA 99352
 $^{241}\text{Am}(\text{H}), ^{210}\text{Po}(\text{H}), ^{147}\text{Pm}(\text{H}), ^{239}\text{Pu}(\text{H})$
- 317 University of Maryland
Baltimore County Campus
5401 Wilkins Dr.
Baltimore, MD 21228
 $^{28}\text{Mg}(\text{O})$
- 318 Utah, University of
Purchasing Department
Salt Lake City, UT 84112
 $^{244}\text{Pu}(\text{O}), ^{133}\text{Xe}(\text{O})$
- 319 Utah-Department of Energy-CARL
Comparative Animal Research Laboratory
1299 Bethel Valley Rd.
Oak Ridge, TN 37830
 $^{241}\text{Am}(\text{O}), ^{243}\text{Am}(\text{O}), ^{28}\text{Mg}(\text{O}), ^{95}\text{Nb}(\text{O})$
- 320 Veterans Administration Hospital
1055 Clermont St.
Denver, CO 80220
 $^{133}\text{Xe}(\text{O})$
- 321 Veterans Administration Hospital
Chief, Supply Division
General Storeroom, Building 142
Hines, IL 60141
 $^{47}\text{Ca}(\text{O}), ^{252}\text{Cf}(\text{S})$
- 322 Veterans Administration Hospital
Wilshire and Sawtelle Blvds.
Los Angeles, CA 90073
 $^{47}\text{Ca}(\text{O})$
- 323 Veterans Administration Hospital
Northport, NY 11768
 $^{127}\text{Xe}(\text{B})$
- 324 Veterans Administration Hospital
3801 Junipero Serra Blvd.
Palo Alto, CA 94304
 $^{192}\text{Ir}(\text{O}), ^{103}\text{Ru}(\text{O})$
- 325 Veterans Administration Hospital
Syracuse, NY 13210
 $^{133}\text{Xe}(\text{O})$
- 326 Veterans Administration Hospital
1400 V.F.W. Parkway
West Roxbury, MA 02132
 $^{123}\text{I}(\text{B}), ^{127}\text{Xe}(\text{B})$
- 327 Virginia, University of
Charlottesville, VA 22903
 $^{85}\text{Kr}(\text{O}), ^{127}\text{Xe}(\text{B})$
- 328 Virginia, University of
Radiation Safety Office
RMMF, 11th and Lee Sts.
Charlottesville, VA 22901
 $^{127}\text{Xe}(\text{B})$

- 329 Virginia Hospital, University of
Charlottesville, VA 22901
 $^{133}\text{Xe}(0)$
- 330 Vought Corporation
PO Box 6144
Dallas, TX 75222
 $^{252}\text{Cf}(S)$
- 331 Wadley Institutes of Molecular Medicine
9000 Harry Hines Blvd.
Dallas, TX 75235
 $\text{MCP}(0)$
- 332 Washington State University
Comptroller's Office
Pullman, WA 99163
 $\text{MCP}(0)$, $^{235}\text{U}(0)$, $^{238}\text{U}(0)$
- 333 Washington University
Lindell and Skinker
St. Louis, MO 63130
 $^{47}\text{Ca}(0)$, $^{133}\text{Xe}(0)$
- 334 Washington, University of
400 Administration Building
Seattle, WA 98105
 $^{114}\text{In}(0)$, $^{242}\text{Pu}(0)$, $^{244}\text{Pu}(0)$, $^{106}\text{Ru}(0)$,
 $^{89}\text{Sr}(0)$, $^{133}\text{Xe}(0)$
- 335 Western Electric Company
100 Central Ave.
Kearny, NJ 07032
 $^{137}\text{Cs}(0)$
- 336 Western Electric Company, Inc.
555 Union Blvd.
Allentown, PA 18103
 $^{85}\text{Kr}(0)$
- 337 Westinghouse Electric Corporation
PO Box 284
Elmira, NY 14902
 $^{238}\text{U}(0)$
- 338 Westinghouse Electric Corporation
Research and Development
1310 Beulah Rd.
Churchill, PA 15235
 $^{60}\text{Co}(H)$, $\text{RSI}(H)$
- 339 Western Electric Company, Inc.
PO Box 1409
Lawrence, MA 01842
 $^{85}\text{Kr}(0)$
- 340 Western Kentucky University
Bowling Green, KY 42101
 $^{239}\text{Pu}(0)$
- 341 Westinghouse Electric Corporation
Hanford Engineering Development Laboratory
PO Box 1970
Richland, WA 99352
 $^{241}\text{Am}(0)$, $^{243}\text{Am}(0)$, $^{133}\text{Ba}(H)$, $^{140}\text{Ba}(0)$,
 $\text{Cap}(0)$, $^{144}\text{CePr}(H)$, $^{252}\text{Cf}(0)$, $^{137}\text{Cs}(H)$,
 $^{57}\text{Co}(H)$, $\text{DU}(P)$, $\text{EU}(P)$, $^3\text{H}(0)$, $\text{MCP}(0)$,
 $^{22}\text{Na}(H)$, $^{237}\text{Np}(0)$, $\text{Pu}(P)$, $^{236}\text{Pu}(0)$,
 $^{239}\text{Pu}(H)$, $^{239}\text{Pu}(0)$, $^{242}\text{Pu}(0)$, $^{103}\text{Ru}(0)$,
 $^{75}\text{Se}(H)$, $^{90}\text{SrY}(H)$, $^{99}\text{Tc}(H)$, $\text{Tgs}(0)$, $\text{U}(0)$,
 $\text{U}(P)$, $^{235}\text{U}(0)$, $^{238}\text{U}(0)$, $^{133}\text{Xe}(0)$
- 342 Westinghouse Electric Corporation
Bettis Atomic Power Laboratory
PO Box 79
West Mifflin, PA 15122
 $^{140}\text{Ba}(0)$, $^{131}\text{I}(0)$, $\text{Tgs}(0)$, $^{232}\text{Th}(0)$,
 $^{232}\text{U}(0)$
- 343 Whitman College
Walla Walla, WA 99362
 $^{37}\text{Ar}(0)$
- 344 William Beaumont Hospital
3601 W Thirteen Mile Rd.
Royal Oak, MI 48072
 $^{133}\text{Xe}(0)$
- 345 Wisconsin, University of
750 University Ave.
Madison, WI 53706
 $^{153}\text{Gd}(0)$, $\text{SS}(0)$
- 346 Woods Hole Oceanographic Institute
Woods Hole, MA 02543
 $^{237}\text{Np}(0)$, $^{244}\text{Pu}(0)$
- 347 Yale University
20 Ashmun St.
New Haven, CT 06520
 $^{47}\text{Ca}(0)$
- 348 York College
Department of Natural Sciences
Jamaica, NY 11451
 $\text{RSI}(B)$

