The Superior Nuclide For Thyroid Studies
Sodium Iodide I 123
I 123... A Superior Thyroid Agent

Sodium Iodide I 123 is superior to I 131 because of its low radiation dose to the patient, its short half-life of 13.2 hours, and its imaging energy of 159 KeV.

Sodium Iodide I 123 is superior to Tc99m because it is trapped and organified by the thyroid gland and, therefore, will image the "cold," non-functioning nodule that may appear "hot" or "cold" with Tc99m.\textsuperscript{1,2}

For a Consistent Quality Image.....Sodium Iodide I 123

medi+physics\textsuperscript{TM}

5801 Christie Avenue, Emeryville, CA 94608
For More Information, Please Call (415) 658-2184
Inside California Toll Free (800) 772-2446 • Outside California Toll Free (800) 227-0483


\textsuperscript{2}Information for Physicians—Irradiation-Related Thyroid Cancer \textsuperscript{TM} prepared by the Division of Cancer Control and Rehabilitation National Cancer Institute. DH-EW Publication No. (NIH) 77-1120, p. 13.

DESCRIPTION: Sodium iodide I 123 for diagnostic use is supplied as capsules and in vials as an aqueous solution for oral administration. At calibration time, each capsule has an activity of 100 microcuries and each vial contains solution with a total specific concentration of two milliemes per ml.

INDICATIONS: Sodium iodide I 123 is indicated for use in the diagnosis of thyroid function and imaging.

CONTRAINDICATIONS: None known.

WARNINGS: This radiopharmaceutical should not be administered to children or to patients who are pregnant or to nursing mothers unless the information to be gained outweighs the potential hazards. Ideally, examinations using radiopharmaceuticals, especially those elective in nature, in women of child-bearing capability should be performed during the first few (approximately 10) days following the onset of menses. However, when studies of thyroid function are clinically indicated, for members of these special population groups, use of I 123 would be preferable to the use of I 131 in order to minimize radiation dosage.

Adequate reproduction studies have not been performed in animals to determine whether this drug affects fertility in males or females, has teratogenic potential, or has other adverse effects on the fetus. Sodium iodide I 123 should be used in pregnant women only when clearly needed.

PRECAUTIONS: Sodium iodide I 123, as well as other radioactive drugs, must be handled with care. Appropriate safety measures should be used to minimize radiation exposure to the patient and other personnel. Care should also be taken to minimize radiation exposure to the patient consistent with proper patient management. The prescribed sodium iodide I 123 dose should be administered as soon as practicable in order to minimize the fraction of radiation exposure due to relative increase of radionuclidic contaminants with time. The uptake of I 123 may be decreased by recent administration of iodinated contrast materials, by intake of stable iodine in any form, or by thyroid, antithyroid, and other drugs. Accordingly, the patient should be questioned carefully regarding diet, previous medication, and procedures involving radiographic contrast media.

ADVERSE REACTIONS: There were nine adverse reactions reported in a series of 1,393 administrations. None of these were attributed to I 123. Five adverse reactions, consisting of gastric upset and vomiting, were attributed to a filler in the capsule. Two cases of headache and one case of nausea and weakness were attributed to the fasting state. One case of garlic odor on the breath was presumed to be attributable to the presence of tellurium.

 DOSAGE AND ADMINISTRATION: The recommended oral dose range for diagnostic studies of thyroid function in the average adult patient (70 kg) is from 100 to 400 microcuries. The patient dose should be measured by a suitable radioactivity calibration system immediately prior to administration. Concentration of I 123 in the thyroid gland should be measured in accordance with standardized procedures.

SPECIAL CONSIDERATION: Radiopharmaceuticals should be used only by physicians who are qualified by training and experience in the safe use and handling of radionuclides and whose experience and training have been approved by the appropriate government agency authorized to license the use of radionuclides.

HOW SUPPLIED: Sodium iodide I 123 for oral administration is supplied in aqueous solution in glass vials of 10mCi and in capsules of 100 μCi.
Always Available

On call 24 hours a day to take your order.

You can place an order with Mallinckrodt any time of the day or night, 7 days a week. Our order department is open a full ten hours every business day. But you can call even after hours or on weekends and your order will be recorded. Since our people are scheduled to come in early, order processing starts before normal business hours.

Ours is a time-proven system which processes and ships literally hundreds of orders a day. And isn't it nice to know you can always get through to Mallinckrodt should you need to order a technetium Tc99m generator, or radiopharmaceuticals?

