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List of DOE Radioisotope Customers with Summary of Radioisotope Shipments FY 1979

Compiled by
J. S. Burlison

June 1980

Prepared for
Office of Health and Environmental Research
Office of the Assistant Secretary for
Environment
U.S. Department of Energy
Washington, D. C. 20545
Contract DE-AC06-76RLO 1830

Pacific Northwest Laboratory
Operated for the U.S. Department of Energy
by Battelle Memorial Institute

PNL-3274

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LIST OF DOE RADIOISOTOPE CUSTOMERS WITH
SUMMARY OF RADIOISOTOPE SHIPMENTS

Compiled by
J. S. Burlison

June 1980

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Pacific Northwest Laboratory
Richland, Washington

This document is
PUBLICLY RELEASABLE
Larry E. Williams
Authorizing Official
Date: *06/13/2007*

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See

ACKNOWLEDGMENTS

The compiler thanks the following laboratories and DOE Area Offices for their annual contributions from which this report is compiled.

Argonne National Laboratory
Brookhaven National Laboratory
Hanford Engineering Development Laboratory
Idaho Operations Office/EG&G Idaho, Inc.
Los Alamos Scientific Laboratory
Mound Facility
Oak Ridge National Laboratory
Pacific Northwest Laboratory
Rocky Flats Area Office
Savannah River Plant/DOE
UNC Nuclear Industries, Inc.

PREVIOUS REPORTS

Previous reports in this series are:

TID-2160 (FY 1964)	ORNL-IIC-17 (FY 1968)	BNWL-1774 (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)	PNL-2572 (FY 1977)	PNL-2930 (FY 1978)

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 1978," Oak Ridge National Laboratory, ORNL/TM-6710, May 1979 (\$4.50 printed; \$3.00 microfiche).
- "Stable Isotope Sales: Mound Facility Customer and Shipment Summaries, FY 1978." MLM-2594, March 16, 1979 (\$4.00 printed; \$3.00 microfiche).
- "Stable Isotope Sales: Mound Facility Customer and Shipment Summaries, FY 1977." MLM-2504, April 27, 1978 (\$4.00 printed; \$3.00 microfiche).
- "Stable Isotope Sales: Mound Facility Customer and Shipment Summaries, FY 1976 and 1976 A," MLM-2403, June 6, 1977 (\$4.00 printed; \$3.00 microfiche).
- "Stable Isotope Sales: Mound Facility Customer and Shipment Summaries, FY 1975." MLM-2295, April 30, 1976 (\$4.00 printed; \$3.00 microfiche).

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LIST OF DOE RADIOISOTOPE CUSTOMERS WITH
SUMMARY OF RADIOISOTOPE SHIPMENTS FY 1979

INTRODUCTION

The fifteenth edition of the radioisotope customer list was prepared at the request of the Division of Financial Services, Office of the Assistant Secretary for Environment, Department of Energy (DOE). This document lists DOE's 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 Facility; Oak Ridge National Laboratory; Rocky Flats Area Office; Savannah River Laboratory; and UNC Nuclear Industries, Inc.

The information is divided into five sections:

1. Isotope Suppliers, Facility, Contracts and Isotopes or Services Supplied. Section 1 lists suppliers of isotopes, the isotopes supplied, and the contact person for each DOE facility. If a reader needs more specific information that is not supplied in this report about isotope sales or shipments for a particular facility, he or she should contact the person listed for that facility.
2. Alphabetical List of Customers, and Isotopes Purchased. Section 2 is an alphabetical list of domestic and foreign customers and their addresses. Each customer has a customer number. This number is used to cross-reference data in the other sections of the report. Isotope purchases are listed after each customer's address, and the laboratory supplying each isotope is indicated by a letter abbreviation set off by parentheses.
3. Alphabetical List of Isotopes Cross-Referenced to Customer Numbers. Section 3 alphabetically lists isotopes and cross-references them to customer numbers. This section provides a quick idea of the number of companies purchasing a particular isotope. If the reader needs more information he or she can refer to the customer list in Section 2 to determine the laboratory supplying the isotope.
4. Geographical Location of Radioisotope Customers. Section 4 is an alphabetical list of states and foreign countries that is cross-referenced to customer numbers and indicates the geographical concentration of isotope users.
5. Radioisotope Sales and Transfers-FY 1979. Section 5 summarizes the FY-1979 radioisotope shipment activities of the DOE laboratory facilities listed in Section 1. A table alphabetically lists the isotopes and their suppliers. Data on shipments, quantities, and dollar values of each isotope are listed under domestic, foreign, and project (DOE facilities) categories.

1. ISOTOPE SUPPLIER(a), FACILITY CONTACT, AND ISOTOPES OR SERVICES SUPPLIED

<u>Facility</u>	<u>Abbreviation</u>	<u>Facility</u>	<u>Abbreviation</u>
Argonne National Laboratory	(A)	Idaho Operations Office	(I)
J. C. Haugen Special Materials Division Argonne National Laboratory 9700 S. Cass Ave Argonne, IL 60439		R. E. Tiller, Director Department of Energy EG&G Idaho, Inc. 550 Second Street Idaho Falls, ID 83401	
FTS 972-6778 Commercial (312)972-6778		FTS 583-1439 Commercial (208)526-1439	
<u>Isotopes or Services:</u>		^{28}Al , ^{139}Ba , ^{80}Br , ^{82}Br , ^{38}Cl , ^{165}Dy , ^{166}Ho , ^{56}Mn , ^{99}Mo , ^{24}Na , ^{147}Nd , ^{186}Re , ^{188}Re , RSI, ^{182}Ta	
CSI, RSI			
Brookhaven National Laboratory	(B)	Los Alamos Scientific Laboratory	(L)
P. Colman Isotopes and Special Materials Group Brookhaven National Laboratory Upton, Long Island, NY 11973		C. Longmire Los Alamos Scientific Laboratory University of California P.O. Box 1663 Los Alamos, NM 87545	
FTS 664-4058 Commercial (516)345-3441 Extension 4058		FTS 843-4948 Commercial (505)667-4948	
<u>Isotopes or Services:</u>		^{77}Br , ^{52}Fe , ^{82}Sr , ^{85}Sr	
^{211}At , ^{77}Br , ^{109}Cd , ^{18}F , ^{52}Fe , ^{123}I , ^{28}Mg , ^{191}Os , ^{81}Rb , RSI, ^{103}Ru , ^{178}W , ^{123}Xe , ^{127}Xe		Mound Facility	(M)
Hanford Engineering Development Laboratory	(H)	L. P. Thomas Sales/Marketing Manager Stable Isotope Sales Monsanto Research Corporation P.O. Box 32 Miamisburg, OH 45342	
D. Engel, Manager Materials Department Richland, WA 99352		FTS 774-3896 Commercial (513)865-3896 Extension 7147	
FTS 444-3548 Commercial (509)942-3548		^{227}Ac , ^{252}Cf , ^3H , ^{231}Pa , ^{210}Po , ^{238}Pu , ^{239}Pu , ^{240}Pu , ^{242}Pu , ^{229}Th , ^{230}Th , ^{234}U , ^{238}U , ^{133}Xe	
^{241}Am , ^{133}Ba , $^{144}\text{CePr}$, ^{252}Cf , ^{57}Co , ^{60}Co , ^{134}Cs , ^{137}Cs , ^3H , ^{203}Hg , ^{192}Ir , ^{54}Mn , ^{92}Nb , ^{239}Np , ^{147}Pm , ^{210}Po , ^{238}Pu , ^{239}Pu , ^{240}Pu , ^{8a}OEF , ^{106}Ru , ^{90}Sr , ^{90}SrY , ^{182}Ta , ^{232}Th , U(N) , ^{238}U , ^{95}Zr			

(a) All entries for Argonne, UNC, 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.

241Am, 243Am, 243Ar, 249Bk, 47Ca, Cap,
249Cf, 250Cf, 252Cf, 144Ce, 60Co,
137Cs, CSI, 243Cu, 244Cu, 245Cu,
248Cu, 253Es, 152Eu, 153Gd, 3H,
181Hf, 129I, 131I, 192Ir, 43K,
85Kr, MCP, 95Nb, 237Np-high purity,
237Np-metal, 237Np-oxide, NU, 33P,
231Pa, 147Pm, 236Pu, 237Pu, 238Pu,
239Pu, 240Pu, 241Pu, 242Pu, 244Pu,
RW, 103Ru, 106Ru, 151Sm, SS, 89Sr,
90Sr, Tgs, 99Tc, 229Th, 230Th, 232Th,
232U, 233U, 234U, 235U, 236U, 238U,
133Xe, 91Yb, 95Zr

J. V. Filsinger
Safety and Materials Management
Pacific Northwest Laboratory
PO Box 999
Richland, WA 99352

$$^{241}_{94}\text{Am}, ^{241}_{95}\text{Cm}, ^{242}_{96}\text{Cm}, ^{242}_{97}\text{Bk}, ^{243}_{98}\text{Cf}, ^{244}_{99}\text{Es}, ^{244}_{100}\text{Fm}, ^{245}_{101}\text{Md}, ^{246}_{102}\text{No}, ^{247}_{103}\text{Lr}, ^{248}_{104}\text{Rf}, ^{249}_{105}\text{Db}, ^{250}_{106}\text{Sg}, ^{251}_{107}\text{Bh}, ^{252}_{108}\text{Hs}, ^{253}_{109}\text{Mt}, ^{254}_{110}\text{Ds}, ^{255}_{111}\text{Rg}, ^{256}_{112}\text{Uub}, ^{257}_{113}\text{Uut}, ^{258}_{114}\text{Uuq}, ^{259}_{115}\text{Uubh}, ^{260}_{116}\text{Uuq}, ^{261}_{117}\text{Uuh}, ^{262}_{118}\text{Uuq}, ^{263}_{119}\text{Uuh}, ^{264}_{120}\text{Uuq}, ^{265}_{121}\text{Uuh}, ^{266}_{122}\text{Uuq}, ^{267}_{123}\text{Uuh}, ^{268}_{124}\text{Uuq}, ^{269}_{125}\text{Uuh}, ^{270}_{126}\text{Uuq}, ^{271}_{127}\text{Uuh}, ^{272}_{128}\text{Uuq}, ^{273}_{129}\text{Uuh}, ^{274}_{130}\text{Uuq}, ^{275}_{131}\text{Uuh}, ^{276}_{132}\text{Uuq}, ^{277}_{133}\text{Uuh}, ^{278}_{134}\text{Uuq}, ^{279}_{135}\text{Uuh}, ^{280}_{136}\text{Uuq}, ^{281}_{137}\text{Uuh}, ^{282}_{138}\text{Uuq}, ^{283}_{139}\text{Uuh}, ^{284}_{140}\text{Uuq}, ^{285}_{141}\text{Uuh}, ^{286}_{142}\text{Uuq}, ^{287}_{143}\text{Uuh}, ^{288}_{144}\text{Uuq}, ^{289}_{145}\text{Uuh}, ^{290}_{146}\text{Uuq}, ^{291}_{147}\text{Uuh}, ^{292}_{148}\text{Uuq}, ^{293}_{149}\text{Uuh}, ^{294}_{150}\text{Uuq}, ^{295}_{151}\text{Uuh}, ^{296}_{152}\text{Uuq}, ^{297}_{153}\text{Uuh}, ^{298}_{154}\text{Uuq}, ^{299}_{155}\text{Uuh}, ^{300}_{156}\text{Uuq}, ^{301}_{157}\text{Uuh}, ^{302}_{158}\text{Uuq}, ^{303}_{159}\text{Uuh}, ^{304}_{160}\text{Uuq}, ^{305}_{161}\text{Uuh}, ^{306}_{162}\text{Uuq}, ^{307}_{163}\text{Uuh}, ^{308}_{164}\text{Uuq}, ^{309}_{165}\text{Uuh}, ^{310}_{166}\text{Uuq}, ^{311}_{167}\text{Uuh}, ^{312}_{168}\text{Uuq}, ^{313}_{169}\text{Uuh}, ^{314}_{170}\text{Uuq}, ^{315}_{171}\text{Uuh}, ^{316}_{172}\text{Uuq}, ^{317}_{173}\text{Uuh}, ^{318}_{174}\text{Uuq}, ^{319}_{175}\text{Uuh}, ^{320}_{176}\text{Uuq}, ^{321}_{177}\text{Uuh}, ^{322}_{178}\text{Uuq}, ^{323}_{179}\text{Uuh}, ^{324}_{180}\text{Uuq}, ^{325}_{181}\text{Uuh}, ^{326}_{182}\text{Uuq}, ^{327}_{183}\text{Uuh}, ^{328}_{184}\text{Uuq}, ^{329}_{185}\text{Uuh}, ^{330}_{186}\text{Uuq}, ^{331}_{187}\text{Uuh}, ^{332}_{188}\text{Uuq}, ^{333}_{189}\text{Uuh}, ^{334}_{190}\text{Uuq}, ^{335}_{191}\text{Uuh}, ^{336}_{192}\text{Uuq}, ^{337}_{193}\text{Uuh}, ^{338}_{194}\text{Uuq}, ^{339}_{195}\text{Uuh}, ^{340}_{196}\text{Uuq}, ^{341}_{197}\text{Uuh}, ^{342}_{198}\text{Uuq}, ^{343}_{199}\text{Uuh}, ^{344}_{200}\text{Uuq}, ^{345}_{201}\text{Uuh}, ^{346}_{202}\text{Uuq}, ^{347}_{203}\text{Uuh}, ^{348}_{204}\text{Uuq}, ^{349}_{205}\text{Uuh}, ^{350}_{206}\text{Uuq}, ^{351}_{207}\text{Uuh}, ^{352}_{208}\text{Uuq}, ^{353}_{209}\text{Uuh}, ^{354}_{210}\text{Uuq}, ^{355}_{211}\text{Uuh}, ^{356}_{212}\text{Uuq}, ^{357}_{213}\text{Uuh}, ^{358}_{214}\text{Uuq}, ^{359}_{215}\text{Uuh}, ^{360}_{216}\text{Uuq}, ^{361}_{217}\text{Uuh}, ^{362}_{218}\text{Uuq}, ^{363}_{219}\text{Uuh}, ^{364}_{220}\text{Uuq}, ^{365}_{221}\text{Uuh}, ^{366}_{222}\text{Uuq}, ^{367}_{223}\text{Uuh}, ^{368}_{224}\text{Uuq}, ^{369}_{225}\text{Uuh}, ^{370}_{226}\text{Uuq}, ^{371}_{227}\text{Uuh}, ^{372}_{228}\text{Uuq}, ^{373}_{229}\text{Uuh}, ^{374}_{230}\text{Uuq}, ^{375}_{231}\text{Uuh}, ^{376}_{232}\text{Uuq}, ^{377}_{233}\text{Uuh}, ^{378}_{234}\text{Uuq}, ^{379}_{235}\text{Uuh}, ^{380}_{236}\text{Uuq}, ^{381}_{237}\text{Uuh}, ^{382}_{238}\text{Uuq}, ^{383}_{239}\text{Uuh}, ^{384}_{240}\text{Uuq}, ^{385}_{241}\text{Uuh}, ^{386}_{242}\text{Uuq}, ^{387}_{243}\text{Uuh}, ^{388}_{244}\text{Uuq}, ^{389}_{245}\text{Uuh}, ^{390}_{246}\text{Uuq}, ^{391}_{247}\text{Uuh}, ^{392}_{248}\text{Uuq}, ^{393}_{249}\text{Uuh}, ^{394}_{250}\text{Uuq}, ^{395}_{251}\text{Uuh}, ^{396}_{252}\text{Uuq}, ^{397}_{253}\text{Uuh}, ^{398}_{254}\text{Uuq}, ^{399}_{255}\text{Uuh}, ^{400}_{256}\text{Uuq}, ^{401}_{257}\text{Uuh}, ^{402}_{258}\text{Uuq}, ^{403}_{259}\text{Uuh}, ^{404}_{260}\text{Uuq}, ^{405}_{261}\text{Uuh}, ^{406}_{262}\text{Uuq}, ^{407}_{263}\text{Uuh}, ^{408}_{264}\text{Uuq}, ^{409}_{265}\text{Uuh}, ^{410}_{266}\text{Uuq}, ^{411}_{267}\text{Uuh}, ^{412}_{268}\text{Uuq}, ^{413}_{269}\text{Uuh}, ^{414}_{270}\text{Uuq}, ^{415}_{271}\text{Uuh}, ^{416}_{272}\text{Uuq}, ^{417}_{273}\text{Uuh}, ^{418}_{274}\text{Uuq}, ^{419}_{275}\text{Uuh}, ^{420}_{276}\text{Uuq}, ^{421}_{277}\text{Uuh}, ^{422}_{278}\text{Uuq}, ^{423}_{279}\text{Uuh}, ^{424}_{280}\text{Uuq}, ^{425}_{281}\text{Uuh}, ^{426}_{282}\text{Uuq}, ^{427}_{283}\text{Uuh}, ^{428}_{284}\text{Uuq}, ^{429}_{285}\text{Uuh}, ^{430}_{286}\text{Uuq}, ^{431}_{287}\text{Uuh}, ^{432}_{288}\text{Uuq}, ^{433}_{289}\text{Uuh}, ^{434}_{290}\text{Uuq}, ^{435}_{291}\text{Uuh}, ^{436}_{292}\text{Uuq}, ^{437}_{293}\text{Uuh}, ^{438}_{294}\text{Uuq}, ^{439}_{295}\text{Uuh}, ^{440}_{296}\text{Uuq}, ^{441}_{297}\text{Uuh}, ^{442}_{298}\text{Uuq}, ^{443}_{299}\text{Uuh}, ^{444}_{300}\text{Uuq}, ^{445}_{301}\text{Uuh}, ^{446}_{302}\text{Uuq}, ^{447}_{303}\text{Uuh}, ^{448}_{304}\text{Uuq}, ^{449}_{305}\text{Uuh}, ^{450}_{306}\text{Uuq}, ^{451}_{307}\text{Uuh}, ^{452}_{308}\text{Uuq}, ^{453}_{309}\text{Uuh}, ^{454}_{310}\text{Uuq}, ^{455}_{311}\text{Uuh}, ^{456}_{312}\text{Uuq}, ^{457}_{313}\text{Uuh}, ^{458}_{314}\text{Uuq}, ^{459}_{315}\text{Uuh}, ^{460}_{316}\text{Uuq}, ^{461}_{317}\text{Uuh}, ^{462}_{318}\text{Uuq}, ^{463}_{319}\text{Uuh}, ^{464}_{320}\text{Uuq}, ^{465}_{321}\text{Uuh}, ^{466}_{322}\text{Uuq}, ^{467}_{323}\text{Uuh}, ^{468}_{324}\text{Uuq}, ^{469}_{325}\text{Uuh}, ^{470}_{326}\text{Uuq}, ^{471}_{327}\text{Uuh}, ^{472}_{328}\text{Uuq}, ^{473}_{329}\text{Uuh}, ^{474}_{330}\text{Uuq}, ^{475}_{331}\text{Uuh}, ^{476}_{332}\text{Uuq}, ^{477}_{333}\text{Uuh}, ^{478}_{334}\text{Uuq}, ^{479}_{335}\text{Uuh}, ^{480}_{336}\text{Uuq}, ^{481}_{337}\text{Uuh}, ^{482}_{338}\text{Uuq}, ^{483}_{339}\text{Uuh}, ^{484}_{340}\text{Uuq}, ^{485}_{341}\text{Uuh}, ^{486}_{342}\text{Uuq}, ^{487}_{343}\text{Uuh}, ^{488}_{344}\text{Uuq}, ^{489}_{345}\text{Uuh}, ^{490}_{346}\text{Uuq}, ^{491}_{347}\text{Uuh}, ^{492}_{348}\text{Uuq}, ^{493}_{349}\text{Uuh}, ^{494}_{350}\text{Uuq}, ^{495}_{351}\text{Uuh}, ^{496}_{352}\text{Uuq}, ^{497}_{353}\text{Uuh}, ^{498}_{354}\text{Uuq}, ^{499}_{355}\text{Uuh}, ^{500}_{356}\text{Uuq}, ^{501}_{357}\text{Uuh}, ^{502}_{358}\text{Uuq}, ^{503$$