B. FOREIGN

AUSTRALIA

- 349 Australian Radiation Laboratory
36 Lonsdale St.
Melbourne, Victoria, 3000 Australia

$^{127}\text{Xe}(\text{B})$, $^{127}\text{Xe}(\text{O})$

AUSTRIA

- 350 International Atomic Energy Agency
Kaerntnerring 11-13
A-1010 Vienna, Austria

$^{236}\text{Pu}(\text{O})$, $^{244}\text{Pu}(\text{O})$

BELGIUM

- 351 Academic Hospital St. Rafael
Department Nuclear Medicine
Kapucijnenvoer 35
B-3000 Leuven, Belgium

$^{127}\text{Xe}(\text{B})$

- 352 Centre d'Etude de l'Energie Nclr.
Boeretang 200
B-2400 Mol-Donk, Belgium

$^{234}\text{U}(\text{O})$

- 353 Centre d'Etude de l'Energie Nucleaire
Studiecentrum voor Kernenergie
270 Boertang
2400 MOL (DONK), Belgium

$^{140}\text{Ba}(\text{H})$

- 354 EURATOM
51-53 Rue Belliard
Brussels, Belgium

$^{231}\text{Pa}(\text{O})$, $^{230}\text{Th}(\text{O})$, $^{233}\text{U}(\text{O})$, $^{235}\text{U}(\text{O})$
 $^{238}\text{U}(\text{O})$

- 355 European Atomic Energy Commission
Central Bureau for Nuclear Measurements
Geel, Belgium

$^{252}\text{Cf}(\text{O})$, $\text{MCP}(\text{O})$, $^{244}\text{Pu}(\text{O})$, $^{230}\text{Th}(\text{O})$,
 $^{233}\text{U}(\text{O})$, $^{234}\text{U}(\text{O})$

- 356 IRE, Institut National des Radioelements
Avenue Eugene Plasky, 144
1040 Brussels, Belgium

$^{137}\text{Cs}(\text{O})$, $\text{MCP}(\text{O})$

- 357 Katholieke Universite Leuven
Dienst Radioprotektie
De Croylaan 54
3030 Heverlee, Belgium

$^{127}\text{Xe}(\text{B})$

- 358 Louvain, Universite de
Parc d'Arenberg
Heverle Louvain, Belgium

$^{133}\text{Xe}(\text{O})$

BRAZIL

- 359 Institute of Atomic Energy
Sao Paulo, Brazil

$^{252}\text{Cf}(\text{S})$

CANADA

- 360 Alberta, University of
Edmonton, Alberta, Canada

$^{133}\text{Xe}(\text{O})$

- 361 Atomic Energy of Canada Limited
Chalk River, Ontario, Canada

$^8\text{Kr}(\text{O})$

- 362 Joseph Brant Memorial Hospital
1230 N Shore Blvd.
Burlington, Ontario, Canada

$^{127}\text{Xe}(\text{B})$

- 363 Manitoba, University of
Winnepeg, Manitoba, Canada

$^3\text{H}(\text{O})$, $\text{Tgs}(\text{O})$

- 364 McGill University
3655 Drummond St.
Montreal 2, P.Q., Canada

$^{28}\text{Mg}(\text{B})$, $^{28}\text{Mg}(\text{O})$, $^{133}\text{Xe}(\text{O})$

- 365 McMaster University
Hamilton, Ontario, Canada

$^3\text{H}(\text{O})$, $^{127}\text{Xe}(\text{B})$

- 366 National Research Council
Montreal Road Laboratories
Ottawa, Ontario, Canada

$^{244}\text{Cm}(\text{O})$

- 367 Ontario Hydro
700 University Ave.
Toronto, Ontario M5G 1X6, Canada

$^{236}\text{Pu}(\text{O})$

- 368 Queen's University
Biology Department
Kingston, Ontario, Canada

$^{28}\text{Mg}(\text{B})$, $^{28}\text{Mg}(\text{O})$

- 369 Royal Military College of Canada
Department of Chemistry and
Chemical Engineers
Kingston, Ontario K7L2W3, Canada