For more information, call your Mallinckrodt representative or this toll-free number:

800-325-3688 (In Missouri, 314-895-0880 collect)

For technical assistance, it's 800-325-8181

THE MALLINCKRODT COMMITMENT

to Nuclear Medicine

MALLINCKRODT, INC., Post Office Box 5840, St. Louis, MO 63134

©Mallinckrodt Inc., 1980
Only NEN

Five regional distribution centers

NEN's five regional distribution centers—Atlanta, Boston, Chicago, Dallas and Los Angeles—enable next-morning delivery to virtually any nuclear medicine department in the United States, 6 days a week. If you call us today, your order should arrive before 8:00 AM tomorrow.

And if you're within one of our distribution center radiuses, our Medical Emergency Delivery Service (MEDS) can deliver your radiopharmaceutical order the same day, within hours of your call. That means thallium-201 is available whenever you require a study—even in the acute setting.

For Canadian nuclear physicians, NEN Canada provides the same high level of service from its Montreal distribution center.

We're committed. We're New England Nuclear

Call us toll free at (800) 225-1572; in Massachusetts (617) 667-9531; in Canada (514) 636-9531
Available for use with up to 90 mCi per vial.

Easy to prepare.¹
Stable formulation prepared with stannous tartrate, which is more resistant to oxidation than stannous chloride.²
Lowest dose rate to the lungs of any commercially available kit.³

For ordering, customer service and technical information call toll-free: (800) 431-1146. In New York State, call (800) 942-1986.

Technetium Tc 99m Albumin Aggregated Kit
Diagnotic-for intravenous use

BRIEF SUMMARY OF PRESCRIBING INFORMATION

Indications and usage
Technetium Tc 99m Aggregated Albumin is indicated as a lung imaging agent to be used as an adjunct in the evaluation of pulmonary perfusion.

Contraindications
Technetium Tc 99m Aggregated Albumin should not be administered to patients with severe pulmonary hypertension. The use of Technetium Tc 99m Aggregated Albumin is contraindicated in persons with a history of hypersensitivity reactions to products containing human serum albumin.

Warnings
The possibility of allergic reactions should be considered in patients who receive multiple doses.

Theoretically, the intravenous administration of any particulate material such as aggregated albumin imposes a temporary small mechanical impediment to blood flow. While this effect is probably physiologically insignificant in most patients, the administration of aggregated albumin is possibly hazardous in acute cor pulmonale and other states of severely impaired pulmonary blood flow. This radiopharmaceutical preparation should not be administered to children, to pregnant women or lactating women unless the expected benefits to be gained outweigh the potential risks.

Ideally, examinations using radiopharmaceuticals, especially those elective in nature, of a woman of childbearing capability should be performed during the first few (approximately 10) days following the onset of menses.

Precautions
In cases of right-to-left cardiac shunt, additional risk may exist due to the rapid entry of aggregated albumin into the systemic circulation.

The contents of the kit are not radioactive. However, after the Sodium Pertechnetate Tc 99m is added, adequate shielding of the final preparation must be maintained.

The labeling reactions involved in preparing the agent depend on maintaining the tin in the reduced state. Any oxidant present in the Sodium Pertechnetate Tc 99m supply may thus adversely affect the quality of the prepared agent. Hence, Sodium Pertechnetate Tc 99m containing oxidants, or other additives, should not be employed without first demonstrating that it is without adverse effect on the properties of the resulting agent.

The contents of the vial are sterile and pyrogen-free. It is essential that the user follows the directions carefully and adheres to strict aseptic procedures during preparation of the radiodiagnostic.

Technetium Tc 99m Aggregated Albumin is physically unstable and as such the particles will settle with time. Failure to agitate the vial adequately before use may result in non-uniform distribution of radioactivity.

It is also recommended that, because of the increasing probability of agglomeration with aging, a batch of Technetium Tc 99m Aggregated Albumin not be used after eight hours from the time of preparation. Refrigerate at 2°C to 8°C after preparation. If blood is withdrawn into the syringe, unnecessary delay prior to injection may result in clot formation in situ.

The contents of the vial are under a nitrogen atmosphere and should be protected from air. On preparation with Sodium Pertechnetate Tc 99m, the contents of the vial should be mixed by gentle inversion to avoid changes in particle size. Do not use if clumping or foaming of the contents is observed.

Pregnancy category C

Animal reproduction studies have not been performed to determine whether this drug affects fertility in males or females, has teratogenic potential, or has other adverse affects on the fetus. Technetium Tc 99m Aggregated Albumin should be used in pregnant women only when clearly needed.