G. T. Echert
Manufacturing Branch
Rocky Flats Area Office
P.O. Box 928
Golden, CO 80401

Am shipped as AmO₂ to the
Oak Ridge Laboratory Isotope
Pool

M. J. Sires, Acting Director
Technical and Production Division
Department of Energy
P.O. Box A
Aiken, SC 29801

 $^{241}\text{Am}, ^{252}\text{Cf}, ^{238}\text{Pu}$

P. A. Carlson, Manager
Reactor Technology
Richland, WA 99352

170Tm, 147Nd, 149Nd, 60Co
All produced from reactor service
irradiations

2. ALPHABETICAL LIST OF CUSTOMERS, SUPPLIERS, AND ISOTOPES PURCHASED

The following abbreviations are used in this customer listing:

Cyclotron Service Irradiations	CSI	Natural Uranium	NU
Depleted Uranium	DU	Reactor Service Irradiations	RSI
Encapsulation	Cap	Withdrawn radioisotopes prepared under special approval	RW
Enriched Uranium	EU	Special Services	SS
Fission Products	FP	Targets	Tgs
Miscellaneous Compound Preparations	MCP		

The letter following each isotope or service entry is the supplier abbreviation listed in Section 1.

DOMESTIC CUSTOMERS

<p>1 AAI Corporation
PO Box 6767
Baltimore, MD 21204

DU(P)</p> <p>2 Airco, Inc.
Central Research Laboratories
Murray Hill, NJ 07974

85Kr(O)</p> <p>3 Albert Einstein Hospital
Newport and Morris Avenue
Bronx, NY 10461

81Rb(B)</p> <p>4 America Atomics Corporation
425 South Plumer
Tucson, AZ 85719

3H(O), 85Kr(O), SS(O)</p> <p>5 Amersham Corporation
2636 S. Clearbrook Drive
Arlington Heights, IL 60005

241Am(O), 109Cd(B*), CSI(O), 153Gd(O),
129I(O), 106Ru(O), RW(O)</p> <p>6 Amoco Oil Co.
Naperville, IL 60540

RSI(A)</p> | <p>7 ARCO Nuclear Company
PO Box 546
Leechburg, PA 15656

238Pu(O)</p> <p>8 Argonne National Laboratory
9700 South Cass Avenue
Argonne, IL 60439

241Am(O), 241Am(P), 249Bk(O), Cap(O),
249Cf(O), 252Cf(S), 243Cm(O), 60Co(O),
137Cs(O), DU(P), 253Es(O), 95Nb(O),
Np(P), 237Np(O), Pu(P), 241Pu(O),
242Pu(O), RSI(B), 103Ru(O), 90Sr(O),
99Tc(O), Tgs(O), 230Th(O)</p> <p>9 Automation Industries, Inc.
Instruments Division
Route 1113, Kimberton Road
Phoenixville, PA 19460

192Ir(H), 192Ir(O)</p> <p>10 Babcock and Wilcox Company
20 South Van Buren Avenue
Barberton, OH 44203

SS(O)</p> <p>11 Babcock Electronics Corporation
PO Box 1499
Costa Mesa, CA 92626

85Kr(O)</p> |
|--|---|

* Oak Ridge billed.

- 12 Battelle Memorial Institute
Columbus Laboratory
505 King Ave.
Columbus, OH 43201

DU(P)

Battelle, Pacific Northwest Laboratories
see Pacific Northwest Laboratory
- 13 Bell Telephone Laboratories
Murray Hill, NJ 07971

CSI(0), MCP(0), SS(0)
- 14 Bendix Corporation
2000 East Bannister Road
Kansas City, MO 64131

147Pm(0), SS(0)
- 15 Best Industries, Inc.
PO Box 681.
Washington, DC 20044

137Cs(0), MCP(0)
- 16 Boston University
100 Cunningham Street
Boston, MA 02215

89Sr(0)
- 17 Bowman Gray School of Medicine
Winston-Salem, NC 27103

133Xe(0)
- 18 Brookhaven National Laboratory
Upton, NY 11973

77Br(0), 252Cf(S), 3H(0), 103Ru(0),
99Tc(0)
- 19 Brooklyn College
Chemistry Department
Brooklyn, NY 11210

RSI(B)
- 20 Burroughs Corporation
PO Box 203
Paoli, PA 19301

85Kr(0)
- 21 Campbell Pacific Nuclear Corporation
130 Buchanan
Pareco, CA 94553

241Am(P)
- 22 Carnegie-Mellon University
5000 Forbes
Pittsburgh, PA 15213

181Hf(0)
- 23 Case-Western Reserve University
2220 Circle Drive
Cleveland, OH 44106

CSI(0), 28Mg(B*)
- 24 Centronic
1101 Bristol Road
Mountainside, NJ 07092

238U(H)
- 25 Chamberlain Manufacturing Corporation
East 4th and Esther St.
Waterloo, IA 50705

DU(P)
- 26 Chevron Research Company
555 Market Street
San Francisco, CA 94120

3H(0), 106Ru(0), 133Xe(0)
- 27 Children's Hospital
Howard Medical School
300 Longwood Ave.
Boston, MA 02115

43K(0), 191Os(B), 81Rb(B), 178W(B)
- 28 Colorado School of Mines
PO Box 112
Golden, CO 80402

230Th(0)
- 29 Colorado State Department of
Occupational Health
4210 East 11th Avenue
Denver, CO 80220

236Pu(0), SS(0), 229Th(0)

- 30 Columbia Presbyterian Hospital
622 W 168th Street
New York, NY 10032
 $^{81}\text{Rb}(\text{B})$
- 31 Columbia University
630 West 168th Street
New York, NY 10032
 $^{28}\text{Mg}(\text{B}^*)$
- 32 Continental Oil Company
PO Box 1267
Ponca City, OK 74601
 $^{89}\text{Sr}(\text{O})$
- 33 Cook Electric Company
6201 Oakton Street
Morton Grove, IL 60053
 $^{85}\text{Kr}(\text{O})$
- 34 Cooper Medical Center
6th and Stevens Street
Camden, NJ 08103
 $^{127}\text{Xe}(\text{B}^*)$
- 35 Cornell University
Division of Nutritional Sciences
Ithaca, NY 14853
 $^{47}\text{Ca}(\text{O})$, $^{28}\text{Mg}(\text{B}^*)$
- 36 Creighton University
2410 California
Omaha, NE 68131
 $^{47}\text{Ca}(\text{O})$
- 37 Cryogenic Rare Gas Laboratories, Inc.
730 S. 13th Street
Newark, NJ 07103
 $^{85}\text{Kr}(\text{O})$
- 38 DCA Reliability Laboratory
975 Bernicia Avenue
Sunnyvale, CA 94086
 $^{85}\text{Kr}(\text{O})$
- 39 Delco Electronics
General Motors Corporation
Kokomo, IN 46901
 $^{85}\text{Kr}(\text{O})$
- 40 Department of Energy-ID
Health Services Laboratory
550 2nd Street
Idaho Falls, ID 83401
 $^{147}\text{Nd}(\text{I})$, $^{186}\text{Re}(\text{I})$, $^{188}\text{Re}(\text{I})$
- 41 Department of Law Enforcement
Bureau of Scientific Studies
515 E. Woodruff Road
Joliet, IL 60432
 $\text{RSI}(\text{A})$
- 42 Diagnostic Isotopes
225 Belleville Avenue
Bloomfield, NJ 07003
 $^{127}\text{Xe}(\text{E}^*)$
- 43 Diagnostic Radiopharmacy
6980 Aragon Circle
Suite 5
Buena Park, CA 90620
 $^{133}\text{Xe}(\text{O})$
- 44 Downstate Medical Center
450 Clarkson Avenue
Brooklyn, NY 11203
 $^{28}\text{Mg}(\text{B}^*)$
- 45 Dresser Atlas
Division of Dresser Industries, Inc.
PO Box 1407
Houston, TX 77001
 $^3\text{H}(\text{O})$, $\text{Tgs}(\text{O})$
- 46 Duke University
Durham, NC 27706
 $\text{Tgs}(\text{O})$, $^{238}\text{U}(\text{O})$, $^{133}\text{Xe}(\text{O})$
- duPont
see, E.I. duPont de Nemours Co., Inc.
- 47 EAD Metallurgical, Inc.
71 Pearce Avenue
Tonawanda, NY 14150
 $^{241}\text{Am}(\text{O})$, $\text{Cap}(\text{O})$

- 48 East Carolina University
Purchasing Department
Greenville, NC 27834
 $^{89}\text{Sr}(0)$
- 49 Eberline Instrument Corporation
PO Box 279
Santa Fe, NM 87501
 $\text{Tgs}(0)$, $^{230}\text{Th}(0)$
- 50 Edinboro State College
Edinboro, PA 16444
 $^{252}\text{Cf}(S)$
- 51 Edsel B. Ford Institute for
Medical Research
Department of Physics and Biophysics
Henry Ford Hospital
2799 West Grand Boulevard
Detroit, MI 48202
 $^{252}\text{Cf}(S)$
- 52 EG&G Idaho, Inc.
550 Second Street
PO Box 1845
Idaho Falls, ID 83401
 $^{243}\text{Am}(0)$, $\text{Cap}(0)$, $^{249}\text{Cf}(0)$, $^{252}\text{Cf}(0)$,
 $^{244}\text{Cm}(0)$, $^{95}\text{Nb}(0)$, $^{236}\text{Pu}(0)$, $^{239}\text{Pu}(0)$,
 $^{241}\text{Pu}(0)$, $\text{SS}(0)$, $^{229}\text{Th}(0)$, $^{233}\text{U}(0)$,
 $^{235}\text{U}(0)$, $^{236}\text{U}(0)$, $^{133}\text{Xe}(0)$, $^{95}\text{Zr}(0)$
- 53 EG&G Idaho, Inc.
TRA/PO Bo: 1625
Idaho Falls, ID 83401
 $^{28}\text{Al}(I)$, $^{139}\text{Ba}(I)$, $^{80}\text{Br}(I)$, $^{82}\text{Br}(I)$,
 $^{38}\text{Cl}(I)$, $^{165}\text{Dy}(I)$, $\text{EU}(P)$, $^{166}\text{Ho}(I)$,
 $^{56}\text{Mn}(I)$, $^{99}\text{Mo}(I)$, $^{24}\text{Na}(I)$, $^{147}\text{Nd}(I)$,
 $^{231}\text{Pa}(M)$, $^{109}\text{Pd}(I)$, $\text{RSI}(I)$, $^{182}\text{Ta}(I)$
- 54 E. I. du Pont de Nemours Co., Inc.
Savannah River Plant
Aiken, SC 29801
 $^{243}\text{Am}(0)$, $\text{Cap}(0)$, $^{252}\text{Cf}(0)$, $^{244}\text{Cm}(0)$,
 $\text{D}_2\text{O}(P)$, $\text{DU}(P)$, $^3\text{H}(M)$, $^{238}\text{Pu}(M)$, $^{238}\text{Pu}(0)$,
 $^{242}\text{Pu}(0)$, $^{106}\text{Ru}(0)$, $\text{SS}(0)$, $\text{Th}(P)$, $^{233}\text{U}(0)$,
 $^{95}\text{Zr}(0)$
- 55 EMR Photo Electric
Division of Weston Instruments
PO Box 44
Princeton, NJ 08540
 $^3\text{H}(0)$
- 56 Environmental Protection Agency
Division of Financial Management
Accounting Operations Office
Washington, DC 20460
 $^{99}\text{Tc}(0)$
- 57 Esso Research and Engineering Company
PO Box 642
Linden, NJ 07036
 $^{99}\text{Tc}(0)$
- 58 Exxon Nuclear Co., Inc.
2101 Horn Rapids Road
Richland, WA 99352
 $\text{EU}(P)$
- 59 Exxon Nuclear Idaho Company, Inc.
Idaho Chemical Processing Plant
550 Second St.
Idaho Falls, ID 83401
 $\text{EU}(P)$
- 60 Exxon Nuclear Idaho Company, Inc.
1955 Fremont Avenue
Idaho Falls, ID 83401
 $\text{RSI}(I)$
- 61 Fairchild Semiconductor
PO Box 790
Mountain View, CA 94040
 $^{85}\text{Kr}(0)$
- 62 Flinchbaugh Products, Inc.
315 Richard Mine Road
Wharton, NJ 07885
 $\text{DU}(P)$
- 63 Florida State University
Tallahassee, FL 32306
 ^{230}Th