$^{252}\text{Cf}(\text{S})$

- 370 Royal Ontario Museum
100 Queens Park
Toronto, Ontario, Canada M5S 2C6

$^{235}\text{U}(0)$

- 371 Simon Fraser University
Burnaby 2, B.C., Canada

$^{106}\text{Ru}(0)$

- 372 Sunnybrook Hospital
Nuclear Medicine Department
2075 Bayview Ave.
Toronto, Ontario, Canada

$^{127}\text{Xe}(\text{B})$

- 373 Toronto General Hospital
101 College St.
Toronto 2, Ontario, Canada

$^{133}\text{Xe}(0)$

- 374 Toronto, University of
Toronto, Ontario, Canada

$^{234}\text{U}(0)$

- 375 University Hospital
Nuclear Medicine Dept.
London, Ontario N6G 2K3, Canada

$^{127}\text{Xe}(\text{B})$

- 376 University of Regina
Regina, Saskatchewan, Canada

$^{235}\text{U}(0)$, $^{238}\text{U}(0)$

- 377 Vancouver General Hospital
Division of Nuclear Medicine
Vancouver, British Columbia, Canada

$^{127}\text{Xe}(\text{B})$

CHINA

- 378 National Cash Register Manufacturing
Company, Ltd.
No. 55 Wong Chuk Hang Rd.
Aberdeen, Hong Kong, China

$^{85}\text{Kr}(0)$

- 379 Semi-Conductor Devices, Ltd.
59-61 Wong Chuk Hang Rd.
Aberdeen, Hong Kong, China

$^{85}\text{Kr}(0)$

CZECHOSLOVAKIA

- 380 CHEMAPOL
Foreign Trade Corporation
Panska 9
Praha 1, Czechoslovakia

$^{129}\text{I}(0)$

DENMARK

- 381 Gammatec
Stormly 16
3500 Hareskov
Denmark

$^{153}\text{Gd}(0)$, $\text{SS}(0)$

- 382 The Isotope Pharmacy
378 Frederikssundsvej
DK-2700 Bronshøj, Denmark

$^{127}\text{Xe}(\text{B})$

ENGLAND

- 383 London Reactor Center, University of
Silwood Park
Sunninghill, Ascot, Berkshire, England

$^{54}\text{Mn}(\text{H})$

- 384 Ministry of Agriculture, Fisheries and
Food
Fisheries Radiobiological Laboratory
Hamilton Dock, Lowestoft (Suffolk),
England

$^{236}\text{Pu}(0)$

- 385 Oxford, University of
Nuclear Physics Laboratory
21 Banbury Rd.
Oxford, England

$^{233}\text{U}(0)$, $^{236}\text{U}(0)$

FRANCE

- 386 Centre d'Etudes
Nucleaires de Fontenay-aux-Roses
92260 Fontenay-aux-Roses, France

$^{252}\text{Cf}(\text{S})$

- 387 Laboratoire de Physique et Chimie Marine
4 Place Jussieu, Tour 24/25
Paris, Cedex 05, France

$^{28}\text{Mg}(\text{B})$

GERMANY

- 388 American Hoechst Corporation
PO Box 2500
Somerville, NJ 08876

$^{85}\text{Kr}(0)$

389 Buchler and Company
Frankfurter St. 294
Braunschweig, Germany

$^{129}\text{I}(0)$

390 GWK-Gesellschaft zur Wiederaufbereitung
von Kernb
D-7051 Leopoldshafen, West Germany

$^{233}\text{U}(0)$

391 Gesellschaft für Kernforschung mbH
Institute fuer Angewandte Reaktor Physik
Weberstrasse 5
75 Karlsruhe, West Germany

$\text{Cap}(0)$, $^{237}\text{Np}(0)$

392 Heidelberg, Universität
Heidelberg, Germany

$\text{MCP}(0)$, $^{230}\text{Th}(0)$

393 Institute für Transurane EURATOM
75 Karlsruhe 1, West Germany

$^{252}\text{Cf}(S)$

394 Kernforschung Sanlage
Postfach 365
517 Julich, Germany

$^{151}\text{Sm}(0)$

395 NEN Chemicals GMBH
Main Airport
Frankfort, Germany

$^{28}\text{Mg}(B)$

IRELAND

396 AGIP USA, Inc.
1221 Avenue of the Americas
New York, NY 10020

$\text{MCP}(0)$, $^{90}\text{Sr}(0)$

ISRAEL

397 Embassy of Israel
1621-22nd St., NW
Washington, DC 20008

$^{129}\text{I}(0)$

398 Technion-Israel Institute of Technology
PO Box 4910
Haifa, Israel

$^{252}\text{Cf}(0)$, $\text{Tgs}(0)$

ITALY

399 EURATOM
Chemistry Division
Ispra, Italy

$^{252}\text{Cf}(S)$

JAPAN

400 Japan Radioisotope Association
Hon-Komagome 2 Chome 28
Bunkyo-Ku
Tokyo, Japan

$^{85}\text{Kr}(0)$, $\text{MCP}(0)$, $^{147}\text{Pm}(0)$

401 Keio University School of Medicine
Tokyo, Japan

$^{252}\text{Cf}(S)$

NETHERLANDS

402 Highways International
Amsterdamse Straatweg 20
Baarn 2670, The Netherlands

$^{95}\text{Zr}(0)$

403 N. V. Philips - Duphar
PO Box 2
Weesp, The Netherlands

$\text{CSI}(0)$, $^{133}\text{Xe}(0)$

NORWAY

404 Institutt for Atom Energi
OECD Halden Reactor Project
Halden, Norway

$\text{EU}(P)$

POLAND

405 PHZ Metronex
Al. Jerozolimskie 44
Warszawa 1, Poland

$^{241}\text{Am}(0)$, $\text{Cap}(0)$

SCOTLAND

406 Glasgow, University of
Glasgow, W.2. Scotland

$^{28}\text{Mg}(0)$

407 Royal Infirmary
Medical Cardiology
University of Glasgow
Glasgow, G4 OSF, Scotland

$^{28}\text{Mg}(B)$

SPAIN

- 408 Instituto **Nacional** de Intestigaciones
Agrarias
Avda. Puerta de Hierro, S/N
Madrid 3, Spain
 $^{33}\text{P}(0)$