It is not known whether this drug is excreted in human milk. As a general rule, nursing should not be undertaken while a patient is on a drug since many drugs are excreted in human milk.

Safety and effectiveness in children have not been established.

As in the use of any radioactive material, care should be taken to minimize radiation exposure to the patient, consistent with proper patient management, and to insure minimal radiation exposure to the occupational worker.

Radiopharmaceuticals should be used only by physicians who are qualified by training and experience in the safe use and handling of radionuclides and whose experience and training have been approved by the appropriate governmental agency authorized to license the use of radionuclides.

Adverse reactions
The literature contains reports of deaths occurring after the administration of aggregated albumin to patients with pre-existing severe pulmonary hypertension. Instances of any radiopharmaceutical preparation to preparations of Technetium Tc 99m labeled aggregated albumin have been reported.

Hypersensitivity reactions are possible whenever protein-containing materials such as Technetium Tc 99m labeled aggregated albumin are used in man. Epinephrine, antihistamines and corticosteroid agents should be available for use.

How supplied

kit contents
5 STERILE MULTIDOSE REACTION VIALS (10cc, silver aluminum overseal), each containing 0.34 mg MAA Aggregated Normal Serum Albumin (Human), 2.0x10⁹±25% particles, 0.27 mg stannous tartrate, 0.6 ml of isotonic saline. Hydrochloric acid and sodium hydroxide may have been added for pH adjustment.
10 PRESSURE-SENSITIVE LABELS for final Technetium Tc 99m Aggregated Albumin preparation.
1 PACKAGE INSERT.

For full preparation and prescribing information, see package insert.

In the sixties it was Instant Technetium
In the seventies it was Technetium Generators
And in the eighties it's Unit Doses

We feel that the distribution of radiopharmaceuticals
in the eighties will be primarily
through nuclear pharmacies. and Pharmatopes is
the leader in providing this service.

PHARMATOPES ADDRESSES THE PROBLEMS OF THE EIGHTIES:
- Compliance With ALARA
- Waste Disposal Management
- Cost Containment
- Quality Control Assurance

Pharmatopes, Inc.
NUCLEAR PHARMACY SERVICES

DETROIT 543-0460 • GRAND RAPIDS 245-8781 • TOLEDO 473-1215 • DAYTON 461-9300 • CINCINNATI 984-6517
COLUMBUS 252-3176 • AKRON 753-1009 • INDIANAPOLIS 472-3101 • CHICAGO 666-8200 • Dyer IN 924-8818
VIRGINIA BEACH 490-3159 • RICHMOND 643-1054 • BALTIMORE 252-0420 • WASHINGTON D.C. 666-0742
SACRAMENTO 381-7131 • SANTA CLARA 733-7550 • TULSA 665-2250 • MIAMI 592-4743 • NEWARK 429-9545
TO BE OPEN SOON HARTFORD. NEW YORK CITY. OAKLAND

WE CAN HELP YOU MEET THE CHALLENGES OF THE EIGHTIES
Dependable Delivery

Generators and radiopharmaceuticals that arrive on time, week after week.

Mallinckrodt's generator delivery system is ranked number one* in the industry. Here's why:

- Our mid-continental location means we can make most deliveries by truck. So for 90% of our customers in 45 states, the number one delivery problem—airline delays—is no problem at all. If there is a hitch, one quick call to our toll-free service number will straighten it out.

Mallinckrodt weekend generators are delivered no later than 8 AM every Monday. If you need midweek delivery, your generator will arrive by 8 AM Wednesday.

For dependable, on-time generator delivery, week after week, call your Mallinckrodt representative or this toll-free number:

800-325-3688 (In Missouri, 314-344-3880 collect)
For technical assistance it's 800-325-8181
(In Missouri, 314-895-2405 collect)

THE MALLINCKRODT COMMITMENT to Nuclear Medicine

MALLINCKRODT, INC., Post Office Box 5840, St. Louis, MO 63134

*In a recent independent survey of 400 nuclear medicine departments. Data on file at Mallinckrodt.
MPI Thallous Chloride TI 201

Thallous Chloride TI 201

MPI Thallous Chloride TI 201 can be delivered with other MPI products without an additional delivery charge.