- 64 Gamma Industries
9320 Travenor
PO Box 34526
Houston, TX 77034
 $^{241}\text{Am}(0)$, $\text{Cap}(0)$
- 65 Gamma Industries, Inc.
PO Box 2543
Baton Rouge, LA 70821
 $^{192}\text{Ir}(0)$
- 66 Gammie Nuclear Company, Inc.
11941 Waveland Avenue
Franklin Park, IL 60131
RSI(A)
- 67 General Electric Company
Lynchburg, VA 24502
 $^{85}\text{Kr}(0)$
- 68 General Electric Company
PO Box 254
San Jose, CA 95103
 $^{239}\text{Pu}(0)$, $^{240}\text{Pu}(0)$, $^{241}\text{Pu}(0)$, $\text{RW}(0)$, $\text{SS}(0)$,
 $\text{Tgs}(0)$, $^{234}\text{U}(0)$, $^{238}\text{U}(0)$
- 69 General Electric Company
General Electric Drive
Waynesboro, VA 22980
 $^{85}\text{Kr}(0)$
- 70 General Electric Company
Neutron Services Department
Pinellas Peninsula Plant
St. Petersburg, FL 33733
 $^{238}\text{Pu}(M)$, $^{239}\text{Pu}(M)$
- 71 General Electric Research and
Development
PO Box 8
Schenectady, NY 12301
 $^{239}\text{Pu}(0)$, RSI(B), $\text{Tgs}(0)$
- 72 General Nucleonics Division
Tyco Laboratories
2811 Metropolitan Place
Pomona, CA 91767
 $^{85}\text{Kr}(0)$
- 73 George Washington University
23rd and Eye St. N.W.
Washington, DC 20037
 $^{77}\text{Br}(L)$
- 74 George Washington University
25th and H Streets N.W.
Washington, DC 20037
 $^{77}\text{Br}(B)$
- 75 Georgia Institute of Technology
225 North Avenue, N.W.
Atlanta, GA 30332
 $^{85}\text{Kr}(0)$, $\text{MCP}(0)$, $^{90}\text{Sr}(0)$
- 76 Gollob Analytical Service Corporation
47 Industrial Road
Berkeley Heights, NY 07922
 $^3\text{H}(0)$
- 77 Goodyear Atomic Corp.
PO Box 628
Piketon, OH 45661
 $\text{EU}(P)$, $^{99}\text{Tc}(0)$
- 78 Grumman Aerospace Corporation
PO Box 177
Bethpage, NY 11714
RSI(B)
- 79 Gulf Energy and Environmental Systems
PO Box 608
San Diego, CA 92112
 $^{103}\text{Ru}(0)$, $^{95}\text{Zr}(0)$
- 80 Gulf Nuclear, Inc.
202 Medical Center
Webster, TX 77598
 $^{241}\text{Am}(0)$, $\text{Cap}(0)$, $^{137}\text{Cs}(0)$, $^{153}\text{Gd}(0)$,
 $^3\text{H}(0)$, $^{192}\text{Ir}(0)$, $\text{MCP}(0)$, $\text{Tgs}(0)$

Hanford Development Engineering
Laboratory
See
Westinghouse Hanford Company

- 81 Harvard Medical School
50 Binney Street
Boston, MA 02115
 $^{211}\text{At}(\text{E})$
- 82 Hazen Research, Inc.
4601 Indiana Street
Golden, CO 80401
 $\text{SS}(\text{O})$, $^{229}\text{Th}(\text{O})$
- 83 Henry Ford Hospital
2799 West Grand Boulevard
Detroit, MI 48202
 $^{47}\text{Ca}(\text{O})$
- 84 Holy Family Hospital
N 5633 Lidgerwood Street
Spokane, WA 99207
 $^{133}\text{Xe}(\text{O})$
- 85 Hughes Aircraft Company
PO Box 11337
Tucson, AZ 85706
 $^{85}\text{Kr}(\text{O})$
- 86 Hughes Aircraft Company
PO Box 92907
Los Angeles, CA 90009
 $^{85}\text{Kr}(\text{O})$
- 87 ICI America, Inc.
Atlas Aerospace Division
Valley Forge Industrial Park
Valley Forge, PA 19481
 $^{85}\text{Kr}(\text{O})$
- 88 ICI-NBCo.
26201 Miles Road
Cleveland, OH 44128
 $^{137}\text{Cs}(\text{O})$, $\text{CSI}(\text{O})$, $^3\text{H}(\text{O})$, $^{33}\text{P}(\text{O})$,
 $^{106}\text{Ru}(\text{O})$, $^{90}\text{Sr}(\text{O})$, $^{99}\text{Tc}(\text{O})$
- 89 Industrial Nuclear Company
1124 Chess Drive
Foster City, CA 94404
 $^{192}\text{Ir}(\text{O})$
- 90 INTEL Corporation
3065 Bowers Avenue
Santa Clara, CA 95051
 $^{85}\text{Kr}(\text{O})$
- 91 Intelcom Rad Tech
PO Box 80817
San Diego, CA 92138
 $^{237}\text{Np}(\text{O})$, $\text{Tgs}(\text{O})$, $^{235}\text{U}(\text{O})$, $^{238}\text{U}(\text{O})$
- 92 International Nutronics, Incorporated
1237 N. San Antonia Road
Palo Alto, CA 94303
 $^{252}\text{Cf}(\text{S})$
- 93 Iowa State University
Ames, IA 50010
 $^{238}\text{U}(\text{O})$
- 94 Isomedix, Inc.
PO Box 177
25 Eastmans Road
Parsippany, NJ 09054
 $^{137}\text{Cs}(\text{O})$
- 95 Isotope Products Laboratories
404 S Luke Street
Burbank, CA 91502
 $^{241}\text{Am}(\text{O})$, $^{109}\text{Cd}(\text{B}^*)$, $^{252}\text{Cf}(\text{O})$, $^{137}\text{Cs}(\text{O})$,
 $\text{CSI}(\text{O})$, $^{129}\text{I}(\text{O})$, $^{236}\text{Pu}(\text{O})$, $^{106}\text{Ru}(\text{O})$,
 $^{90}\text{Sr}(\text{O})$, $\text{SS}(\text{O})$, $^{230}\text{Th}(\text{O})$, $^{95}\text{Zr}(\text{O})$
- 96 Isovac Engineering Company
6220 San Fernando Road
Glendale, CA 91204
 $^{85}\text{Kr}(\text{O})$
- 97 Jewish Hospital of St. Louis
216 S. Kingshighway Blvd.
St. Louis, MO 63110
 $^{133}\text{Xe}(\text{O})$
- 98 John Hopkins Hospital
650 North Wolfe Street
Baltimore, MD 21205
 $^{127}\text{Xe}(\text{B}^*)$, $^{47}\text{Ca}(\text{O})$

<p>99 K & K Laboratories
121 Express Street
Plainview, NY 11803

238U(M)</p> | <p>Los Alamos Scientific Laboratory
See
University of California
Los Alamos Scientific Laboratory</p> |
| <p>100 Kaman Nuclear
1700 Garden of the Gods Road
Colorado Springs, CO 80907

3H(0), Tgs(0)</p> | <p>108 Los Angeles County USC Medical Center
1200 N. State Street, Box 112 GH
Los Angeles, CA 90033

47Ca(0)</p> |
| <p>101 Kaman Scientists Corp.
195 W 2950 South
Salt Lake City, UT 84115

90Sr(H)</p> | <p>109 Lovelace Clinic
4800 Gibson Boulevard S.E.
Albuquerque, NM 87108

243Cm(0), SS(0)</p> |
| <p>102 KMS Fusion, Inc.
3941 S. Research Park Drive
PO Box 1567
Ann Arbor, MI 48106

3H(0)</p> | <p>110 Loyola University
Medical Center
2106 S. First Avenue
Maywood, IL 60153

CSI(A)</p> |
| <p>103 Knolls Atomic Power Laboratory
PO Box 1072
Schenectady, NY 12301

Tgs(0), 235U(0)</p> | <p>111 Mallinckrodt Chemical Works
3600 N. Second St
St. Louis, MO 63160

CSI(0), RW(0), SS(0), 127Xe(B*)</p> |
| <p>104 KOR Isotopes
56 Rogers Street
Cambridge, MA 02141

3H(0)</p> | <p>112 Marquette University
1120 W. Michigan St.
Milwaukee, WI 53233

43K(0)</p> |
| <p>105 Lakeshore, Inc.
PO Box 809
Iron Mountain, MI 49801

85Kr(0)</p> | <p>113 Massachusetts General Hospital
Boston, MA 02114

47Ca(0), 18F(B), MCP(0), 82Sr(L), 85Sr(L)</p> |
| <p>106 Lehigh University
Department of Chemistry
Bethlehem, PA 18015

252Cf(S)</p> | <p>114 Massachusetts Institute of Technology
Box 69
Cambridge, MA 02114

47Ca(0)</p> |
| <p>107 Lenoir-Rhyne College
Hickory, NC 38601

252Cf(S)</p> | <p>115 Mayo Clinic
Medical Science Building
Rochester, MN 55901

47Ca(0), 153Gd(0), SS(0), 127Xe(B*)</p> |

- 116 Measurex Corporation
10475 Imperial Avenue
Cupertino, CA 95014
 $^{85}\text{Kr}(0)$
- 117 Medical College of Wisconsin
8700 W. Wisconsin Avenue
Milwaukee, WI 53226
 $^{43}\text{K}(0)$
- 118 Medi-Physics, Inc.
5855 Christie Avenue
Emeryville, CA 94608
 $^{99}\text{Tc}(0)$
- 119 Memorial Hospital
Department of Nuclear Medicine
1400 E. Boulder
Colorado Springs, CO 80909
 $^{133}\text{Xe}(0)$
- 120 Methodist Hospital
1604 N. Capitol
Indianapolis, IN 46202
 $^{127}\text{Xe}(B^*)$
- 121 Michael-Reese Hospital
29th St. and Ellis Ave.
Chicago, IL 60616
 $^{133}\text{Xe}(0)$
- 122 Micro-Re1, Inc.
2340 W 10 Place
Tempe, AZ 85281
 $^{85}\text{Kr}(0)$
- 123 Microtest Systems, Inc.
1188 Bordeaux Drive
Sunnyvale, CA 94086
 $^{85}\text{Kr}(0)$
- 124 Mine Safety Appliance Company
201 N. Braddock Ave.
Pittsburgh, PA 15208
 $^{131}\text{I}(0)$
- 125 Mine Safety Appliances Company
RD 2
Evans City, PA 16033
 $^{131}\text{I}(0)$
- 126 Minnesota Mining and Manufacturing Company
Bldg 590
Twin Cities Army Ammunition Plant
New Brighton, MN 55112
 $^{210}\text{Po}(H)$, $^{210}\text{Po}(M)$
- 127 Minnesota Mining and Manufacturing Company
PO Box 3121
St. Paul, MN 55101
 $^{137}\text{Cs}(0)$, $\text{MCP}(0)$, $^{95}\text{Nb}(0)$, $^{147}\text{Pm}(0)$,
 $^{127}\text{Xe}(B^*)$
- 128 Monolithic Memories, Inc.
1165 E. Arques Ave.
Sunnyvale, CA 94086
 $^{85}\text{Kr}(0)$
- 129 Monsanto Company
PO Box 1311
Texas City, TX 77591
 $^{133}\text{Xe}(0)$
- 130 Monsanto Research Corporation
Dayton Laboratory
1515 Nicholas Road
Dayton, OH 45407
 $^{241}\text{Am}(0)$, $\text{Cap}(0)$, $^{252}\text{Cf}(S)$, $^{238}\text{Pu}(0)$
- 131 Moravak Biochemicals
15302 E. Proctor Avenue
City of Industry, CA 91745
 $^3\text{H}(0)$
- 132 Motorola, Inc.
5005 E. McDowell Road
Phoenix, Az 85008
 $^{85}\text{Kr}(0)$

<p>133 Mount Sinai Medical Center
4300 Alton Road
Miami Beach, FL 33139</p> <p>CSI(0)</p>	<p>141 New York Hospital
525 East 68th Street
New York, NY 10021</p> <p>$^{81}\text{Rb}(\text{B})$</p>
<p>134 Nassau County Medical Center
Meadowbrook Hospital
2201 Hempstead Turnpike
East Meadow, NY 11554</p> <p>$^{47}\text{Ca}(\text{O})$</p>	<p>142 New York State Department of Health
Office of Fiscal Management
84 Holland Avenue
Albany, NY 12208</p> <p>$^{244}\text{Cm}(\text{O}), \text{SS}(\text{O}), ^{229}\text{Th}(\text{O})$</p>
<p>135 National Bureau of Standards
Route 270 and Quince Orchard Road
Gaithersburg, MD 20760</p> <p>$^{242}\text{Pu}(\text{M}), ^{127}\text{Xe}(\text{B})$</p>	<p>143 New York University Medical Center
550 First Avenue
New York, NY 10016</p> <p>$^{244}\text{Pu}(\text{O})$</p>
<p>136 National Bureau of Standards
Connecticut Ave. and Van Ness St., N.W.
Washington, DC 20234 $^{252}\text{Cf}(\text{O}), ^{241}\text{Pu}(\text{O}), \text{SS}(\text{O}), \text{Tgs}(\text{O}),$
$^{133}\text{Xe}(\text{O})$</p>	<p>144 North Carolina Baptist Hospital
300 S. Hawthorne
Winston-Salem, NC 27103</p> <p>$^{127}\text{Xe}(\text{B}^*)$</p>
<p>137 National Lead Co of Ohio
PO Box 39158
Cincinnati, OH 45239</p> <p>DU(P)</p>	<p>145 North Carolina Memorial Hospital
Division of Nuclear Medicine
Chapel Hill, NC 27514</p> <p>$^{99}\text{Tc}(\text{O}), ^{127}\text{Xe}(\text{B}^*)$</p>
<p>138 National Semiconductor Corporation
2900 Semiconductor Drive
Santa Clara, CA 95051</p> <p>$^{85}\text{Kr}(\text{O})$</p>	<p>146 Northwestern Memorial Hospital
239 E. Chicago Avenue
Chicago, IL 60611</p> <p>$^{127}\text{Xe}(\text{B}^*)$</p>
<p>139 New Brunswick Laboratory
9800 S. Cass Avenue
Argonne, IL 60439</p> <p>RSI(A)</p>	<p>147 Northwestern University
619 Clark Street
Evanston, IL 60201</p> <p>SS(O)</p>
<p>140 New England Nuclear Corporation
575 Albany St
Boston, MA 02118 $^{241}\text{Am}(\text{O}), \text{Cap}(\text{O}), ^{109}\text{Cd}(\text{B}^*), ^{144}\text{Ce}(\text{O}),$
$^{137}\text{Cs}(\text{O}), \text{CSI}(\text{O}), ^{152+154}\text{Eu}(\text{O}), ^{153}\text{Gd}(\text{O}),$
$^3\text{H}(\text{O}), ^{129}\text{I}(\text{O}), ^{85}\text{Kr}(\text{O}), \text{MCP}(\text{O}), ^{33}\text{P}(\text{O}),$
$^{147}\text{Pm}(\text{O}), ^{103}\text{Ru}(\text{O}), \text{RW}(\text{O}), ^{90}\text{Sr}(\text{O}), \text{SS}(\text{O}),$
$^{99}\text{Tc}(\text{O}), ^{127}\text{Xe}(\text{B}^*), ^{133}\text{Xe}(\text{O}), ^{178}\text{W}(\text{B}^*),$
$^{95}\text{Zr}(\text{O})$</p>	<p>148 Nuclear Metals, Inc.
2229 Main Street
Concord, MA 01742   DU(P)   149 Nuclear Radiation Development, Inc.
2937 Alt Blvd.
Grand Island, NY 14072</p> <p>$^{241}\text{Am}(\text{O}), \text{Cap}(\text{O})$</p>