SWITZERLAND

- 409 Eidg. Institut fur Reaktorforschung
Wurenlingen, Switzerland
 $^{233}\text{U}(0)$

- 410 Eribourg, University of
1700 Fribourg, Switzerland

$^{237}\text{Np}(0)$, $\text{Tgs}(0)$

- 411 Radium-Chemie
A. Zeller and Company
9053 Teufen/Ar, Switzerland

$^{37}\text{Ar}(0)$, $\text{MCP}(0)$, $^{147}\text{Pm}(0)$

11. ALPHABETICAL LIST OF ISOTOPES
CROSS-REFERENCED TO CUSTOMER NUMBERS

A. <u>DOMESTIC</u>	Bromine 77 (Br)
Actinium 227 (Ac)	53
36, 287	Bromine 80 (Br)
Aluminum 28 (Al)	77
77	Bromine 82 (Br)
Americium (Am)	77
23	Cadmium 117 (Cd)
Americium 241 (Am)	77
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16, 21, 90, 243, 319, 341	Calcium 49 (Ca)
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131	Californium 249 (Cf)
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77	Californium 252 (Cf)
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77	Cerium (Ce)
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10, 287, 343	Cerium 139 (Ce)
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77	Cerium 141 (Ce)
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Barium 139 (Ba)	77
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10, 36, 40, 84	Cesium (Cs)
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Chlorine 38 (Cl)

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Cobalt 57 (Co)

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Cobalt 60 (Co)

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Curium 244 (Cm)

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Curium 246 (Cm)

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Curium 248 (Cm)

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Cyclotron Service Irradiations (CSI)

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223, 224, 285, 287

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Europium 154 (Eu)

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162, 197, 199, 201, 287, 341

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Gadolinium 153 (Gd)

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Gadolinium 159 (Gd)

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Gadolinium 161 (Gd)

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Germanium 75 (Ge)

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Iron 55 (Fe)

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Krypton 85 (Kr)

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69, 83, 92, 94, 96, 102, 107, 108, 115,
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Manganese 56 (Mn)

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Mercury 197 (Hg)

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7, 10, 23, 24, 25, 30, 40, 41, 44, 74,
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200, 203, 225, 252, 257, 266, 267, 272,
286, 287, 296, 301, 331, 332, 341

Molybdenum 93 (Mo)

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Molybdenum 99 (Mo)

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Neodymium 147 (Nd)

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Neodymium 149 (Nd)

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Neptunium 237 (Np)

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Nickel 65 (Ni)

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Plutonium 236 (Pu)

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Plutonium 238 (Pu)

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131, 169, 172, 188, 237, 243, 244, 266,
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Plutonium 239 (Pu)

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Plutonium 240 (Pu)

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Potassium 43 (K)	Strontium 89 (Sr)
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Praseodymium 142 (Pr)	Strontium 90 (Sr)
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Promethium 147 (Pm)	Strontium 90 - Yttrium (SrY)
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77	10, 23, 24, 30, 33, 40, 41, 46, 47, 71, 90, 114, 117, 119, 125, 144, 172, 202, 231, 233, 234, 241, 243, 247, 287, 341, 342
Ruthenium 103 (Ru)	Technetium 99 (Tc)
10, 14, 16, 30, 102, 178, 287, 324, 341	2, 4, 16, 24, 30, 41, 56, 78, 98, 109, 158, 178, 184, 273, 274, 284, 287, 288, 341
Ruthenium 106 (Ru)	Thorium 229 (Th)
10, 24, 28, 51, 109, 119, 151, 289, 334	162, 187, 287
Samarium 151 (Sm)	Thorium 230 (Th)
24, 40, 62, 106, 308	10, 11, 30, 33, 40, 47, 119, 172, 187, 228, 237, 272, 285, 287, 306
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23, 24, 30, 40, 41, 78, 92, 144, 233,
266, 287, 307, 342

Thulium 170 (Tm)

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Tin 125 (Sn)

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Uranium 233 (U)

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Uranium 235 (U)

10, 24, 33, 35, 40, 41, 62, 119, 202,
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Uranium 236 (U)

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Uranium 238 (U)

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Xenon 127 (Xe)

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136, 143, 150, 166, 171, 173, 175, 190,
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Xenon 133 (Xe)

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148, 149, 152, 153, 157, 160, 172, 198,
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227, 250, 254, 255, 256, 261, 262, 264,
279, 286, 287, 294, 318, 320, 325, 329,
333, 334, 341, 344

Yttrium 88 (Y)

Yttrium 91 (Y)

10, 222, 314

Zinc 65 (Zn)

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Zinc 69 (Zn)

77

Zinc 71 (Zn)

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Zirconium 95 (Zr)

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Zirconium 97 (Zr)

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Argon 37 (Ar)

411

Barium 140 (Ba)

353

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355, 359, 369, 386, 393, 398, 399, 401