PLEASE SEE FOLLOWING PAGE FOR BRIEF SUMMARY OF PRESCRIBING INFORMATION.

medi+physics™

5801 Christie Ave., Emeryville, Calif. 94608, (415) 658-2184
MIRP PAMPHLETS AVAILABLE
(Medical Internal Radiation Dose)

PAMPHLETS
1 (Revised) A revised schema for calculating the absorbed dose from biologically distributed radionuclides. ($5.25)
5 (Revised) Estimates of specific absorbed fractions for photon sources uniformly distributed in various organs of a heterogeneous phantom. ($5.75)
10 Radionuclide decay schemes and nuclear parameters for use in radiation-dose estimation. ($8.00)
11 'S' absorbed dose per unit cumulative activity for selected radionuclides and organs. ($11.00)
12 Kinetic models for absorbed dose calculations. ($5.25)

SUPPLEMENTS
3 Includes the original pamphlet #5: "Estimates of absorbed fractions for monoenergetic photon sources uniformly distributed in various organs of a heterogeneous phantom."
($1.50)
5 Includes 2 pamphlets: "Distribution of absorbed dose around point sources of electrons and beta particles in water and other media"; and "Absorbed fractions for small volumes containing photon-emitting radioactivity." ($1.50)
6 Includes pamphlet 9: "Radiation dose to humans from 192-Selenium-265." ($3.00)

SPECIAL OFFER
All available MIRP pamphlets and supplements for only $25.00 plus $4.00 for shipping and handling.

MIRP Pamphlets and Supplements may be ordered from: Book Order Dept., Society of Nuclear Medicine, 475 Park Avenue South, New York, NY 10016. All orders must be prepaid or accompanied by a purchase order. Checks must be in U.S. funds only, please.

Mail to: Book Order Dept., Society of Nuclear Medicine, 475 Park Avenue South, New York, NY 10016. Make checks payable to: Society of Nuclear Medicine, Inc. U.S. funds only, please.

PAMPHLETS SUPPLEMENTS SPECIAL OFFER

| 1 ($5.25) | 3 ($1.50) | $47.50
| 5 ($5.75) | 5 ($1.50) | $47.50
| 10 ($8.00) | 6 ($3.00) | $80.00
| 11 ($11.00) | 12 ($5.25) | $147.50

SHIPPING AND HANDLING CHARGES

| 1 item | 1.00 | 10-19 items | 6.00 |
| 2 items | 2.00 | 20-29 items | 8.00 |
| 3 items | 3.00 | 30-39 items | 10.00 |
| 4-9 items | 4.00 | 

TOTAL $_____

SEND TO:
NAME
ADDRESS

ZIP

5801 Christie Avenue,
P.O. Box 6864,
Emeryville, California 94608

Volume 22, Number 2
"With ADAC, you're not just buying a system. You're buying a company."
"That's not just an empty statement. That's a commitment.
We're not in medical imaging simply to stay. We're in it to lead.
Take Systems I–IV.
It's the only nuclear medicine system that
precisely meets your requirements as they change.
You never have to buy less—or more—
than you actually need.
It's what you have a right to expect from the
leader in medical imaging.”

Charles W. Cantoni, President

ADAC System I.
It processes and acquires. It
has a Diagnostic Acquisition/
Processing Console, a Com-
puter Section, and a Winches-
ter disc drive. It can easily
be expanded to a System II.

ADAC System II.
It processes one study while acquiring or
processing another. It's a System I—plus a
Remote Acquisition/Processing Terminal,
a second Computer Section, and a second
Winchester. It can
easily be expanded
to a System III.

ADAC System III.
It processes and acquires in two
places at once. It looks just like a
System II. But there's
capability inside the Computer
Section. It can easily be expanded
to a System IV.

ADAC System IV.
It has a three-location option.
With two Consoles and an ex-
panded Computer Section, you
can process and acquire in two
places at once. Add an optional
Remote Terminal and you can
process and acquire studies at
three locations.

For more information on
ADAC Systems I, II, III & IV,
write or call collect.
ADAC Laboratories, 255
San Geronimo Way, Sunnyvale,
California 94086. (408) 736-1101

Medical Imaging Systems.
125I METHOTREXATE RADIOIMMUNOASSAY KIT

Our 125I Methotrexate Radioimmunoassay Kit provides a rapid, simple method with an unexcelled level of sensitivity and specificity.

Here is a comparison chart that speaks for itself.

Select the proven DBI 125I MTX-RIA kit to monitor the circulating methotrexate levels in serum, plasma, cerebral spinal fluid or urine.

Also available:
- 125I Doxorubicin-RIA Kit
- 125I Digoxin-Stat-RIA Kit
- 125I Folate Kit
- 125I T4-One Step-RIA Kit
- 125I T3-Uptake Kit

Call or write for our low priced introductory kit.