150 Nuclear Research Corporation
Street Road and Second Street Pike
Southampton, PA 18966

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

151 Nuclear Sources and Services
PO Box 14023
Houston, TX 77021

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

152 Oak Ridge Associated Universities
PO Box 117
Oak Ridge, TN 37830

CSI(O), SS(O), $^{99}\text{Tc}(\text{O})$

Oak Ridge National Laboratory
See
Union Carbide Corporation
Oak Ridge National Laboratory

153 Occidental Oil Shale Company, Inc.
PO Box 2999
Grand Junction, CO 81501

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

154 Ohio State University
190 North Oval Drive
Columbus, OH 43210

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

155 Ohio State University
Research Foundation
1314 Kinnear Road
Columbus, OH 43212

$^{89}\text{Sr}(\text{O})$

156 Ohio University
Athens, OH 45701

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

157 Orlando Laboratories, Inc.
PO Box 8025A
Orlando, FL 32806

$^{243}\text{Am}(\text{O})$

158 Oregon State University
Corvallis, OR 97330

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

159 Pacific Northwest Laboratory
999 Battelle Blvd.
Richland, WA 99352

$^{241}\text{Am}(\text{H})$, $^{241}\text{Am}(\text{O})$, $^{37}\text{Ar}(\text{O})$, $^{252}\text{Cf}(\text{H})$,
 $^{60}\text{Co}(\text{H})$, $^{60}\text{Co}(\text{O})$, $^{134}\text{Cs}(\text{H})$, $^{137}\text{Cs}(\text{H})$,
CSI(O), $^3\text{H}(\text{H})$, $^{85}\text{Kr}(\text{O})$, MCP(O), $^{95}\text{Nb}(\text{O})$,
 $^{147}\text{Nd}(\text{U})$, $^{149}\text{Nd}(\text{U})$, $^{237}\text{Np}(\text{O})$, Nu(H),
 $^{238}\text{Pu}(\text{H})$, $^{239}\text{Pu}(\text{H})$, $^{240}\text{Pu}(\text{H})$, $^{238}\text{Pu}(\text{O})$,
 $^{239}\text{Pu}(\text{O})$, $^{240}\text{Pu}(\text{O})$, $^{241}\text{Pu}(\text{O})$, $^{242}\text{Pu}(\text{O})$,
 $^{244}\text{Pu}(\text{O})$, RaDEF(H), RSI(A), $^{106}\text{Ru}(\text{H})$,
 $^{90}\text{SrY}(\text{H})$, $^{90}\text{Sr}(\text{O})$, SS(O), $^{99}\text{Tc}(\text{O})$, Tgs(O),
 $^{230}\text{Th}(\text{O})$, $^{170}\text{Tm}(\text{U})$, $^{95}\text{Zr}(\text{O})$

160 Pacific Radiopharmacy
347 N. Kuakini St.
Honolulu, HI 96817

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

161 Palmdale General Hospital
Palmdale, CA 93550

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

162 Pennsylvania State University
University Park, PA 16802

$^{99}\text{Tc}(\text{O})$

163 Penrose Hospital
2215 N. Cascade
Colorado Springs, CO 80907

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

164 Pharmatopes
2944 Corvin Drive
Santa Clara, CA 95051

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

165 Pleasant Valley Hospital
2309 Antonio Ave.
Camarillo, CA 93010

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

- 166 Potter and Brumfield
Princeton, IN 47570
 $^{85}\text{Kr}(0)$
- 167 Princeton University
James Forrestal Campus
Princeton, NJ 08540
 $\text{CSI}(0)$, $^{237}\text{Np}(0)$
- 168 Princeton University
Box 451
Princeton, NJ 08544
 $\text{RSI}(\text{B})$
- 169 Proctor and Gamble Company
PO Box 175
Groesbeck Station
Cincinnati, OH 45239
 $^{95}\text{Zr}(0)$
- 170 Radiation Resources, Inc.
24 Kulick Road
Fairfield, NJ 07006
 $^{137}\text{Cs}(0)$, $\text{MCP}(0)$
- 171 Raytheon Company
350 Ellis Street
Mountain View, CA 94042
 $^{133}\text{Xe}(0)$
- 172 Raytheon Company
350 Lowell St.
West Andover, MA 01810
 $^{85}\text{Kr}(0)$
- 173 RCA
Route 12, Fostoria Road
Findlay, OH 45840
 $^{85}\text{Kr}(0)$
- 174 RCA
Raritan, NJ 08869
 $^{85}\text{Kr}(0)$
- 175 Reactor Experiments, Inc.
963 Terminal Way
San Carlos, CA 94070
 $\text{NU}(0)$, $^{239}\text{Pu}(0)$, $\text{Tgs}(0)$, $^{235}\text{U}(0)$, $^{238}\text{U}(0)$
- 176 Reluxtrol
333 Victory Avenue
South San Francisco
CA 94080
 $\text{DU}(\text{P})$
- 177 Rensselaer Polytechnic Institute
Troy, NY 12181
 $^{28}\text{Mg}(\text{B}^*)$, $\text{RSI}(\text{B})$, $^{230}\text{Th}(0)$
- 178 Research Triangle Institute
PO Box 12086
Research Triangle Park, NC 27709
 $^{106}\text{Ru}(0)$, $\text{SS}(0)$
- 179 Reuter-Stokes Electronics Components
18530 South Miles Parkway
Warrensville Heights
Cleveland, OH 44128
 $^{28}\text{Mg}(\text{B}^*)$, $^{234}\text{U}(0)$, $^{238}\text{U}(0)$
- 180 Richland Memorial Hospital
3301 Harden Street
Columbia, SC 29203
 $^{127}\text{Xe}(\text{B}^*)$
- 181 Rockwell Hanford Operations
PO Box 800
Richland, WA 99352
 $\text{DU}(\text{P})$, $^3\text{H}(\text{H})$
- 182 Rockwell International
8900 Desoto Avenue
Canoga Park, CA 91304
 $^{182}\text{Ta}(\text{H})$
- 183 Rockwell International
Rocky Flats Plant
Golden, CO 80401
 $\text{DU}(\text{P})$, $^{238}\text{Pu}(\text{M})$

- 184 Rush Presbyterian-St. Luke's Medical Center 192 Schlumberger Technology Corporation
1753 W Congress Parkway
Chicago, IL 60612
Old Quarry Road
PO Box 307
Ridgefield, CT 06877
 $^{52}\text{Fe}(\text{B})$, $^{89}\text{Sr}(\text{O})$
 $^{252}\text{Cf}(\text{S})$
- 185 Rutgers University
School of Chemistry
Busch Campus
Piscataway, NY 08854
RSI(B)
- 186 Rutgers University
New Brunswick, NY 08903
 $\text{Tgs}(\text{O})$, $^{235}\text{U}(\text{O})$
- 187 Sacred Heart Medical Center
Nuclear Medicine
West 101 8th Avenue
Spokane, WA 99204
 $^{133}\text{Xe}(\text{O})$
- 188 Sandia Corporation
PO Box 5800
Albuquerque, NM 87115
 $^{85}\text{Kr}(\text{O})$, $^{237}\text{Np}(\text{O})$, $\text{Tgs}(\text{O})$, $^{235}\text{U}(\text{O})$,
 $^{238}\text{U}(\text{O})$
- 189 Sandia Laboratories
Kirtland Air Force Base (East)
Receiving Section, Building 894
Albuquerque, NM 87115
 $^{238}\text{Pu}(\text{M})$, $^{239}\text{Pu}(\text{M})$
- 190 Sandia Laboratories
Livermore Laboratory
PO Box 969
Livermore, CA 94550
 $^3\text{H}(\text{P})$
- 191 San Jose State College
Health/Physics Committee
125 South Seventh St.
San Jose, CA 95114
 $\text{DU}(\text{P})$
- 193 Schwarz Bio-Research, Inc.
Mountain View Avenue
Orangeburg, NY 10962
 $^3\text{H}(\text{O})$
- 194 Self-Powered Lighting, Ltd.
8 Westchester Plaza
Elmsford, NY 10523
 $^3\text{H}(\text{O})$
- 195 Shell Development Company
1410 45th Street
Emeryville, CA 94608
 $^{85}\text{Kr}(\text{O})$
- 196 Shepherd and Associates, J.L.
1614 Victory Blvd.
Glendale, CA 91201
 $^{137}\text{Cs}(\text{O})$, $\text{MCP}(\text{O})$
- 197 Signetics, Inc.
811 East Arques Ave.
Sunnyvale, CA 94086
 $^{85}\text{Kr}(\text{O})$
- 198 Silicon General, Inc.
11651 Monarch St.
Garden Grove, CA 92641
 $^{85}\text{Kr}(\text{O})$
- 199 Sloan-Kettering Institute
425 E. 68th St
New York, NY 10021
 $^{133}\text{Xe}(\text{O})$
- 200 Solid State Testing
56 Middlesex Turnpike
Burlington, MA 01803
 $^{133}\text{Xe}(\text{O})$

<p>201 Source Production and
Equipment Co., Inc.
625 Oxley St.
Kenner, LA 70062

192Ir(0)</p> <p>202 Spire Corporation
Patriots Park
Bedford, MA 01730

CSI(0), RW(0), 151Sm(0), SS(0)</p> <p>203 St. John's Hospital
333 N. F St.
Oxnard, CA 93030

133Xe(0)</p> <p>204 St. Patrick Hospital
524 S. Ryan St.
Lake Charles, LA 70601

133Xe(0)</p> <p>205 St. Vincent Medical Center
3rd and Grandview
Los Angeles, CA 90057

133Xe(0)</p> <p>206 State University of New York
Downstate Medical Center
450 Clarkson Ave.
Brooklyn, NY 11203

28Mg(B*), 99Tc(0)</p> <p>207 State University of New York
Department of Earth and Space Sciences
Stony Brook, NY 11790

RSI(B)</p> <p>208 Swedish-American Hospital
1400 Charles St.
Rockford, IL 61101

133Xe(0)</p> <p>209 Statek Corporation
1200 Alvarez Ave.
Orange, CA 92668

85Kr(0)</p> | <p>210 Syntex Corporation
3401 Hillview Ave.
Palo Alto, CA 94304

3H(0)</p> <p>211 Technical Operations
South Avenue
Burlington, MA 01803

192Ir(0)</p> <p>212 Teledyne Isotopes
Nuclear Systems Division
110 W. Timonium Road
Timonium, MD 21093

MCP(0), 90Sr(0)</p> <p>213 Texas Instruments, Inc.
Science Services Division
PO Box 5012, Mail Stop 6
Dallas, TX 75222

85Kr(0)</p> <p>214 Texas Instruments, Inc.
PO Box 66027, Mail Stop 615
Houston, TX 77006

85Kr(0)</p> <p>215 TII Corporation
100 N. Strong Ave.
Lindenhurst, NY 11757

3H(0)</p> <p>216 TII Industries, Inc.
PO Box 433
Toa Alta, P4 00758

3H(0)</p> <p>217 Touro Infirmary Research Department
1401 Foucher St.
New Orleans, LA 70115

28Mg(B*)</p> <p>218 Trio-Tech, Inc.
2435 N. Naomi
Burbank, CA 91504

85Kr(0)</p> |
|---|--|

- 219 TRW System Group
One Space Park
Redondo Beach, CA 90277
 $^{85}\text{Kr}(\text{O})$
- 220 UNC Nuclear Industries
PO Box 490
Richland, WA 99352
 $^{60}\text{Co}(\text{U})$, $\text{DU}(\text{P})$, $\text{EU}(\text{P})$
- 221 Union Carbide Corporation
Nuclear Division
Oak Ridge Gaseous Diffusion Plant
PO Box P
Oak Ridge, TN 37830
 $^{85}\text{Kr}(\text{O})$, $^{238}\text{U}(\text{M})$
- 222 Union Carbide Corporation
Oak Ridge National Laboratory
Isotope Pool
Oak Ridge National Laboratory
Box X
Oak Ridge, TN 37830
 $\text{Am}(\text{R})$
- 223 Union Carbide Corporation
Oak Ridge National Laboratory
PO Box X
Oak Ridge, TN 37830
 $^{227}\text{Ac}(\text{M})$, $^{241}\text{Am}(\text{O})$, $^{243}\text{Am}(\text{O})$, $^{47}\text{Ca}(\text{O})$,
 $\text{Cap}(\text{O})$, $^{252}\text{Cf}(\text{M})$, $^{252}\text{Cf}(\text{O})$, $\text{Cm}(\text{P})$,
 $^{137}\text{Cs}(\text{O})$, $\text{CSI}(\text{O})$, $^3\text{H}(\text{O})$, $^{131}\text{I}(\text{O})$,
 $^{192}\text{Ir}(\text{O})$, $^{85}\text{Kr}(\text{O})$, $\text{MCP}(\text{O})$, $^{95}\text{Nb}(\text{O})$,
 $^{237}\text{Np}(\text{O})$, $^{231}\text{Pa}(\text{M})$, $^{231}\text{Pa}(\text{O})$, $\text{Pu}(\text{P})$,
 $^{239}\text{Pu}(\text{O})$, $^{242}\text{Pu}(\text{P})$, $\text{RW}(\text{O})$, $\text{SS}(\text{O})$,
 $^{99}\text{Tc}(\text{O})$, $\text{Tgs}(\text{O})$, $^{229}\text{Th}(\text{M})$, $^{230}\text{Th}(\text{M})$,
 $^{232}\text{U}(\text{O})$, $^{233}\text{U}(\text{O})$, $^{234}\text{U}(\text{M})$, $^{235}\text{U}(\text{O})$,
 $^{236}\text{U}(\text{O})$, $^{238}\text{U}(\text{O})$, $^{133}\text{Xe}(\text{O})$, $^{95}\text{Zr}(\text{O})$
- 224 Union Carbide Corporation
Oak Ridge National Laboratory
Nuclear Division, Y-12 Plant
PO Box Y
Oak Ridge, TN 37930
 $\text{CSI}(\text{O})$, $\text{DU}(\text{P})$, $\text{EU}(\text{P})$, $^{153}\text{Gd}(\text{O})$, $^{192}\text{Ir}(\text{O})$,
 $\text{MCP}(\text{O})$, $^{236}\text{Pu}(\text{O})$, $^{242}\text{Pu}(\text{O})$, $^{244}\text{Pu}(\text{O})$,
 $\text{SS}(\text{O})$, $^{233}\text{U}(\text{O})$
- 225 Union Carbide Corporation
Sterling Forest Research Center
PO Box 324
Tuxedo, NY 10987
 $\text{MCP}(\text{O})$, $^{90}\text{Sr}(\text{O})$, $^{99}\text{Tc}(\text{O})$
- 226 Unit Process Assemblies, Inc.
53-15 37th Ave.
Woodside, NY 11377
 $^{147}\text{Pm}(\text{O})$, $^{90}\text{Sr}(\text{O})$
- 227 United Nuclear Corporation
Fuel Recovery Operations
Woodriver Junction, RI 02894
 $\text{EU}(\text{P})$
- 228 United States Air Force Academy
USAF Academy, CO 80840
 $^{252}\text{Cf}(\text{S})$
- 229 United States Army
Armament Research and Development
Aberdeen Proving Ground
Aberdeen Proving Ground, MD 21005
 $\text{DU}(\text{P})$
- 230 United States Army
Letterman Medical Center
Finance and Accounting Division
Building 102
Presidio of San Francisco, CA 94129
 $^{47}\text{Ca}(\text{O})$
- 231 United States Army
Materials and Mechanics Research Center
Watertown Arsenal
Watertown, MA 02172
 $\text{DU}(\text{P})$
- 232 United States Army
Picatinny Arsenal
Ordnance Corps
Dover, NJ 07801
 $\text{DU}(\text{P})$
- 233 United States Army
Aberdeen Proving Ground
Aberdeen Proving Ground, MD 21005
 $\text{DU}(\text{P})$