Cesium 137 (Cs)

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363, 365

Iodine 129 (I)

380, 389, 397

Krypton 85 (Kr)

361, 378, 379, 388, 400

Magnesium 28 (Mg)

364, 368, 387, 395, 406, 407

Manganese 54 (Mn)

383

Mercury 197 (Hg)

77

Miscellaneous Compound Preparation (MCP)

355, 356, 392, 396, 400, 411

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Neodymium 149 (Nd)

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Neptunium 237 (Np)

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Phosphorus 33 (P)

408

Plutonium 236 (Pu)

350, 367, 384

Plutonium 244 (Pu)

350, 355

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354, 355, 392

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Uranium 235 (U)

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Uranium 236 (U)

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Xenon 127 (Xe)

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Xenon 133 (Xe)

358, 360, 364, 372, 403

Zirconium 95 (Zr)

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111. ALPHABETICAL LIST OF STATES AND COUNTRIES
CROSS-REFERENCED TO CUSTOMER NUMBERS

A. DOMESTIC

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Arizona (AZ)

7, 13, 14, 155, 165, 233

Arkansas (AR)

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California (CA)

17, 19, 27, 33, 34, 35, 36, 37, 38, 39,
40, 42, 43, 44, 49, 74, 89, 90, 102, 107,
110, 114, 116, 118, 119, 120, 131, 133,
134, 163, 177, 189, 202, 207, 212, 216,
218, 222, 227, 229, 231, 244, 247, 248,
251, 252, 254, 257, 258, 262, 263, 265,
282, 283, 294, 310, 311, 322, 324

Colorado (CO)

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302, 305, 320

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District of Columbia (DC)

46, 98, 172, 176, 299, 301

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Georgia (GA)

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Illinois (IL)

8, 10, 50, 51, 52, 65, 70, 80, 87, 152,
194, 195, 221, 240, 264, 296, 321

Indiana (IN)

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Iowa (IA)

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Kansas (KA)

Kentucky (KY)

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Louisiana (LA)

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Massachusetts (MA)

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5, 18, 30, 31, 58, 62, 66, 72, 92, 95,
103, 106, 132, 167, 183, 184, 185, 186,
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21, 23, 55, 56, 57, 59, 88, 96, 101, 109,
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IV. RADIOISOTOPE SALES AND TRANSFERS - FY 1977 (Plus the Transition Quarter)

A = Argonne National Laboratory
P = Battelle, Pacific Northwest Laboratories
B = Brookhaven National Laboratory
H = Hanford Engineering Development Laboratory
I = Idaho Operations Office
M = Mound Laboratory
O = Oak Ridge National Laboratory
S = Savannah River Plant
U = United Nuclear Industries, Inc.

Isotope	Domestic			Foreign			Project ^(a)			Total		
	Ship- ments	Millicuries, unless noted	Dollars	Ship- ments	Millicuries, unless noted	Dollars	Ship- ments	Millicuries, unless noted	Dollars	Ship- ments	Millicuries, unless noted	Total Dollars
Actinium-227(M)	-	-	-	-	-	-	4	3.52	-	4	3.52	-
Aluminum-28(I)	-	-	-	-	-	-	1	1.76	-	1	1.76	-
Antimony-122(I)	-	-	-	-	-	-	1	17	-	1	17	-
Americium(P)	-	-	-	-	-	-	1	0.01 Ci	-	1	0.01 Ci	-
Americium-241(H)	2	50.6 µCi	-	-	-	-	26	122	-	28	122	-
Americium-241(O)	69	127 g	631,185	1	10 g	2,220	58	4 g	-	128	1,281 g	633,405
Americium-243(H)	-	-	-	-	-	-	1	1	-	1	1	-
Americium-243(O)	2	-	330	-	-	-	6	5 mg	990	8	5 mg	1,320
Americium-244(P)	1	<1 µCi	-	-	-	-	-	-	-	1	<1 µCi	-
Argon-37(O)	1	1	60	1	1	60	2	6	400	4	8	520
Barium-131(I)	-	-	-	-	-	-	1	1	-	1	1	-
Barium-133(H)	2	151 µCi	-	-	-	-	10	655 µCi	-	12	866 µCi	-
Barium-139(I)	-	-	-	-	-	-	1	1	-	1	1	-
Barium-140(H)	1	3	-	1	1	-	4	4	-	6	8	-
Barium-140(O)	2	14	105	3	10	75	3	23	200	8	47	380
Berkelium-249(O)	1	-	75	-	-	-	6	30 µg	390	7	30	465
Bismuth-210(H)	9	9 nCi	-	-	-	-	24	132 nCi	-	33	141 nCi	-
Bromine-77(B)	1	2	-	-	-	-	-	-	-	1	2	-
Bromine-80(I)	-	-	-	-	-	-	-	20	-	-	20	-
Bromine-82(I)	-	-	-	-	-	-	-	55	-	-	55	-
Cadmium-117(I)	-	-	-	-	-	-	-	123	-	-	123	-
Calcium-47(I)	-	-	-	-	-	-	-	0.3	-	-	0.3	-
Calcium-47(O)	223	1,081.3	21,368	-	-	-	-	-	-	223	1,081.3	21,368
Californium-249(O)	1	-	75	-	-	-	1	-	65	2	-	140
Californium-252(O)	7	-	525	4	-	473	21	43,780.5 µg	6,460	32	43,780.5 µg	7,458
Californium-252(S)	9	17.17 mg	198,197	3	8.71 mg	107,178	-	-	-	13	21.3 mg	305,375
Cerium-139(H)	-	-	-	-	-	-	1	0.88	-	1	0.88	-
Cerium-141(H)	-	-	-	-	-	-	1	2	-	1	2	-