<table>
<thead>
<tr>
<th></th>
<th>DBI RADIOIMMUNOASSAY</th>
<th>IMMUNOENZYME ASSAY</th>
</tr>
</thead>
<tbody>
<tr>
<td>STAT INCUBATION:</td>
<td>15 minutes at 37°C</td>
<td>1 minute</td>
</tr>
<tr>
<td>SENSITIVITY:</td>
<td>0.0004 μM (700 times more sensitive)</td>
<td>0.3 μM</td>
</tr>
<tr>
<td>EXOGENOUS INTERFERENCE:</td>
<td>None</td>
<td>Lypemic Icterus Hemolysis</td>
</tr>
<tr>
<td>STANDARDS SUPPLIED:</td>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td>PRICE:</td>
<td>*57½ cents per tube</td>
<td>$1.86 per tube</td>
</tr>
</tbody>
</table>

*In units of 200
Raytheon takes pride in performance, in productivity — but above all, we take pride in technical innovation ahead of the crowd.

Raytheon Nuclear Diagnostics is the leader with its multi-tube camera. Where the rest are still playing catch-up with 61-tube cameras, RND's 91-tube large field-of-view camera has an enviable four-year record with greater than 740,000 hours of clinical service. From the beginning we recognized the value of high resolution in a large-field camera — and with the massive resources of the Raytheon group we made it happen.

So join the march with Raytheon — be ahead of the crowd.

Raytheon Nuclear Diagnostics
70 Ryan Street, Stamford, Connecticut 06907
800-243-9058 • (203) 324-5803 (In Conn.)
The "JAWS III" stress test

This dramatic, non-exercise stress test produces maximum elevation of blood pressure and cardiac rate in a minimum amount of time. Clinical testing remains incomplete.

Interested in safe, effective, low-cost stress testing? The O'NEILL ERGOMETER TABLE, with smoother, adjustable pedalling action, and retractable casters, can be used with any size camera. Furthermore, it is the LOWEST PRICED PROVEN STRESS SYSTEM ON THE MARKET! Patient studies, prices, and hospital references available on request.
PRESENTING ANOTHER DIMENSION IN ESTRIOL RIA

GAMMADAB® FREE/TOTAL ESTRIOL RIA KIT FROM CLINICAL ASSAYS

Now you can have the convenience and versatility of two assays in one.

Serum or Urine TOTAL ESTRIOL
- Quantitative results within one hour
- ½ hour single incubation
- No separate hydrolysis
- Four simple pipetting steps
- Urine and serum controls for conjugated estriol supplied at two levels

Serum FREE ESTRIOL
- Simple extraction procedure uses small volume pipettings
- Extraction avoids cross-reactivity possible with direct immunoreactive assays
- Assay performed directly in extraction tubes
- Serum controls for free estriol supplied at two levels

Innovating for Life™

CLINICAL ASSAYS
DIVISION OF TRAVENOL LABORATORIES, INC.
620 Memorial Drive • Cambridge, MA 02139
(617) 492-2526 • TLX: 921461 CLASS CAM
Toll free: (800) 225-1241

For worldwide locations, please contact your local Clinical Assays/Travenol representative or the International Sales Department, Clinical Assays, Cambridge, MA 02139, U.S.A.
multicrystal count rates with single-crystal image quality

Another unique feature of the Apex Line
In the practice of modern Nuclear Medicine, physicians have learned that a camera's major diagnostic advantage is often negated by a parallel disadvantage. High count rate is one such case. Until Apex, high count rates were achievable only with multicrystal cameras—at the expense of image quality. Only Elscint's Apex Line provides count rates as high as 500,000 CPS and resolutions as fine as 1.8 mm bars (Apex 215M).

**High Count Rates—The Clinical Need**

As Nuclear Medicine techniques become more sophisticated, they require higher count rates. Cardiac first-pass studies, for example, can only be effectively accomplished with count rates exceeding the limitations of most present day gamma cameras. Apex systems, however, do perform these studies—with remarkable image clarity.

**Some Impressive Apex Qualities**

The remarkable Count Rate performance of the Apex Line is supported by a high Dynamic Frame Rate of 64 FPS for $64 \times 64$ pixels, and a Multigated Frame Rate of 64 frames per heart cycle for $64^2$ matrix.
Being first can be habit forming. We were first with the 2-mm resolution mobile gamma camera. We were first with 12-inch (30 mm) FOV resolution good enough for cardiology. We were first with instant on-line ejection fraction. We were first with energy calibration.