- 234 United States Department of Agriculture
Building 307, Room 215
Beltsville, MD 20502
 $^{28}\text{Mg}(\text{B}^*)$
- 235 United States Department of Energy
Chicago Operations Office
Finance Division
9800 S. Cass Ave
Argonne, IL 60439
 $^{242}\text{Pu}(0)$, $^{233}\text{U}(0)$, $^{234}\text{U}(0)$, $^{236}\text{U}(0)$
- 236 United States Department of Energy
376 Hudson St. 5th Fl.
New York, NY 10014
 $^{236}\text{Pu}(0)$, $\text{SS}(0)$, $^{229}\text{Th}(0)$
- 237 United States Department of Energy
Richland Operations Office
PO Box 550
Richland, WA 99352
 $^{244}\text{Cm}(0)$, $^{236}\text{Pu}(0)$, $^{238}\text{Pu}(0)$, $^{240}\text{Pu}(0)$,
 $^{244}\text{Pu}(0)$, $^{106}\text{Ru}(0)$, $\text{SS}(0)$, $^{95}\text{Zr}(0)$
- 238 United States Department of Interior
Geological Survey
National Center
12201 Sunrise Valley Drive
Reston, VA 22092
 $^{243}\text{Am}(0)$, $^{252}\text{Cf}(S)$, $^{244}\text{Cm}(0)$, $^{237}\text{Np}(0)$,
 $^{236}\text{Pu}(0)$
- 239 United States National Aeronautics and
Space
Ames Research Center
Moffett Field, CA 94035
 $^{47}\text{Ca}(0)$
- 240 United States National Aeronautics and
Space
Lyndon B. Johnson Space Center
Transportation Officer, Building 420
Houston, TX 77058
 $\text{RSI}(\text{B})$
- 241 United States National Aeronautics and
Space Administration
George C. Marshall Flight Center
Huntsville, AL 35812
 $\text{MCP}(0)$
- 242 United States Navy
Naval Electronics Lab Center
271 Catalina Blvd.
San Diego, CA 92152
 $^{95}\text{Zr}(0)$
- 243 United States Navy
National Naval Medical Center
Building #144
Bethesda, MD 20014
 $^{127}\text{Xe}(\text{B}^*)$
- 244 United States Navy
Naval Regional Medical Center
8750 Mountain Boulevard
Oakland, CA 94627
 $^{47}\text{Ca}(0)$, $^{127}\text{Xe}(\text{B}^*)$
- 245 United States Environmental Protection
Agency
Accounting Operations Office, Durham
Research Triangle Park, NC 27711
 $\text{CSI}(0)$
- 246 United States Public Health Service
National Institutes of Health
Isotope Laboratory
Building 21
Bethesda, MD 20014
 $^{47}\text{Ca}(0)$, $^{43}\text{K}(0)$, $^{127}\text{Xe}(\text{B}^*)$
- 247 United States Public Health Service
Hospital
15th Avenue and Lake St.
San Francisco, CA 94118
 $^{47}\text{Ca}(0)$
- 248 United States Radium Corporation
4150 Old Berwick Road
PO Box 380
Bloomsbury, PA 17815
 $^3\text{H}(0)$

- 249 Unitrode Corporation
580 Pleasant St
Watertown, MA 01970

 $^{85}\text{Kr}(0)$
- 250 University of Alabama
Medical Center
1919 Seventh Avenue, South
Birmingham, AL 35486

 $^{133}\text{Xe}(0)$
- 251 University of Arizona
Post Office Drawer 4100
Tucson, AZ 85724

 $^{127}\text{Xe}(\text{B}^*)$
- 252 University of Arkansas
Fayetteville, AR 72701

 $^{252}\text{Cf}(\text{S}), ^{238}\text{U}(\text{H})$
- 253 University of California
Davis, CA 95616

 $\text{DU}(\text{P}), ^{129}\text{I}(0)$
- 254 University of California
Ernest O. Lawrence Laboratory
PO Box 808
Livermore, CA 94551

 $^{241}\text{Am}(\text{P}), \text{Nu}(\text{P}), \text{Pu}(\text{P}), ^{238}\text{Pu}(\text{P})$
- 255 University of California at La Jolla
3175 Miramar Road
La Jolla, CA 92093

 $^{82}\text{Sr}(\text{L}), ^{85}\text{Sr}(\text{L}), ^{127}\text{Xe}(\text{B}^*)$
- 256 University of California
Lawrence Berkeley Laboratory
Berkeley, CA 94701

 $^{249}\text{Bk}(0), ^{249}\text{Cf}(0), ^{250}\text{Cf}(0), ^{82}\text{Sr}(\text{L}), ^{85}\text{Sr}(\text{L}), \text{SS}(0)$
- 257 University of California
Lawrence Livermore Laboratory
Livermore, CA 94550

 $^{227}\text{Ac}(\text{M}), ^{241}\text{Am}(0), ^{243}\text{Am}(0), ^{249}\text{Bk}(0), ^{249}\text{Cf}(0), ^{244}\text{Cm}(0), ^{245}\text{Cm}(0), ^3\text{H}(0), \text{MCP}(0), ^{92}\text{Nb}(\text{H}), \text{Tgs}(0), ^{230}\text{Th}(0), ^{232}\text{Th}(0), ^{235}\text{U}(0), ^{238}\text{U}(0)$
- 258 University of California
Los Alamos Scientific Laboratory
PO Box 1663
Los Alamos, NM 87545

 $^{241}\text{Am}(0), ^{211}\text{At}(\text{B}), ^{249}\text{Bk}(0), \text{Cap}(0), ^{249}\text{Cf}(0), ^{252}\text{Cf}(\text{S}), ^{243}\text{Cm}(0), ^{137}\text{Cs}(0), \text{DU}(\text{P}), ^{131}\text{I}(0), \text{Pu}(\text{P}), ^{236}\text{Pu}(0), ^{238}\text{Pu}(\text{M}), ^{240}\text{Pu}(\text{M}), \text{SS}(0), \text{Tgs}(0), ^{230}\text{Th}(0), ^{232}\text{Th}(0), ^{234}\text{U}(0), ^{235}\text{U}(0), ^{238}\text{U}(\text{M}), ^{238}\text{U}(0), ^{95}\text{Zr}(0)$
- 259 University of California
Los Angeles, CA 90024

 $^{241}\text{Am}(0), ^{47}\text{Ca}(0), ^{52}\text{Fe}(\text{L}) \text{MCP}(0), ^{239}\text{Pu}(0), ^{242}\text{Pu}(0), \text{SS}(0), ^{133}\text{Xe}(0)$
- 260 University of California
San Francisco Medical Center
San Francisco, CA 94122

 $^{133}\text{Xe}(0)$
- 261 University of Chicago
5641 S. Ingleside Ave.
Chicago, IL 60637

 $\text{CSI}(\text{A}), \text{RSI}(\text{A})$
- 262 University of Chicago
950 E 59th Street
Chicago, IL 60637

 $^{252}\text{Cf}(\text{S})$
- 263 University of Chicago
Office of the Comptroller
1525 E. Hyde Park Blvd.
Chicago, IL 60615

 $^{47}\text{Ca}(0), ^{28}\text{Mg}(\text{B}^*), ^{89}\text{Sr}(0)$

- 264 University of Cincinnati
Cincinnati, OH 45221
 $^{99}\text{Tc}(0)$
- 265 University of Connecticut
Health Center
Farmington, CT 06032
 $^{43}\text{K}(0)$
- 266 University of Florida
Gainesville, FL 32601
 $^{28}\text{Mg}(B^*)$, $^{147}\text{Pm}(0)$
- 267 University of Georgia
Athens, GA 30601
 $\text{Tgs}(0)$, $^{238}\text{U}(0)$
- 268 University of Illinois
203 Administration Building E
Urbana, IL 61803
 $^{239}\text{Pu}(0)$, $\text{Tgs}(0)$, $^{233}\text{U}(0)$
- 269 University of Illinois
College of Veterinary Medicine
Urbana, IL 61801
 $^{81}\text{Rb}(B)$
- 270 University of Illinois
Physics Department
Urbana, IL 61801
 $\text{RSI}(A)$
- 271 University of Iowa Hospitals
Nuclear Medicine
Iowa City, IA 52242
 $^{127}\text{Xe}(B^*)$
- 272 University of Kansas
Kansas City, KS 66103
 $^{77}\text{Br}(L)$, $^{47}\text{Ca}(0)$
- 273 University of Kentucky
800 Rose Street
Lexington, KY 40506
 $^{252}\text{Cf}(S)$, $\text{MCP}(0)$, $^{28}\text{Mg}(B^*)$
- 274 University of Mississippi
Jackson, MS 39216
 $^{43}\text{K}(0)$
- 275 University of Missouri
Columbia, MO 65201
 $\text{Nu}(P)$, $^{233}\text{U}(0)$
- 276 University of New Mexico
Radiopharmacy
Pharmacy and Nursing Building
Albuquerque, NM 87131
 $^{77}\text{Br}(L)$
- 277 University of Oregon
Medical School
3181 S.W. Sam Jackson Park Road
Portland, OR 97201
 $^{133}\text{Xe}(0)$
- 278 University of Pennsylvania
3025 Walnut St.
Philadelphia, PA 19104
 $^{133}\text{Xe}(0)$
- 279 University of Pennsylvania Hospital
3400 Spruce Street
Philadelphia, PA 19104
 $^{18}\text{F}(B)$, $^{123}\text{I}(B)$, $^{28}\text{Mg}(B^*)$
- 280 University of Pittsburgh
Radiation Safety Office
Pittsburgh, PA 15261
 $\text{NU}(P)$
- 281 University of Rochester
Exxon Research
Laboratory for Laser Energetics
College of Engineering
South Campus
East River Road
Rochester, NY 14642
 $^3\text{H}(M)$
- 282 University of Rochester
Rochester, NY 14642
 $^{47}\text{Ca}(0)$, $\text{RSI}(B)$

- 283 University of South Alabama
2451 Sillingim
Mobile, AL 36617
 $^{28}\text{Mg}(\text{B}^*)$
- 284 University of Southern California
School of Pharmacy
1985 Zonal Avenue
Los Angeles, CA 90033
 $^{252}\text{Cf}(\text{S})$
- 285 University of Southern California
University Park
Los Angeles, CA 90007
 $\text{MCP}(\text{O})$
- 286 University of Tennessee
865 Jefferson Avenue
Memphis, TN 38103
 $^{47}\text{Ca}(\text{O})$
- 287 University of Tennessee
1299 Bethel Valley Road
Oak Ridge, TN 37830
 $^{47}\text{Ca}(\text{O}), ^{28}\text{Mg}(\text{B}^*)$
- 288 University of Texas
5108 Medical Center Drive
Dallas, TX 75235
 $^{47}\text{Ca}(\text{O}), ^{127}\text{Xe}(\text{B}^*)$
- 289 University of Texas Medical Branch
Nuclear Medicine Division
Room 229, Clinical Science Building
Galveston, TX 77550
 $^{127}\text{Xe}(\text{B}^*), ^{133}\text{Xe}(\text{O})$
- 290 University of Texas
PO Box 688
Richardson, TX 75080
 $^{230}\text{Th}(\text{O}), ^{235}\text{U}(\text{O})$
- 291 University of Utah
Purchasing Department
Salt Lake City, UT 84112
 $^{244}\text{Pu}(\text{O}), ^{133}\text{Xe}(\text{O})$
- 292 University of Utah
Radiobiology Division
2C-108 Medical Center
Salt Lake City, UT 84112
 $\text{Pu}(\text{P})$
- 293 University of Virginia
RWMF, 11th and Lee Street
Charlottesville, VA 22901
 $^{127}\text{Xe}(\text{B}^*)$
- 294 University of Virginia
Charlottesville, VA 22903
 $\text{MCP}(\text{O}), \text{SS}(\text{O}), ^{127}\text{Xe}(\text{B}^*), ^{133}\text{Xe}(\text{O})$
- 295 University of Washington
400 Administration Building
Seattle, WA 98105
 $^{89}\text{Sr}(\text{O}), ^{133}\text{Xe}(\text{O})$
- 296 University of Wisconsin
750 University Avenue
Madison, WI 53706
 $^3\text{H}(\text{O})$
- 297 U.S. Testing Company, Inc.
2800 George Washington Way
Richland, WA 99352
 $^{241}\text{Am}(\text{H}), ^3\text{H}(\text{H}), \text{Nu}(\text{HO}), ^{147}\text{Pm}(\text{H}),$
 $^{239}\text{Pu}(\text{H}), \text{RaDEF}(\text{H}), ^{90}\text{SrY}(\text{H})$
- 298 Vanderbilt University
Business Manager's Office
Nashville, TN 37203
 $^{248}\text{Cm}(\text{O})$
- 299 VA Calm 361
Data Processing Center
1615 Woodward St. E.
Austin, TX 78772
 $\text{MCP}(\text{O}), ^{133}\text{Xe}(\text{O})$
- 300 Veterans Administration Center
Wood, WI 53193
 $^{43}\text{K}(\text{O})$

<p>301 Veterans Administration Hospital
11201 Benton Street
Loma Linda, CA 92354
$^{127}\text{Xe}(\text{B}^*)$</p> <p>302 Veterans Administration Hospital
Wilshire and Sawtelle Boulevards
Los Angeles, CA 90073
$^{47}\text{Ca}(0)$</p> <p>303 Veterans Administration Hospital
1201 Northwest 16th Street
Miami, FL 33125
$^{133}\text{Xe}(0)$</p> <p>304 Veterans Administration Hospital
Chief Supply Service
Building #7
Hines, IL 60141
$^{47}\text{Ca}(0)$, $^{252}\text{Cf}(\text{S})$</p> <p>305 Veterans Administration Hospital
1400 VFW Parkway
West Roxbury, MA 02132
$^{123}\text{Xe}(\text{B})$, $^{127}\text{Xe}(\text{B}^*)$</p> <p>306 Veterans Administration Hospital
Nuclear Medicine
Northport, NY 11768
$^{127}\text{Xe}(\text{B}^*)$</p> <p>307 Veterans Administration Hospital
Syracuse, NY 13210
$^{133}\text{Xe}(0)$</p> <p>308 Veterans Administration Hospital
Fulton St. and Durham Rd.
Durham, NC 22705
$^{47}\text{Ca}(0)$</p> <p>309 Veterans Administration Hospital
1310 24th Ave. S.
Nashville, TN 37203
$^{133}\text{Xe}(0)$</p> | <p>310 Veterans Administration Hospital
4435 Beacon Avenue South
Seattle, WA 98108
$^{103}\text{Ru}(8)$</p> <p>311 Veterans Administration Medical Center
3350 La Jolla Village
San Diego, CA 92161
$^{103}\text{Ru}(0)$</p> <p>312 Vetter Research
3189 C Airway Ave.
Costa Mesa, CA 92626
$^3\text{H}(0)$</p> <p>313 Vought Corporation
PO Box 6144
Dallas, TX 75222
$^{252}\text{Cf}(\text{S})$</p> <p>314 Washington State University
Nuclear Radiation Center
Pullman, WA 99163
$\text{Eu}(\text{P})$</p> <p>315 Washington University
499 S. Euclid
St. Louis, MO 63110
$^{77}\text{Br}(\text{L})$</p> <p>316 Washington University
Lindell and Skinker
St. Louis, MO 63130
$^{133}\text{Xe}(0)$</p> <p>317 Washington University School of Medicine
Malinckrodt Institute of Radiology
510 South Kings Highway
St. Louis, MO 63110
$^{252}\text{Cf}(\text{S})$</p> |
|--|---|