Isotope	Domestic			Foreign			Project ^(a)			Total		
	Ship- ments	Millicuries, unless noted	Dollars	Ship- ments	Millicuries, unless noted	Dollars	Ship- ments	Millicuries, unless noted	Dollars	Ship- ments	Millicuries, unless noted	Total Dollars
Cerium-141(I)								0.154			0.154	
Cerium-141+ Praseodymium(tl)							4	12		4	12	
Cerium-143(I)								0.18			0.18	
Cerium-144(O)				1	100	100	8	2,581	7,020	9	2,681 Ci	7,120
Cesium(P)	1	370 Ci								1	370	
Cesium-137(H)							52	22		52	22	
Cesium-137(O)	52	2,797 Ci	1,510	2	76,726 Ci	13,354	-			54	73,928 Ci	14,864
Chlorine-38(I)								160			160	
Chromium-51(H)							2	290,127		3	290,127	
Chromium-51(I)								0.054			0.054	
Cobalt-57(H)	2	50 nCi					1	10.2 µCi		2	10.2 µCi	
Cobalt-60(H)	10	390					20	49,160		31	49,550	
Cobalt-60(I)						-		556		31	556	
Cobalt-60(O)		-	-			-	1	20	80	1	20	80
Copper-64(I)						-		3			3	
Curium(P)	1	0.106 Ci					-			1	0.106 Ci	
Curium-243(O)	1		65				1		65	2		130
Curium-244(O)	8	1,019 mg	2,087	1	13 mg	1,320	9	92.9 mg	1,040	18	1,124.9 mg	4,447
Curium-246(O)							1	1,000	120	1	1,000	120
Curium-248(O)		-	-				1	50 mg	65	1	50 mg	65
Cyclotron Service Irradiations(A) ^(b)	3		657				105			108		675
Einsteinium-253(O)							9	3.2	585	9	3.2	585
Encapsulation(O)			112,139			33,425			31,200			176,764
Europium-152(I)								160	-	-	160	
Europium-154(I)	-	-	-					0.036			0.036	
Fermium-257(O)	-						1		65	1		65
Fluorine-18(B)	3	6								3	6	
Gadolinium-152(I)	-							0.056 µCi			0.056 µCi	
Gadolinium-153(O)	6	7,000	5,750	2	1,250	1,250	6	8,006	6,500	14	16,256	13,500
Gadolinium-159(I)								38 µCi			38 µCi	
Gadolinium-161(I)						-		160 µCi			160 µCi	
Germanium-73(I)			-					50			50	

Isotope	Domestic			Foreign			Project ^(a)			Total		
	Ship- ments	Millicuries, unless noted	Dollars	Ship- ments	Millicuries, unless noted	Dollars	Ship- ments	Millicuries, unless noted	Dollars	Ship- ments	Millicuries, unless noted	Total Dollars
Germanium-75(I)	-	-		-	-	-	-	10			10	-
Gold-198(I)				-	-	-	-	952			952	
Hafnium-181 (O)	2	3	75	-	-	-	-		-	2	3	75
Hydrogen-3(H)				-	-	-	17	123 µCi		17	123 µCi	
Hydrogen-3(M)	-	-					4	3.52		4	3.52	
Hydrogen-3(O)	234	288,258 Ci	233,391	10	45,570 Ci	42,640	30	5,376 Ci	3,984	274	339,214 Ci	280,015
Hydrogen-3(P)	1						3	23.6 Ci		4	23.6 Ci	
Indium(8)	3	16		-	-	-		-	-	3	10	
Indium-114(O)	1	2.5	25	-	-	-		-	-	1	2.5	25
Iodine-123(B)	28	1,226		-	-	-	-	-		28	1,226	
Iodine-129(O)	15	10,331 mg	7,910	6	2,802 mg	2,402	4	2,601	2,075	25	15,734	12,387
Iodine-136(H)							6	38.1		6	38.1	
Iodine-131(O)	10	591	591				80	1,164.5	1,219	-	1,755.5	1,810
Iridium-192(I)				-	-	-	-	230			230	
Iridium-192(O)	1	1	25	-	-	-	-	-		1	1	25
Iron-52(B)	4	38		-	-	-	-	-		4	38	
Iron-55(H)			-	-	-	-	1	20,000		1	20,000	-
Iron-59(H)			-	-	-	-	1	2		1	2	
Krypton-81(B)	1	25		-	-	-				1	25	
Krypton-85(H)							1	25		1	25	
Krypton-85(O)	137	4,013 Ci	101,955	18	1,109 Ci	28,278	30	78 Ci	2,045	185	5,200 Ci	132,278
Lanthanum-140(I)								0.7			0.7	
Lead-210(H)	-	-					25	140 nCi		25	140 nCi	
Magnesium-28(B)	28	3.4	3,965	18	2.1	2,520				4.6	5.5	6,485
Magnesium-28 (O)		25	3,465		25	2,283		2	206		52	5,954
Manganese-54(H)	82	130	-							2	130	-
Manganese-56(H)	1	3.3	-				-			1	3.3	-
Manganese-56 (I)	-	-	-				-	18			18	-
Mercury-197(I)	-	-	-	-	-	-	1	0.6		1	0.6	-
Mercury-203(I)	-	-	-	-	-	-	1	3.5		1	3.5	-
Miscellaneous Com- pound Services(O)	24	287	999	2	4	5,200	19	0.1		45	291	6,199
Molybdenum-93 (I)							1	5		1	5	