It took 61 photomultiplier tubes and an ingenious optimization of crystal design to improve resolution 25%. INTRODUCING THE DYNA™CAMERA 4/15/61 CLINICAL SYSTEM —

- Intrinsic resolution and linearity so good, myocardial tomography is now a practical reality.
- Improved clarity in small-lesion detection.
- Better reading of low-contrast liver, lung, and renal studies.
- Over 30,000 clinical imaging hours in nuclear medicine departments.

DynaCamera 4/15/61: 61-tube resolution in a compact, newly designed chassis. It's not only first, but it's good enough to remain first. There's more you should know. Write: Picker Corporation, 12 Clintonville Rd., Northford, CT 06472, or Picker International, 595 Miner Rd., Highland Hts., OH 44143.
Our new, totally computerized customer service system enables us to answer your questions, make additions or deletions to your film badge service, or provide any other assistance quickly and reliably.

No, you won’t be talking to a machine. We haven’t gone that far. We still have the largest customer service staff of any dosimetry service. When you call the toll-free Nuclibadge® HOTLINE number, you’ll talk with a professional service representative who’s on-line with our in-house computer containing all the details of your program.

You’ll get instant answers, speedy response to service changes, immediate attention—not the delays, errors, call-backs, and lost correspondence inherent in manual operations.

Full computerization demonstrates the kind of investment and commitment Siemens is making to maintain leadership in this field. But it’s just one of the things that sets Siemens Radiation Monitoring Service apart from all the others.

Look what we provide FREE:

- Telephone requests for additional badges.
- Immediate telephone notification of any exposure above a level you set.
- Additional badges shipped within 24 hours.

And you still get all the special benefits of Nuclibadge II Film Badge Service:

- Accounts may be subdivided by department.
- A variety of report formats to meet your needs.
- Exposure reports on printed cards, tape, or magnetic tape.
- Emergency processing service in case of accident.
- Color-coded badges.

Look what we provide FREE:

- Telephone requests for additional badges.
- Immediate telephone notification of any exposure above a level you set.
- Additional badges shipped within 24 hours.

And you still get all the special benefits of Nuclibadge II Film Badge Service:

- Accounts may be subdivided by department.
- A variety of report formats to meet your needs.
- Exposure reports on printed cards, tape, or magnetic tape.
- Emergency processing service in case of accident.
- Color-coded badges.

Look what we provide FREE:

- Telephone requests for additional badges.
- Immediate telephone notification of any exposure above a level you set.
- Additional badges shipped within 24 hours.

And you still get all the special benefits of Nuclibadge II Film Badge Service:

- Accounts may be subdivided by department.
- A variety of report formats to meet your needs.
- Exposure reports on printed cards, tape, or magnetic tape.
- Emergency processing service in case of accident.
- Color-coded badges.

Look what we provide FREE:

- Telephone requests for additional badges.
- Immediate telephone notification of any exposure above a level you set.
- Additional badges shipped within 24 hours.

And you still get all the special benefits of Nuclibadge II Film Badge Service:

- Accounts may be subdivided by department.
- A variety of report formats to meet your needs.
- Exposure reports on printed cards, tape, or magnetic tape.
- Emergency processing service in case of accident.
- Color-coded badges.

Look what we provide FREE:

- Telephone requests for additional badges.
- Immediate telephone notification of any exposure above a level you set.
- Additional badges shipped within 24 hours.

And you still get all the special benefits of Nuclibadge II Film Badge Service:

- Accounts may be subdivided by department.
- A variety of report formats to meet your needs.
- Exposure reports on printed cards, tape, or magnetic tape.
- Emergency processing service in case of accident.
- Color-coded badges.

Look what we provide FREE:

- Telephone requests for additional badges.
- Immediate telephone notification of any exposure above a level you set.
- Additional badges shipped within 24 hours.

And you still get all the special benefits of Nuclibadge II Film Badge Service:

- Accounts may be subdivided by department.
- A variety of report formats to meet your needs.
- Exposure reports on printed cards, tape, or magnetic tape.
- Emergency processing service in case of accident.
- Color-coded badges.
A Complete System

the Assayer I, the Isotron, the Isocord—from RADX

ASSAYER I is a dose calibrator unsurpassed in reliability, accuracy, and linearity with a unique method of isotope selection—an optical scanner. ISOTRON is the ONLY radiopharmaceutical inventory control device. You program it for your needs and you are not limited by manufacturer’s pre-programmed decay scheme. And best of all, it keeps track by chemical form, up to 20 different ones simultaneously and independently. Look at the Inventory Control ticket. Notice that it lists Tc 99m Polyphosphate, not just Tc 99m, something no other instrument can do! It also performs dose volume calculations in real time and future time. ISOCORD is a hard copy ticket printer. It produces the record shown below in triplicate for your various record keeping needs.