318 Western Electric Company, Inc.
PO Box 241
Reading, PA 19603

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

319 Western Electric Company, Inc.
PO Box 1409
Lawrence, MA 01842

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

320 Western Electric Company, Inc.
555 Union Blvd.
Allentown, PA 18103

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

321 Western Electric Company, Inc.
777 N. Blue Parkway
Lee's Summit, MO 64063

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

322 Westinghouse Electric Corporation
Bettis Atomic Power Laboratory
PO Box 79
West Mifflin, PA 15122

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

323 Westinghouse Hanford Company
Hanford Engineering Development
Laboratory
PO Box 1970
Richland, WA 99352

$^{241}\text{Am}(0)$, $^{133}\text{Ba}(H)$, $^{144}\text{CePr}(H)$,
 $^{252}\text{Cf}(0)$, $^{57}\text{Co}(H)$, $^{60}\text{Co}(H)$, $^{60}\text{Co}(0)$,
 $^{134}\text{Cs}(H)$, $^{137}\text{Cs}(H)$, $\text{CSI}(0)$, $\text{DU}(P)$, $\text{EU}(P)$,
 $^{203}\text{Hg}(H)$, $^{54}\text{Mn}(H)$, $^{237}\text{Np}(0)$, $^{239}\text{Np}(H)$,
 $\text{NU}(H)$, $\text{NU}(0)$, $\text{NU}(P)$, $^{238}\text{Pu}(H)$, $^{239}\text{Pu}(H)$,
 $^{239}\text{Pu}(0)$, $^{240}\text{Pu}(0)$, $^{241}\text{Pu}(0)$, $\text{Pu}(P)$,
 $^{90}\text{SrY}(H)$, $\text{SS}(0)$, $\text{Tgs}(0)$, $^{232}\text{Th}(H)$,
 $^{232}\text{Th}(0)$ $\text{Th}(P)$, $^{233}\text{U}(P)$, $^{233}\text{U}(0)$,
 $^{235}\text{U}(0)$, $^{238}\text{U}(0)$, $^{133}\text{Xe}(0)$

324 Yale-New Haven Hospital
333 Cedar Street
New Haven, CT 06510

$^{103}\text{Ru}(B)$

325 Yale University
20 Ashmun St
New Haven, CT 06520

$^{129}\text{I}(0)$, $^{103}\text{Ru}(0)$

326 Zilog, Inc.
10460 Babb Rd.
Cupertino, CA 95014

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

FOREIGN CUSTOMERS

AUSTRALIA

- 327 Australian AEC
Research Establishment
Lucas Heights, Australia
 $^{244}\text{Cm}(0)$, $^{231}\text{Pa}(0)$, $^{127}\text{Xe}(B^*)$
- 328 Australian National University
PO Box 4
Canberra, A.C.T. Australia
 $^{37}\text{Ar}(0)$
- 329 Embassy of Australia
1601 Massachusetts Ave., N.W.
Washington, D.C. 20036
 $^{242}\text{Pu}(0)$
- 330 Western Australian Institute of
Technology
Hayman Road
Bentley South 6102
Western Australia, Australia
 $^{89}\text{Sr}(0)$

AUSTRIA

- 331 International Atomic Energy Agency
Kaerntnerring 11-13
A-1010 Vienna, Austria
 $^{239}\text{Pu}(0)$, $^{240}\text{Pu}(0)$, $^{241}\text{Pu}(0)$, $^{242}\text{Pu}(0)$,
 $^{244}\text{Pu}(0)$, $^{235}\text{U}(0)$, $^{238}\text{U}(0)$

BELGIUM

- 332 Centre d'Etude de l'Energie Nucleaire
144 Avenue Plasky
Brussels 4, Belgium
 $^{237}\text{Np}(0)$, $^{235}\text{U}(0)$, $^{238}\text{U}(0)$
- 333 Katholieke Universiteit Leuven
Dienst Radioprotektie
De Croylaan 54
Henerlee, Belgium
 $^{28}\text{Mg}(B^*)$, $^{127}\text{Xe}(B^*)$

- 334 EURATOM
51-53 Rue Belliard
Brussels, Belgium
 $^{242}\text{Pu}(0)$
- 335 European Atomic Energy Commission
Central Bureau for Nuclear Measurements
Geel, Belgium
 $^{243}\text{Am}(0)$, $^{237}\text{Np}(0)$, $^{239}\text{Pu}(0)$,
 $^{240}\text{Pu}(0)$, $^{241}\text{Pu}(0)$, $^{242}\text{Pu}(0)$, $^{244}\text{Pu}(0)$,
 $^{235}\text{U}(0)$, $^{238}\text{U}(0)$
- 336 Institut National des Radioelements
Avenue Eugene Plasky, 144
1040 Brussels, Belgium
 $^{192}\text{Ir}(0)$, $^{85}\text{Kr}(0)$
- 337 Universite de Liege
2 rue Armand Stevart
Liege, Belgium
 $^{243}\text{Am}(0)$, $^{248}\text{Cm}(0)$

BRAZIL

- 338 Empresas Nucleares Brasileiras S/A
Nuclebras
Rua General Polidoro
316 Rio de Janeiro (RJ), Brazil
 $^{242}\text{Pu}(0)$

CANADA

- 339 Atomic Energy of Canada, Limited
PO Box 6300
Postal Station J
Ottawa, Canada
 $^{137}\text{Cs}(0)$, $\text{MCP}(0)$
- 340 Atomic Energy of Canada, Ltd.
Commercial Products
Ottawa, Canada K2A 3W3
 $^{133}\text{Xe}(M)$

341 Atomic Energy of Canada, Ltd.
Chalk River Nuclear Laboratories
Metallurgy Engineering Branch
Chalk River, Ontario, KOJ1JO, Canada

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

342 Atomic Energy of Canada, Limited
Whiteshell Nuclear Research
Establishment
Pinawa, Manitoba, Canada

$^{242}\text{Pu}(\text{O})$, $^{230}\text{Th}(\text{O})$, $^{234}\text{U}(\text{O})$, $^{238}\text{U}(\text{O})$

343 Bondar-Clegg and Company, Limited
764 Belfast Road
Ottawa, Ontario, K1G 0Z5, Canada

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

344 Dalhousie University
Halifax, Nova Scotia, Canada

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

345 Health Sciences Center
Nuclear Medicine
700 William Avenue
Winnipeg, Canada

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

346 McGill University
Montreal 2, P.Q., Canada

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

347 McMaster University
Hamilton!, Ontario, Canada

$^3\text{H}(\text{O})$, $^{129}\text{I}(\text{O})$, $^{99}\text{Tc}(\text{O})$

348 McMaster University Medical Center
Forsyth Avenue Receiving
Hamilton!, Ontario, Canada

$^{127}\text{Xe}(\text{B}^*)$, $^{133}\text{Xe}(\text{O})$

349 Ontario Hydro
700 University Avenue
Toronto, Ontario, Canada M5G 1X6

$^{243}\text{Am}(\text{O})$

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

$^{230}\text{Th}(\text{O})$

351 St. Joseph's Hospital
Nuclear Medicine Department
268 Grosvenor Street
London, Ontario, N-6A4V2, Canada

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

352 Universite de Laval
Case Postale 2208
Parvillon Vachon
Quebec 10, P.Q. Canada

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

353 University Hospital
Nuclear Medicine Department
London, Ontario, Canada

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

354 University of Alberta
Edmonton, Alberta, Canada T6G2H1

$^{133}\text{Xe}(\text{O})$, $^3\text{H}(\text{O})$

355 University of British Columbia
Vancouver, British Columbia, Canada

$^{89}\text{Sr}(\text{O})$

DENMARK

356 Gammattec
Stormly 16
3500 Hareskov
Denmark

$^{153}\text{Gd}(\text{O})$, $^{88}\text{Sr}(\text{O})$

357 Isotope Pharmacy
378 Frederiksbundvej
Broenshoej, Denmark

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

358 Rigshospitalet
Pshcho Chem Lab
9 Blegdamovej
Copenhagen, Denmark

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

359 University of Copenhagen
Raadmansgade 71, DK 2200
Copenhagen N, Denmark

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

FRANCE

360 CEA
Department des Radioelements
B.P. No. 2
91190 Gif Sur Yvette, France

$^{153}\text{Gd}(0)$, $^{55}\text{S}(0)$

361 French Atomic Energy Commission
1730 Rhode Island Ave., N.W.
Suite 1217
Washington, DC 20036

$^{241}\text{Am}(0)$, $^{238}\text{Pu}(0)$, $^{242}\text{Pu}(0)$

362 Laboratoire Curie
Institut du Radium
11, rue Pierre et Marie Curie
75231 Paris, Cedex 05
France

$^{237}\text{Np}(0)$, $^{238}\text{U}(0)$

363 Universite de Nice
Laboratoire de Geologie Structurale
Parc Valrose, 06100
Nice, France

$^{229}\text{Th}(0)$

364 American Hoechst Corporation
PO Box 2500
Somerville, NJ 08876

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

GERMANY, FEDERAL REPUBLIC OF

365 Buchler and Company
Frankfurter Str. 294
Braunschweig
Federal Republic of Germany

$^{37}\text{Ar}(0)$, $^{237}\text{Np}(0)$

366 Darmstadt, Technischen Hochschule
61 Darmstadt
Federal Republic of Germany

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

367 EURATOM Transuranium Institute
PO Box 452
74 Karlsruhe
Federal Republic of Germany

$^{237}\text{Np}(0)$, $^{230}\text{Th}(0)$

368 Freie Universitat Berlin
Fachbereich Physik
FB20 WL1A
Boltzmannstrasse 20
1000 Berlin 33
Federal Republic of Germany

$^{127}\text{Xe}(8^+)$, $^{133}\text{Xe}(0)$

369 Gesellschaft fur Kernforschung mbH
Institute fuer Angewandte Reaktor
Physik
Weberstrasse 5
75 Karlsruhe
Federal Republic of Germany

$^{241}\text{Am}(0)$, $^{243}\text{Am}(0)$, $^{238}\text{U}(0)$, $^{235}\text{U}(0)$

370 Gesellschaft fur Schwerionenforschung,
mbH
Finanz Abbielung
Postfach 541
D-6100 Darmstadt
Federal Republic of Germany

$^{236}\text{Pu}(0)$, $^{235}\text{U}(0)$

371 Johanna Wolfgang Goeth University
Frankfurt/Main
Federal Republic of Germany

$^{230}\text{Th}(0)$, $^{234}\text{U}(0)$

372 Kernforschung Sanlage
Postfach 365
517 Julich
Federal Republic of Germany

$^{237}\text{Np}(0)$, $^{239}\text{Pu}(0)$, $^{151}\text{Sm}(0)$, $^{232}\text{Th}(0)$, $^{235}\text{U}(0)$, $^{238}\text{U}(0)$

373 Max Planck Institut fur Kernphysik
Saupfercheckweg
Heidelberg
Federal Republic of Germany

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

374 Medizinische Hochschule Hannover
Karl-Wiechert-Allee 9
3000 Hannover 61
Federal Republic of Germany

$^{127}\text{Xe}(8^+)$

375 University of Munster
44 Munster/ Westfalln
Federal Republic of Germany

$^{37}\text{Ar}(0)$

376 Philipps Universitat, F.B. 14
Kern Chemic
355 Marburg, Lahnberg
Federal Republic of Germany

$^{243}\text{Am}(0)$, $\text{Cap}(0)$

377 W. Maier Komm. Ges.
7220 Schwenningen a.N.
Postfach 126
Federal Republic of Germany

$^{147}\text{Pm}(0)$

378 University of Mainz/Rhein
Mainz am Rhein
Federal Republic of Germany

$^{242}\text{Pu}(0)$, $^{244}\text{Pu}(0)$, $\text{Tgs}(0)$

379 University of Erlangen Nurnberg
Gluckstr.
852 Erlangen
Federal Republic of Germany

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

GREAT BRITAIN

380 British Embassy
3100 Massachusetts Avenue, NW.
Washington, DC 20008

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

381 Brandhurst Co., Ltd.
Wellington Road
High Wycombe, Bucks HP12 3PS
England, Great Britain

$^3\text{H}(0)$

382 Edlow International Company
Suite 404-5
1100 17th St., NW.
Washington, DC 20036

$^3\text{H}(0)$

383 Hammersmith Hospital
Ducane Road
London W12 0HS, England
Great Britain

$^{85}\text{Sr}(L)$, $^{82}\text{Sr}(L)$

384 Institute of Oceanographic Sciences
Brook Road
Wormley
Surrey GU8, 5UB, England
Great Britain

385 Mallinkrodt, Ltd.
Building 521 129G
Southampton Road
Middlesex, England
Great Britain

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

386 Medical Research Council
Harwell, Didcot
Oxon OX 11 ORD
England, Great Britain

387 Medical Research Council
Cambridge, CB2 2QH, England
Great Britain

$\text{MCP}(0)$

388 Radio Chemical Centre
White Lion Road
Amersham, Bucks, England
Great Britain

$\text{Cap}(0)$, $^{244}\text{Cm}(0)$, $\text{CSI}(0)$, $^{153}\text{Gd}(0)$, $^3\text{H}(0)$,
 $^{85}\text{Kr}(0)$, $\text{MCP}(0)$, $^{237}\text{Np}(0)$, $^{147}\text{Pm}(0)$,
 $^{106}\text{Ru}(0)$, $^{151}\text{Sm}(0)$, $^{89}\text{Sr}(0)$, $^{99}\text{Tc}(0)$,
 $\text{Tgs}(0)$, $^{91}\text{Y}(0)$, $^{95}\text{Zr}(0)$,

389 Saunders-Roe Developments, Ltd.
North Hyde Road
Hayes, Middlesex, England
Great Britain

$^3\text{H}(0)$

HONG KONG

390 National Cash Register Mfg. Co., Ltd.
No. 55 Wong Chuk Hang Road
Aberdeen, Hong Kong

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

391 Semi-Conductor Devices, Ltd.
59-61 Wong Chuk Hang Road
Aberdeen, Hong Kong

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

INDIA

392 Bhabha Atomic Research Center
Government of India
3rd Floor Mohatta Building
Bombay 1, India

$^{249}\text{Bk}(0)$

ISRAEL

393 Embassy of Israel
1621-22nd Street NW.
Washington, DC 20008

$^3\text{H}(0)$

ITALY

394 ONEN Laboratorio Dati Nucleari
% Laboratorio FRAE via Biancamano
Pissatore Di Medicina
60109, Italy

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

395 Comitato Nazionale per l'Energia Nucleare
818 Eighteenth St., NW.
Washington, DC 20009

$^{242}\text{Pu}(0)$

JAPAN

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

$^{243}\text{Am}(0)$, $\text{Cap}(0)$, $^{244}\text{Cm}(0)$, $^{85}\text{Kr}(0)$,
 $\text{Tgs}(0)$