Isotope	Domestic			Foreign			Project ^(a)			Total		
	Ship- ments	Millicuries, unless noted	Dollars	Ship- ments	Millicuries, unless noted	Dollars	Ship- ments	Millicuries, unless noted	Dollars	Ship- ments	Millicuries, unless noted	Total Dollars
Molybdenum-99(I)	-	-	-	-	-	-	1	12.5	-	1	12.5	-
Neodymium-147(I)	-	-	-	-	-	-	1	0.03	-	1	0.03	-
Neodymium-149(I)	-	-	-	-	-	-	1	30.9	-	1	30.9	-
Neptunium-237(H)	-	-	-	-	-	-	2	8 nCi	-	2	8 nCi	-
Neptunium-237(M)	-	-	-	-	-	-	1	120 g	-	1	120 g	-
Neptunium-237(O)	3	2,176 g	1,056	3	30,002 g	7,352	11	146,695 g	32,355	17	179,413 g	40,763
Neptunium-237(P)	5	1 µCi	-	-	-	-	-	-	-	5	1 µCi	-
Nickel-65(I)	-	-	-	-	-	-	1	500	-	1	500	-
Niobium-95(O)	27	538	13,450	-	-	-	3	42	1,350	30	580	14,500
Phosphorous-33(O)	26	1,845	20,725	1	100	1,000	-	-	-	27	1,945	21,725
Platinum-195(I)	-	-	-	-	-	-	1	1.5	-	1	1.5	-
Plutonium(P)	-	-	-	-	-	-	5.G	288.33 kg	7,688,800	56	288.33 kg	7,688,800
Plutonium-236(H)	-	-	-	-	-	-	1	2 µCi	-	1	2 µCi	-
Plutonium-236(O)	3	-	2,455	3	-	3,547	4	-	3,010	10	-	9,012
Plutonium-237(O)	5	-	4,700	1	-	1,065	5	-	17,100	11	-	22,365
Plutonium-238(M)	-	-	-	-	-	-	39	76.91 kg	-	39	76.91 kg	-
Plutonium-238(O)	2	-	330	-	-	-	7	1,012 g	410	9	1,012 g	740
Plutonium-238(P)	2	357.2 g	-	-	-	-	-	-	-	2	357.2 g	-
Plutonium-238(S)	-	-	-	-	-	-	12	13,982 kg	-	12	13,982 kg	-
Plutonium-239(H)	282	7.13 µCi	-	-	-	-	-	-	-	282	7.13 µCi	-
Plutonium-239(M)	-	-	-	-	-	-	12	4,533 g	-	12	4,533 g	-
Plutonium-239(O)	3	2,200 mg	1,570	-	-	-	14	137,792 mg	1,318	17	139,992 mg	2,888
Plutonium-239(P)	4	1 µCi	-	-	-	-	-	-	-	4	1 µCi	-
Plutonium-240(O)	-	-	-	-	-	-	1	10,000 mg	65	1	10,000 mg	65
Plutonium-241(O)	2	-	330	-	-	-	5	4,904.2 mg	430	7	4,904.2 mg	760
Plutonium-242(H)	-	-	-	-	-	-	1	<1 mg	-	1	<1 mg	-
Plutonium-242(O)	2	5 mg	288	-	-	-	2	4,690 mg	185	4	4,695 mg	473
Plutonium-244(O)	2	20 mg	480	1	10	240	-	-	-	3	30 mg	720
Polonium-210(H)	2	1	-	-	-	-	39	144.67 nCi	-	42	1	-
Polonium-210(M)	-	-	-	-	-	-	2	154	-	2	154	-
Potassium-43(O)	26	76	7,600	-	-	-	11	18	1,800	37	94	9,400
Praseodymium-142(I)	-	-	-	-	-	-	-	1.03	-	-	1.03	-
Promethium-147(H)	-	-	-	-	-	-	22	62	-	22	62	-

Isotope	Ship- ments	Domestic		Ship- ments	Foreign		Project ^(a)			Ship- ments	Total	
		Millicuries, unless noted	Dollars		Millicuries, unless noted	Dollars	Ship- ments	Millicuries, unless noted	Dollars		Millicuries, unless noted	Total Dollars
Promethium-147(0)	12	40.4	960	25	7,439	8,039	1	200	100	38	74,796	9,099
Protactinium-231(M)	-						1	220 mg		1	220 mg	
Protactinium-231(0)	-			2	150 mg	2,042	1	100 mg	787	3	250 mg	2,829
Reactor Service Irradiations(A)	73		15,952	-			259			332		15,952
Reactor Service Irradiations(H)	8	29,349					10	385		18	29,734	-
Reactor Service Irradiations(0)	50	50	276,614	12	5	19,240	19	23	18,368	81	78	341,222
Rubidium-86(I)								32			32	
Ruthenium(P)	1	99 Ci								1	99 Ci	
Ruthenium-103(H)							1	8.2		1	8.2	
Ruthenium-103(0)	5	32	800				4	6	150	9	38	950
Ruthenium-106(H)							7	18.7		7	18.7	
Ruthenium-106(0)	12	117	2,925	1	2	50	3	13.5	337	16	132.5	3,312
Samarium-151(H)							1	25 µCi		1	25 µCi	
Samarium-151(0)	3	1,010 mg	431	3	210 mg	7,560		2 mg	72	6	1,200 mg	8,063
Selenium-46(I)								290			290	
Selenium-75(H)							1	27		1	27	
Sodium-22(B)	1	20								1	20	
Sodium-22(H)							2	10.95 µCi		2	10.95 µCi	
Sodium-24(I)								54			54	
Special Services(0) ^(c)	3	1,200	29,285	-		1,500	6		18,195	9	1,200	48,980
Strontium-85(H)							1	2		1	2	
Strontium-89(0)	26	247	3,305	5	64.2	867	2	12	162	33	323.2	4,334
Strontium-90(0)	15	157,534 Ci	31,705	1	19,118 Ci	5,735	1		10	17	176,652 Ci	37,450
Strontium-90 Yttrium(H)	-						43	15		43	15	
Sulfur-35(I)								4 µCi			4 µCi	
Tantalum-182(H)	1	0.5								1	0.5	
Tantalum-182(I)								1.2			1.2	
Target Preparation(0)	-		41,149	-		3,215	4		364,724	4		409,088
Technetium-99(H)							3	14.27		3	14.27	
Technetium-99(0)	11	34.75 kg	1,922	2	32.33 kg	1,778	2	53.55 kg	2,597	21	120.63 kg	6,297
Thorium(P)							2	62 kg		2	62 kg	
Thorium-239(M)							3	24.6 mg		3	24.6 mg	
Thorium-229(0)	1		990				1		65	2		1,055
Thorium-230(H)	1	11 nCi								1	11 nCi	