RADX was the first to build a printing dose calibrator. Now we offer the first system designed for radiopharmaceutical inventory control and NRC or State accountability requirements. For the complete story of the Complete System, call our toll free number 800-231-1747 (Texas customers call 713-468-9628).

RADX
P.O. Box 19164 Houston, TX 77024
Freight Savings

Kits and generators shipped together to save shipping cost and paper work.

One order assures dependable delivery of your nuclear imaging needs, shipped together for freight savings.

You also get the convenience of one-source responsibility for shipping, billing and follow-through support from the most responsive service organization in the business.

Mallinckrodt offers a full range of generator sizes and the organ-imaging kits you use most often.

Find out how Mallinckrodt's efficient shipping can save time and money in your department. Call your Mallinckrodt representative or this toll-free number.

800-325-3688 (In Missouri, 314-344-3880 collect)
For technical assistance it's 800-325-8181
(in Missouri, 314-895-2405 collect)

THE MALLINCKRODT COMMITMENT
to Nuclear Medicine

MALLINCKRODT, INC., Post Office Box 5840, St. Louis, MO 63134
Our new, totally computerized customer service system enables us to answer your questions, make additions or deletions to your film badge service, or provide any other assistance quickly and reliably.

No, you won’t be talking to a machine. We haven’t gone that far. We still have the largest customer service staff of any dosimetry service. When you call the toll-free Nuclibadge® HOTLINE number, you’ll talk with a professional service representative who’s on-line with our in-house computer containing all the details of your program.

You’ll get instant answers, speedy response to service changes, immediate attention-- not the delays, errors, call-backs, and lost correspondence inherent in manual operations.

Full computerization demonstrates the kind of investment and commitment Siemens is making to maintain leadership in this field. But it’s just one of the things that sets Siemens Radiation Monitoring Service apart from all the others.

Look what we provide FREE:
- Telephone requests for additional badges.
- Immediate telephone notification of any exposure above a level you set.
- Additional badges shipped within 24 hours.

And you still get all the special benefits of Nuclibadge II Film Badge Service:
- Accounts may be subdivided by department.
- A variety of report formats to meet your needs.
- Exposure reports on printed cards, paper tape, or magnetic tape.
- Emergency processing service in case of accident.
- Color-coded badges.

SIEMENS
Health Physics Services
2000 Nuclear Drive
Des Plaines, Illinois
60018

Call Toll-Free 800/323-6015
(In Illinois, call collect,
312/635-3387)

LET US SHOW YOU THAT WE MEAN SERVICE
The Ventilation Connection

Ventil-Con II + Vent-Al

Adds up to a complete Xenon ventilation system

When the Ventil-Con II and new Vent-Al are combined, you get a system which, for the first time, enables you to perform Xenon studies on mechanically vented (respirator) patients.

The RADX Ventil-Con II, recognized worldwide as the leading Xenon rebreathing system, was the first to offer:
- Automatic O₂ replenishment
- In-line autoclavable bacteriological filter
- Dry-rolling spirometer
- Xenon concentration meter
- Shielding equivalent to 1/8" lead
- Reuse of stored Xenon

The Ventil-Con design limits dead space to less than 25 ml, and has less than 0.2 in/H₂O resistance to normal breathing. Xenon trap with exhaust port detector/alarm is built in.

Now RADX is the first to develop the Vent-Al an accessory for the Ventil-Con, for performing Xenon studies on respirator patients. The Vent-Al may be field installed on any Ventil-Con or factory installed in a Xena-Con. Vent-Al provides electronically variable breaths/minute and breathing volumes.

Let RADX tell you more about the Ventilation Connection. Call our toll free number 800-231-1747 (Texas customers call 713-468-9628).

RADX
P.O. Box 19164    Houston, TX 77024
Thallium imaging in acute myocardial infarction

Lewis C. Becker, MD
Associate Professor of Medicine
Director, Nuclear Cardiology
The Johns Hopkins Medical Institutions
Baltimore, Maryland

One of the most significant findings to come from our clinical research over the past several years has been the observation that thallium-201 imaging, performed early after onset of symptoms, can reliably distinguish high-risk and low-risk groups of hemodynamically stable patients with acute myocardial infarction. The value of such a prognostic indicator in the management of acute MI is evident. Patients determined to be at low risk could be ambulated earlier and perhaps discharged sooner than in current practice; in the future, such patients might be placed early in a progressive-care type unit rather than be maintained in the more expensive coronary care unit.