397 Kyoto University
Engineering Research Institute
Kyoto, Japan

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

398 Marubeni American Corporation
14 Henderson Drive
West Caldwell, NJ 07006

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

399 Nissho-Iwai American Corporation
1211 Avenue of the Americas
New York, NY 10036

$^{242}\text{Pu}(0)$, $^{233}\text{U}(0)$

400 Toshiba Corporation
1-6 Uchisaiwaicho, 1-Chome
Chiyoda-Ku, Tokyo, Japan

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

401 University of Tokyo
Atabu, Minato-Ku
Tokyo, Japan

$^{234}\text{U}(0)$, $^{236}\text{U}(0)$

NETHERLANDS

402 Institute for Atomic Sciences in
Agriculture
Keyenbergseweg 6, Wageningen,
The Netherlands

$^{243}\text{Am}(0)$

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

$^{99}\text{Tc}(0)$

404 Reactor Centrum Nederland
Petten N.H.
The Netherlands

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

405 Rijksinkoopbureau
55 A Laan van Meerdervoort
The Hague, The Netherlands

NORWAY

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

$\text{EU}(P)$

407 Institute for Atomic Energy
Isotope Laboratories
N-2007
Kjeller, Norway
 $^{127}\text{Xe}(\beta^*)$

SOUTH AFRICA

408 Tygerberg Hospital
Nuclear Medicine Department
Parowvallei
Cape Province, South Africa
 $^{127}\text{Xe}(\beta^*)$

SWEDEN

409 Centralab
Radiation Physics
Lasarattet, S221 85
Lund, Sweden
 $^{127}\text{Xe}(\beta^*)$

410 University of Uppsala
Uppsala, Sweden
 $^{252}\text{Cf}(0)$, $\text{Tgs}(0)$

SWITZERLAND

411 Basel Universitat
4000 Basel
Switzerland
 $\text{Tgs}(0)$, $^{232}\text{Th}(0)$

412 Eidg. Institut für Reaktorforschung
Würenlingen, Switzerland
 $^{244}\text{Cm}(0)$, $^{230}\text{Th}(0)$, $^{234}\text{U}(0)$

413 University of Fribourg
1700 Fribourg, Switzerland
 $^{237}\text{Np}(0)$, $\text{Tgs}(0)$

414 Merz and Bentelli AG
Bumplitstrasse 91
3018 Bern, Switzerland
 $^3\text{H}(0)$

415 Radium Chemie
A. Zeller and Company
9053 Teufen/Ar
Switzerland
 $^3\text{H}(0)$, $\text{MCP}(0)$, $^{147}\text{Pm}(0)$

TAIWAN

416 United Pacific Semiconductor Corporation
1, San-Chin Street
Su-Lin Cheng, Taipei, Hsien, Taiwan
 $^{85}\text{Kr}(0)$

YUGOSLAVIA

419 Institut Ruder Boskovic
Bijenicka Cesta 54
Zagreb, Yugoslavia
 $^{37}\text{Ar}(0)$

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

DOMESTIC

Actinium 227 (Ac)

223, 257

Aluminum 28 (Al)

53

Americium (Am)

222

Americium 241 (Am)

5, 8, 21, 47, 64, 80, 95, 130, 140,
149, 151, 159, 223, 254, 257, 258, 259,
297, 323

Americium 243 (Am)

52, 54, 157, 223, 238, 257

Argon 37 (Ar)

159

Astatine 211 (At)

81, 258

Barium 133 (Ba)

324

Barium 139 (Ba)

53

Berkelium 249 (Bk)

8, 256, 257, 258

Bromine 77 (Br)

18, 73, 74, 272, 276, 315

Bromine 80 (Br)

53

Bromine 82 (Br)

53

Cadmium 109 (Cd)

5, 95, 140

Californium 249 (Cf)

8, 52, 256, 257, 258

Californium 250 (Cf)

256

Californium 252 (Cf)

8, 18, 50, 51, 52, 54, 92, 95, 106,
107, 130, 136, 158, 159, 192, 223, 228,
238, 252, 258, 262, 273, 284, 304, 313,
317, 323

Cerium 144 (Ce)

140

Cerium 144 + Praseodymium (CePr)

323

Cesium 134 (Cs)

159, 323

Cesium 137 (Cs)

8, 15, 80, 88, 94, 95, 127, 140, 150,
159, 170, 196, 223, 258, 323

Chlorine 38 (Cl)

53

Cobalt 57 (Co)

323

Cobalt 60 (Co)

8, 159, 220, 323

Curium (Cm)

223

Curium 243 (Cm)

8, 109, 258

Curium 244 (Cm)

52, 54, 142, 237, 238, 257

Curium 245 (Cm)

257

Curium 248 (Cm)

298

Cyclotron Service Irradiations (CSI)

5, 13, 23, 88, 95, 110, 111, 133, 140,
152, 159, 167, 202, 223, 224, 245, 261,
323

Depleted Uranium (DU)

1, 8, 12, 25, 54, 62, 137, 148, 176,
181, 183, 191, 220, 224, 229, 231, 232,
233, 253, 258, 323

Deuterium Oxide (D₂O)

54

Dysprosium 165 (Dy)

53

Einsteinium 253 (Es)

8

Encapsulation (Cap)

8, 47, 52, 54, 64, 80, 130, 140, 149,
151, 223, 258

Enriched Uranium (EU)

53, 58, 59, 77, 220, 224, 227, 314

Europium 152+154 (Eu)

140

Fluorine 18 (F)

113, 279

Gadolinium 153 (Gd)

5, 80, 11.5, 140, 224

Hafnium 181 (Hf)

22

Holmium 166 (Ho)

53

Iodine 123 (I)

279

Iodine 129 (I)

5, 95, 140, 253, 325

Iodine 131 (I)

124, 125, 223, 258

Iridium 192 (Ir)

9, 65, 80, 89, 201, 211, 223, 224

Iron 52 (Fe)

184, 259

Krypton 85 (Kr)

2, 4, 11, 20, 33, 37, 38, 39, 61, 67,
69, 72, 75, 85, 86, 87, 90, 96, 105,
116, 122, 123, 128, 132, 138, 140, 153,
159, 166, 172, 173, 174, 188, 195, 197,
198, 209, 213, 214, 218, 219, 221, 223,
249, 318, 319, 320, 321, 326

Magnesium 28 (Mg)

23, 31, 35, 44, 177, 179, 206, 217,
234, 263, 266, 273, 279, 283, 287

Manganese 54 (Mn)

323

Manganese 56 (Mn)

53

Mercury 203 (Hg)

323

Miscellaneous Compound Preparations (MCP)

13, 15, 75, 80, 113, 127, 140, 150,
159, 170, 196, 212, 223, 224, 225, 241,
257, 259, 273, 285, 294, 299

Molybdenum 99 (Mo)

53

Natural Uranium (NU)

175, 280, 323

Neodymium 147 (Nd)

40, 53, 159

Neodymium 149 (Nd)

159

Neptunium (Np)

8

Neptunium 237 (Np)

8, 91, 159, 167, 188, 223, 238, 323

Neptunium 239 (Np)

323

Niobium 92 (Nb)

257

Niobium 95 (Nb)

8, 52, 127, 159, 223

Osmium 191 (Os)

27

Palladium 109 (Pd)

53

Phosphorus 33 (P)

88, 140

Plutonium (Pu)

8, 223, 254, 258, 323

Plutonium 236 (Pu)

29, 52, 95, 224, 236, 237, 238, 258, 292

Plutonium 238 (Pu)

7, 54, 70, 130, 159, 183, 189, 237,
254, 258, 259, 323

Plutonium 239 (Pu)

52, 68, 70, 71, 159, 175, 189, 223,
268, 297, 323

Plutonium 240 (Pu)

68, 159, 237, 258, 323

Plutonium 241 (Pu)

8, 52, 68, 136, 159, 241

Plutonium 242 (Pu)

8, 54, 135, 159, 223, 224, 235, 259

Plutonium 244 (Pu)

143, 159, 224, 237, 291

Polonium 210 (Po)

126

Potassium 43 (K)

27, 112, 117, 246, 265, 274, 300

Promethium 147 (Pm)

14, 127, 140, 226, 266, 297

Protactinium 231 (Pa)

53, 223

RaDeF

159, 297

Reactor Service Irradiations (RSI)

6, 8, 19, 41, 53, 60, 66, 71, 78, 139,
159, 168, 177, 185, 207, 240, 261, 270,
282

Rhenium 186 (Re)

40

Rhenium 188 (Re)

40

Rubidium 81 (Rb)

3, 27, 30, 141, 269

Ruthenium 103 (Ru)

8, 18, 79, 140, 310, 311, 324, 325

Ruthenium 106 (Ru)

5, 26, 54, 88, 95, 159, 178, 237

Samarium 151 (Sm)

202

Sodium 24 (Na)

53

Special Services (SS)

4, 10, 13, 14, 29, 52, 54, 68, 82, 95,
109, 111, 115, 136, 140, 142, 147, 152,
178, 202, 223, 224, 236, 237, 256, 258,
259, 294, 323

Strontium 82 (Sr)

113, 255, 256

Strontium 85 (Sr)

113, 255, 256

Strontium 89 (Sr)

16, 32, 48, 155, 184, 263, 295

Strontium 90 (Sr)

8, 75, 88, 95, 101, 140, 159, 212, 225,
226, 297, 323

Tantalum 182 (Ta)

53, 182

Target Preparations, Radioisotope (Tgs)

8, 45, 46, 68, 71, 80, 91, 100, 103,
136, 151, 154, 156, 159, 175, 186, 188,
223, 257, 258, 267, 268, 322, 323

Technetium 99 (Tc)

8, 18, 56, 57, 77, 88, 118, 140, 145,
152, 159, 162, 206, 223, 225, 264

Thorium (Th)

54, 234

Thorium 229 (Th)

29, 52, 82, 142, 223, 236

Thorium 230 (Th)

8, 28, 49, 63, 95, 159, 177, 223, 257,
258, 290

Thorium 232 (Th)

257, 258, 323

Thulium 170 (Tm)

159

Tungsten 178 (W)

27, 140

Uranium 232 (U)

223

Uranium 233 (U)

52, 54, 223, 224, 235, 268, 275, 323

Uranium 234 (U)

68, 179, 223, 235, 258

Uranium 235 (U)

52, 91, 103, 175, 186, 188, 223, 257,
258, 290, 322, 323

Uranium 236 (U)

52, 223, 235

Uranium 238 (U)

24, 46, 68, 91, 93, 99, 175, 179, 188,
221, 223, 252, 257, 258, 267, 323

Withdrawn Radioisotopes (RW)

111, 140, 202, 223

Xenon 123 (Xe)

305

Xenon 127 (Xe)

34, 42, 98, 111, 115, 120, 127, 135,
140, 144, 145, 146, 180, 243, 244, 246,
251, 255, 271, 288, 289, 293, 294, 301,
305, 306

Xenon 133 (Xe)

17, 26, 43, 46, 52, 84, 97, 119, 121,
129, 136, 140, 160, 161, 163, 164, 165,
171, 187, 199, 200, 203, 204, 205, 208,
223, 250, 259, 260, 277, 278, 289, 291,
294, 295, 299, 303, 307, 309, 316, 323

Zirconium 95 (Zr)

52, 54, 79, 95, 140, 159, 169, 223,
237, 242, 258

FOREIGN

Americium 241 (Am)

361, 369

Americium 243 (Am)

335, 337, 349, 369, 376, 396, 402

Argon 37 (Ar)

328, 365, 375, 417

Berkelium 249 (Bk)

392

Californium 252 (Cf)

343, 379, 394, 410

Cesium 137 (Cs)

339

Curium 244 (Cm)

327, 388, 396, 412

Curium 248 (Cm)	Plutonium 242 (Pu)
337	329, 331, 334, 335, 338, 342, 361, 378, 395, 399
Cyclotron Service Irradiations (CSI)	Plutonium 244 (Pu)
388	331, 335, 378
Encapsulation (Cap)	Promethium 147 (Pm)
327, 335, 361, 362, 365, 367, 369, 376, 388, 396	377, 388, 415
Enriched-Uranium (EU)	Protactinium 231 (Pa)
406	327
Gadolinium 153 (Gd)	Ruthenium 106 (Ru)
356, 360, 388	388
Hydrogen 3 (H)	Samarium 151 (Sm)
347, 354, 381, 382, 388, 389, 393, 414, 415	372, 388
Iodine 129 (I)	Special Services (SS)
347, 365	356, 360, 363
Iridium 192 (Ir)	Strontium 82 (Sr)
336	383
Krypton 85 (Kr)	Strontium 83 (Sr)
336, 364, 388, 390, 391, 396, 416	383
Magnesium 28 (Mg)	Strontium 89 (Sr)
333, 358, 359	330, 355, 388
Miscellaneous Compound Preparations (MCP)	Target Preparations, Radioisotope (Tgs)
339, 387, 388, 415	331, 332, 335, 369, 370, 372, 378, 379, 380, 388, 394, 410, 411, 413
Neptunium 237 (Np)	Technetium 99 (Tc)
332, 335, 362, 365, 367, 372, 388, 413	347, 388, 403
Plutonium 238 (Pu)	Thorium 229 (Th)
361	363
Plutonium 239 (Pu)	Thorium 230 (Th)
331, 335, 372	342, 350, 367, 371, 404, 412
Plutonium 240 (Pu)	Thorium 232 (Th)
331, 335	372, 411
Plutonium 241 (Pu)	Uranium 233 (U)
331, 335	331, 398, 399

Uranium 234 (U)

342, 371, 400, 401, 412

Uranium 235 (U)

331, 332, 335, 370, 372

Uranium 236 (U)

331, 373, 401

Uranium 238 (U)

331, 332, 335, 342, 362, 372, 380

Ytterbium 91 (Y)

388

Xenon 127 (Xe)

327, 333, 345, 348, 351, 353, 357, 368,
374, 385, 407, 408, 409

Xenon 133 (Xe)

340, 346, 348, 352, 354, 368, 397

Zirconium 95 (Zr)

341, 344, 388

4. GEOGRAPHICAL LOCATION OF RADIOISOTOPE CUSTOMERS
(identified by customer numbers)

STATES

Alabama (AL)	Indiana (IN)
241, 250, 283	41, 120, 166
Arizona (AZ)	Iowa (IA)
6, 85, 122, 132, 251	27, 93, 271
Arkansas (AR)	Kansas (KS)
252	272
California (CA)	Kentucky (KY)
13, 23, 28, 40, 45, 61, 68, 72, 79, 86, 89, 90, 91, 92, 95, 96, 108, 116, 118, 123, 128, 131, 138, 161, 164, 165, 171, 175, 176, 182, 190, 191, 195, 196, 197, 198, 203, 205, 209, 210, 218, 219, 230, 239, 242, 244, 247, 253, 254, 255, 256, 257, 259, 260, 284, 285, 301, 302, 311, 312, 326	273
Colorado (CO)	Louisiana (LA)
30, 31, 82, 100, 119, 153, 163, 183, 228	65, 201, 204, 217
Connecticut (CT)	Maryland (MD)
192, 265, 324, 325	1, 98, 135, 212, 229, 233, 234, 243, 246
District of Columbia (DC)	Massachusetts (MA)
17, 57, 73, 74, 136	18, 29, 81, 104, 113, 114, 140, 148, 172, 200, 202, 211, 231, 249, 305
Florida (FL)	Michigan (MI)
63, 70, 133, 157, 266, 303	53, 83, 102, 105
Georgia (GA)	Minnesota (MN)
75, 267	115, 126, 127
Hawaii (HI)	Mississippi (MS)
160	274
Idaho (ID)	Missouri (MO)
2, 5, 42, 54, 60	16, 97, 111, 275, 315, 316, 317, 321
Illinois (IL)	Nebraska (NB)
7, 8, 10, 35, 43, 66, 110, 121, 139, 146, 147, 184, 208, 235, 261, 262, 263, 268, 269, 270, 304	38
	New Jersey (NJ)
	3, 15, 26, 36, 39, 44, 56, 58, 62, 76, 94, 167, 168, 170, 174, 185, 186, 232

New Mexico (NM)

51, 109, 188, 189, 258, 276

New York (NY)

4, 20, 21, 32, 33, 37, 46, 49, 71, 78,
39, 103, 134, 141, 142, 143, 149, 177,
193, 194, 199, 206, 207, 215, 225, 226,
236, 281, 282, 306, 307

North Carolina (NC)

19, 48, 50, 107, 144, 145, 178, 245, 308

Ohio (OH)

12, 14, 25, 77, 88, 130, 137, 154, 155,
156, 169, 173, 179, 264

Oklahoma (OK)

34

Oregon (OR)

158, 277

Pennsylvania (PA)

9, 11, 22, 24, 52, 87, 106, 124, 125,
150, 162, 248, 278, 279, 280, 318, 319,
320, 322

Puerto Rico (PR)