Isotope	Domestic			Foreign			Project ^(a)			Total		
	Ship- ments	Millicuries, unless noted	Dollars	Ship- ments	Millicuries, unless noted	Dollars	Ship- ments	Millicuries, unless noted	Dollars	Ship- ments	Millicuries, unless noted	Total Dollars
Thorium-230(M)							3	86,287 mg		3	86,287 mg	
Thorium-230(M)	10	19 mg	1,176	7	1,052 mg	4,557	12	502 mg	2,422	29	1,573 mg	8,755
Thorium-232(H)							18	0.85 g		18	0.85 g	
Thorium-232(M)							6	175 kg		6	175 kg	
Thorium-232(D)	2	258	150				7	1,520,980	650	9	1,521,238	800
Thulium-170(U)							5	70	1,000	5	70	1,000
Tin-123(I)								0.36			0.36	
Tin-125(I)								0.44			0.44	
Uranium(H)							18	0.18 g		18	0.18 g	
Uranium(P)							4	5 kg		4	5 kg	
Uranium-Depleted(P)	56	2,982 kg	5,900	-			43	3,735 kg		99	6,717 kg	5,900
Uranium-Enriched(P)	4	62,642 g					17	24,877 g		21	87,519 g	
Uranium-232(O)							2	39,076.6 mg	130	2	39,076 mg	130
Uranium-233(O)	3	105 mg	469	7	3,701 mg	10,003	4	35,030 mg	315	14	38,836 mg	10,787
Uranium-234(M)							2	28.4 g		2	28.4 g	
Uranium-234(O)	1	3,000 mg	25,025	3	220 mg	2,025	2	180 mg	1,005	6	3,400 mg	28,055
Uranium-235(M)							3	4,088 g		3	4,088 g	
Uranium-235(O)	11	591,206 mg	7,117	5	5,620 mg	967	23	25,829 mg	1,572	39	623,655 mg	9,656
Uranium-236(M)							2	<1 µCi		2	<1 µCi	
Uranium-236(O)	2	1,067 mg	142	1	1 mg	66	6	6 mg	445	9	1,074 mg	653
Uranium-238(M)							9	12,960 g		9	12,960 g	
Uranium-238(O)	8	146,512 mg	2,902	4	13,520 mg	817	10	41,191.1 mg	34,178	22	201,223.1 mg	37,897
Uranium-238(P)	1	0.08 g								1	0.08 g	
Xenon-127(B)		7,125	21,028	-	2,765	7,987		50	200		9,940	29,215
Xenon-133(H)							2	25.01		2	25.01	
Ytterbium-91(O)	6	43	413	3	41	451	1	5	55	10	89	979
Zinc-65(H)							2	6 µCi		2	6 µCi	
Zinc-65(I)								1.95			1.95	
Zinc-69(I)								13			13	
Zinc-71(I)								2 µCi			2 µCi	
Zirconium-95								2.2 µCi			2.2 µCi	
Zirconium-95/ Niobium-95(O)	7	110	605	17	248.6	1,367	13	68	455	37	426.6	242.7
Zirconium-97								0.2 µCi			0.2 µCi	
Total	1650		1,851,156	180		3,342,248	1,480		8,259,291	3,310		10,444,695

(a) Materials are sometimes transferred between DOE sites without dollars or at costs other than normal

(b) Radioisotopes produced by cyclotron service irradiations: ^{133m}Ba, ^{105,206,207}Bi, ¹¹C, ^{129,134}Cs, ^{56,57,61}Co, ⁶⁴Cu, ^{149,150,153}Eu, ¹⁸F, ^{67,69,70}Ga, ^{67,68}Ge, ¹⁹⁷Au, ¹⁷²Hf, ¹¹¹In, ¹²³I, ¹⁷³Lu, ¹³²Pm, ¹⁸⁹Re, ¹⁸⁹Re, ⁹⁵Rh, ^{83,84}Rb, ^{95m,99}Tc, ¹⁶⁸Tm.

(c) Special services include such items as target fabrication, source encapsulation, and preparation of special chemical forms.

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