216

Rhode Island (RI)

227

South Carolina (SC)

55, 180

Tennessee (TN)

152, 221, 222, 223, 224, 286, 287, 299,
309

Texas (TX)

47, 64, 80, 129, 151, 213, 214, 240,
288, 289, 290, 298, 313

Utah (UT)

101, 291, 292

Virginia (VA)

67, 69, 238, 293, 294

Washington (WA)

59, 84, 159, 181, 187, 220, 237, 295,
297, 310, 314, 323

Wisconsin (WI)

112, 117, 296, 300

FOREIGN

Australia

327, 328, 329, 330

Austria

331

Belgium

332, 333, 334, 335, 336, 337

Brazil

338

Canada

339, 340, 341, 342, 343, 344, 345, 346,
347, 348, 349, 350, 351, 352, 353, 354,
356

Denmark

356, 357, 358, 359

France

360, 361, 362, 363, 364,

Germany, Federal Republic of

365, 366, 369, 368, 369, 370, 371, 372,
373, 374, 375, 376, 377, 378, 379

Great Britain

380, 381, 382, 383, 384, 385, 386, 387,
388, 389

Hong Kong

390, 391

India

392

Israel

393

Italy

394, 395

Japan

396, 397, 398, 399, 400, 401

Netherlands

402, 403, 404, 405,

Norway

406, 407

South Africa

408

Sweden

409, 410

Switzerland

411, 412, 413, 414, 415

Taiwan

416

Yugoslavia

417

5. RADIOISOTOPE SALES AND TRANSFERS - FY 1979

	Domestic			Foreign			Project			Total		
	Shpts	Amount mCi	Dollars	Shpts	Amount mCi	Dollars	Shpts	Amount mCi	Dollars	Shpts	Amount mCi	Dollars
actinium-227(M)							2	482.0		2	482.0	
aluminum-28(I)								80	80		80	'80
americium(R)								676g			676g	
americium-241(H)							4	0.19		4	0.19	
americium-241(H)							4	8.4 pCi		4	8.4 pCi	
americium-241(O)	70	2.668 g	1,608.582	2	60 g	36,240	22	22 g	13,170	94	2,750 g	1,657.992
americium-241(P)(a)	1	60 mCi					5			4	60 mCi	
americium-241(S)							4	3.68 kg		4	3.68 kg	
americium-241(O)	2		330	6	140.0 mg	12,810	6	1,525.0 mg	600	14	1,665.0 ag	13,740
argon-37(O)				5	13.3	675	1	8.0	480	63	22.0	1,155
astatine-211(B)	13	42.0										
barium-133(H)							4	2.2		4	2.2	
barium-139(I)								300			300	
berkelium-249(O)				2		230	4	3.0 µg	90	6	3.0 eg	490
bromine-77(B)	1	3.5								1	3.5	
bromine-77(L)		2,642.5						580.5			3,223.0	
bromine-80(I)								114.5	60		114.5	10
bromine-82(I)								10.4	60		10.4	10
cadmium-109(B)(b)	10	3,633.2	23,684							10	3,633.2	23,684
calcium-47(O)	238	93.1	25,005				5	1.2	250	243	94.3	25,255
californium-249(O)							5	8.9 µCi	292	5	8.9 µCi	292
californium-250(O)							1		120	1		120
californium-252(H)							1	3.3 µCi		1	3.3 µCi	
californium-252(M)							1	1.0 mg		1	1.0 mg	
californium-252(O)	6		440	5		598		124.6 µg	795	19	124.6 µg	1833
californium-252(S)	7	12.97 mg	147,210	3	13.68 mg	164,670	8			10	26.57 mg	311,880
cerium-144(O)	3	300.0	300							3	300.0	300
cerium-144												
praseodymium(H)							3	0.71		3	0.71	
cesium-134(H)							3	541.4 µCi		3	541.4 µCi	
cesium-137(H)							12	850.11 eci				
cesium-137(O)				2			4	224.0	1,000	32	850.821 pCi	11,231
chlorine-38(I)	31	81,482 Ci	10,231					1.3	60		1.3	60
cobalt-57(H)							1	1 µCi		1	1 µCi	
cobalt-60(H)							3	203.0 µCi		3	203.0 µCi	
cobalt-60(O)							12	62.0	248	12	62.0	248
cobalt-60(U)*							2	2,000		2	2,000	
curium(P)(a)							1			1		
curium-243(O)							5			5		
curium-244(O)	2		330	7	265.0 mg	27,430	6	132,480.0 mg	490	15	132,745.0 mg	490
curium-245(O)	2						1		600	3		28,360
curium-248(O)	1	0.1 mg	65	1	20.0	60			65	2		65
cyclotron service												
irradiations(A)	37		11,544				182			219		11,544
cyclotron service												
irradiations(O)	81	177.0	399,594	1	100.0	1,000	14	22.0	18,364	96	299.0	418,958
cyclotron service												
irradiation(B*)(b)	(a)	614.0	58,965								614	58,965
depleted uranium(P)	47	3601 kg	4,206				48	1957 kg	2,040	95	5558 kg	6,246
deuterium oxide(P)							1	18.4 kg	6,000	1	18.4 kg	6,000
dysprosium-165(I)								90	30		90	30

5. RADIOISOTOPE SALES AND TRANSFERS - FY 1979

	Domestic			Foreign			Project			Total		
	Shpts	h u n t mCi	Dollars	Shpts	h u n t mCi	Dollars	Shpts	Amount mCi	Dollars	Shpts	Amount mCi	Dollars
einsteinium-253(0)							1	0.1 mg	65	1	0.1 mg	65
encapsulation(0)			167,109			56,600	1		12,270	1		236,179
enriched												
uranium(P)(a)	6	28.598 g	29,300	3	14.400	14,000	51	57,057	56,900	60	100.055	100,200
europium-152(0)	1	15.0	300							1	15.0	300
fluorine-18(B)	4	77.0								4	77.0	
gadolinium-153(0)	8	6,916.0	10,375	4	5,500.0	6,850	4	4008.0	5,750	16	16,424.0	22,975
hafnium-181(0)	1	20.0	60							1	20.0	60
holmium-166(I)								1.6	60		1.6	60
iodine-123(B)	1	25.0								1	25.0	
iodine-129(0)	7	5,203.0 mg	3,777	3	1,251.0 mg	1,051				10	6,454.0 mg	4,828
iodine-131(0)	2	250.0	250				78	1,121.5	16,083	80	1,371.5	16,333
iridium-192(H)	4	76 Ci								4	76 Ci	
iridium-192(0)	176	1,011,859 Ci	1,486,660	9	37,542 Ci	52,869	6	461 Ci	674	191	1,049,862 Ci	1,540,203
iron-52(B)	3	35.0								3	35.0	
iron-52(L)		30 mg									30 g	
krypton-85												
enriched(0)	2	200 Ci	17,000	1	50 Ci	3,000				3	250 Ci	20,000
krypton-85(0)	190	6,729 Ci	148,392	15	943 Ci	20,746	29	1,409 Ci	18,875	234	9,081 Ci	188,013
magnesium-28(B)(b)	33	8.7	3,146	3	0.8	319				36	9.5	3,465
manganese-54(H)							1	0.11 µCi		1	0.11 µCi	
manganese-56(I)								77.4	300		77.4	300
mercury-203(H)							2	9.0		2	9.0	
miscellaneous												
compound												
preparations(0)	26	265.0	1,104	2	8.0	88	3		56,867	31	273.0	58,059
molybdenum-99(I),								0.001	30		0.001	30
natural uranium(H)							9	7,850,074.5 g		9	7,850,074.5 g	
natural uranium(0)		1,450.0	54					172.2	33		1,622.2	87
natural												
uranium(P)(a)	4						2			7		
neodymium-147(I)								8	30		8	30
neodymium-147(U)							3	1.95	750	3	1.95	750
neodymium-149(U)							3	3.24		3	3.24	
neptunium(P)(a)							2			2		
neptunium-237												
high purity(0)	1	1,000.0 mg	362	5	20,474.0 mg	5,921	5	3,087.0 mg	2,264	11	24,561.0 mg	8,547
neptunium-237												
metal(0)							2		130	2		130
neptunium-237												
oxide(0)	1		365	5	65 Y	15,225	2	31.9 g	9,006	8	96.9 g	24,596
neptunium-239(H)							1	8.3 Ci		1	8.3 Ci	
niobium-92(H)							3	200.41		3	200.41	
niobium-95(0)	27	440.0	11,000				6	28.0	700	33	468.0	11,700
osmium-191(B)	13	10,724.5								13	10,724.5	

5. RADIOISOTOPE SALES AND TRANSFERS - FY 1979

	Domestic			Foreign			Project			Total		
	Shpts	Amount mCi	Dollars	Shpts	Amount mCi	Dollars	Shpts	Amount mCi	Dollars	Shpts	Amount mCi	Dollars
43 palladium-109(I)							3.2	60		3.2	60	
phosphorus-33(O)	24	1,650.0	21,750							24	1,650.0	21,750
plutonium(P)(A)	2						71	1.978 g	74,000	73	1978 g	74,000
plutonium-236(O)	3		492				5		3,861	8		4,353
plutonium-237(O)	2		913	1		665	3		9,545	6		11,183
plutonium-238(H)							2	13.4 nCi		2	13.4 nCi	
plutonium-238(M)							33	17,240.35 g		33	17,240.35 g	
plutonium-238(O)	1	11,170.0 mg	15,962	5	-99,050.0 mg	-173,337	3	210.0 mg	350	9	-87,670.0 mg	-157,025
plutonium-238(P)(A)							1			1		
plutonium-238(S)							7	10.02		7	10.02 kg	
plutonium-239(H)							28	95.07 nCi		28	95.07 nCi	
plutonium-239(M)							2	32.02 g		2	32.02 g	
plutonium-239(O)	4	1,513.1 mg	3,820	6	16.1300 mg	33,528	13	782.1 mg	1,208	23	18,425.8 mg	38,556
plutonium-240(H)							1	4.9 nCi		1	4.9 nCi	
plutonium-240(M)							1	11.9 g		1	11.9 g	
plutonium-240(O)	1	100.0 mg	120	2	2,020.0 mg	6,224	9	2,649.1 mg	855	12	4,769.1 mg	7,199
plutonium-241(O)	2	100.0 mg	639	2	270.0 mg	2,394	7	9,258.1 mg	670	11	9,628.1 mg	3,703
plutonium-242(M)	1	.0045 Ci								1	.0045 µCi	
plutonium-242(P)(A)							1			1		
plutonium-242(O)				14	3,503.0 mg	56,627	7	5,266.1 mg	8,395	21	8,769.1 mg	65,022
plutonium-244(O)				2	70.0 mg	1,365	1	10.0 mg	295	3	80.0 mg	1,650
polonium-210(M)	I	5								1	5	
polonium-210(H)							3	212.0		3	212.0	
potassium-4 (O)	44	94.5	9,450							44	94.5	9,450
protactinium-23 (O)							2	0.28 nCi		2	0.28 nCi	
protactinium-23 (A)	8	1,210 Ci	1,690	18	23,158 Ci	23,458	1	3 Ci	100	27	24,371 Ci	25,248
protactinium-23 (O)							2	132.3 mg		2	132.3 mg	
protactinium-23 (A)				1	100.0 mg	2,170	2	286.0 mg	1,835	3	386.0 mg	10,005
protactinium-23 (O)												
protactinium-23 (A)							3	12,400.4 pCi		3	12,400.4 pCi	
protactinium-23 (O)												
protactinium-23 (A)							205			261		6,077
protactinium-23 (O)												
protactinium-23 (A)												
protactinium-23 (O)												
protactinium-23 (A)												
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protactinium-23 (O)												
protactinium-23 (A)												
 												

5. RADIOISOTOPE SALES AND TRANSFERS - FY 1979

	Domestic			Foreign			Project			Total		
	Shpts	hunt mCi	Dollars	Shpts	hunt mCi	Dollars	Shpts	Amount mCi	Dollars	Shpts	hunt mCi	Dollars
tantalum-182(H)							1	0.9 Ci		1	0.9 Ci	
tantalum-182(I)								0.1	30		0.1	30
target												
preparations(0)	I	3.0	55,562			68,484			314,905	1	3.0	438,951
technetium-99(0)	25	77,830.0 mg	4,280	6	52,560.0 mg	2,890	9	32,762.0 mg	1,888	40	163,152.0 mg	9,058
thorium(P)(a)							12	1 kg	70	12	1 kg	70
thorium-229(M)							2	10.9 mg		2	10.9 mg	
thorium-229(0)	3		195	2		180	2	0.2 mg	130	7	0.3 mg	505
thorium-230(M)							2	56.921 g		2	56.921 g	
thorium-230(0)				2	1.5 mg	238	3	115.0 mg	212	5	116.5 mg	450
thorium-230 95(0)	5	15.1 mg	1,413	1	100.0 mg	9,827	3	14.0 mg	292	9	129.1 mg	11,532
thorium-230 80-9(0)	1	20.0 mg	526	4	90.0 mg	2,336				5	110.0 mg	2,862
thorium-232(H)							1	0.1 g		1	0.1 g	
thorium-232(0)				2	3,000.0 mg	160	9	21,399.8 mg	585	11	24,399.8 mg	745
thulium-170(U)							1	14,000	250	1	14,000	250
tritium(H)							3	14 µCi		3	14 µCi	
tritium(M)	10	95.0 Ci								10	95.0 Ci	1,831,470
tritium(0)	212	1,050,051 Ci	821,077	52	1,337,572 Ci	1,006,984	30	2,811 Ci	3,409	294	2,390,435 Ci	3,000
tritium(P)									3,000			
tungsten-178(B)	4	276.0								4	276.0	
tungsten-178(B)(b)	1	10.0								1	10.0	
uranium-232(0)							1		65	1		65
uranium-233(0)	2	116.0 mg	141	3	4,600.0 mg	12,063	13	11,707.3 mg	4,715	18	16,423.3 mg	16,919
uranium-233(P)							1	97 g	7,000	1	97 g	7,000
uranium-234(M)							1	106 g		1	106 g	
uranium-234(0)	3	3,400.0 mg	28,483	5	2,131.0 mg	18,054	2	50.0	393	10	5,581.0 mg	46,930
uranium-235(0)	5	5,460.0 mg	867	9	72,692.0 mg	11,523	17	153,424.7 mg	1,035	31	231,676.7 mg	13,425
uranium-236(0)				3	576.0 mg	432	4	3,300.0 mg	260	7	3,876.0 mg	692
uranium-238(H)	3	1.02								3	1.02	
uranium-238(M)	1	91.0 g					6	2,264.0 g		7	2,355 g	
uranium-238(0)	8	874,630.0 g	1,807	9	600,485.0 mg	11,497	13	154,682.1 mg	743	30	1,629,797.1 mg	14,047
withdrawn radio-												
isotopes(0)	17	61,332.0	171,708				7	3,100.0	9,854	24	64,432.0	181,562
xenon-123(B)	1	110.0								1	110.0	
xenon-127(B)	1	25.0		1	48.0					2	73.0	
xenon-127(B)(b)	122	24,514.0	35,533	38	10,700.0	15,663				160	35,214.0	51.1%
xenon-133(M)				1	1.0					1	1.0	
xenon-133(0)	428	691 Ci	47,349	51	50 Ci	3,810	24	11 Ci	1,857	503	752 Ci	53,016
ytterbium-91(0)				2	5.0	58				2	5.0	58
zirconium 95	14	1,321.0	6,757	5	61.0	355	10	330.5	1,912	29	1,712.5	9,024
zirconium-95(H)				1	1 Ci					1	1 Ci	
Handling Charges(0)			140,805			16,505			23,085			180,395
Subtotal	2,241		5,649,012	340		1,581,064	1,214		865,881	3,796		8,095,956
Loans										3		2,940
TOTAL										3,799		8,098,896

(a) If no amount is listed, all of the shipments were less than a reportable quantity. If an amount is listed, part of the shipments were less than a reportable quantity.

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