Patients at higher risk might be found to require more intensive monitoring for even longer periods than today. And following discharge, these patients could justifiably be subjected to much closer and long-lasting followup. Most important, reliable identification of patients at high risk would permit earlier initiation of aggressive treatment directed at limiting the extent of infarction.

Predicting mortality

Our recently reported study\(^1\) covered 42 consecutive patients determined by conventional means (history, ECG, serum creatine kinase) to have suffered an acute MI. These were Killip class I or II patients—the largest group of MI patients, and those normally considered to be at relatively low risk. All 42 patients were admitted within 12 hours of onset of chest pain, and underwent thallium imaging within 15 hours of onset.

The thallium images—in the anterior, 40° LAO, and 60° LAO views—were interpreted both subjectively and by a computer-assisted quantitative technique.\(^2\) For each interpretive approach, scores for all views were summed to give a total "defect score"—the lower the score, the smaller the area of thallium defect, with a total defect score of 7 corresponding to reduction in thallium uptake involving approximately 40% of the left ventricle in at least two views. The total defect scores were then correlated with the patients' subsequent clinical course and with other clinical indices believed to have prognostic value—previous history of MI, anterior location of MI, alveolar infiltrates on admission, peak CK greater than 1,000 IU/liter, age, and sex.

Of the 42 patients, 35 survived the initial hospitalization. These survivors were followed for 6 to 20 months after discharge.

What were our results? Nonsurvivors had significantly larger thallium defects than survivors. The mean score for nonsurvivors was 14.3 vs 2.3 for survivors. In the 13 patients with a score greater than 7—ie, 40% or more involvement—the inhospital mortality was 46%; at 6 months it was 62%; and at last followup (mean 9 months) it was 92%. In the group of patients with a total defect score less than 7, the inhospital mortality was 3%; at 6 months and at last followup, it was, respectively, 7% and 7%.

These data conclusively showed that the thallium study performed within hours of admission could identify apparently stable MI patients at high-risk for mortality. In addition, when we compared the predictiveness of the thallium score with the other clinical indices—history, MI location, enzymes, etc—singly and in combination, the thallium study was significantly better.

We were, of course, very excited by our results. But, because this was a retrospective study, we felt it important to validate the findings prospectively. Over a 6-month period, we studied more than 90 consecutive patients admitted to the CCU with documented or strongly suspected MI. We applied the same scoring system and same dividing line (score 7)—and confirmed our ability to use thallium imaging to distinguish between high-risk and low-risk groups. The mortality rates of the two groups were almost identical to those established in the earlier retrospective study.
Irreversible damage and reversible ischemia

We believe the thallium study accurately predicts prognosis in MI patients because the size of the defect reflects the total hypoperfused mass of the left ventricular myocardium—both infarcted and ischemic areas. We know from observations of other investigators that the thallium defect tends to diminish with time after an acute MI. Thus the image recorded immediately after admission will show a larger defect than those recorded on serial followup over subsequent days. Our own pathologic studies have demonstrated that large thallium defects seen on post-MI images may be associated with small areas of infarction on postmortem examination.

Together, these findings strongly support the concept that areas of reduced or absent thallium on the initial post-MI images represent both ischemia and infarction, and that the "filling-in" seen on followup imaging represents resolution of ischemia due to resolution of coronary artery spasm or enlargement of coronary collaterals. Thus, the post-MI study identifies myocardium irreversibly damaged by the acute event, myocardium damaged by previous infarction, and surrounding areas of severe ischemia that are at risk for necrosis either immediately or at some future time.

Clinical implications

In our patients, the highest percentage of inhospital deaths was due to sudden pump failure—possibly due to the large total volume of compromised myocardium. Postdischarge deaths were generally related to a new ischemic event. In both of these high-risk groups, the thallium study might have helped in patient management decisions. For those patients who died while in the hospital, more aggressive support might have been indicated; those whose deaths occurred posthospitalization might have been identified as candidates for coronary artery bypass.

References


Please see following page for brief summary of prescribing information.
Thallous Chloride
TI 201

INDICATIONS AND USAGE: Thallous Chloride TI 201 may be useful in myocardial perfusion imaging for the diagnosis and localization of myocardial infarction. It may also be useful in conjunction with exercise stress testing as an adjunct in the diagnosis of ischemic heart disease (atherosclerotic coronary artery disease).

CONTRAINDICATIONS: None known.

WARNINGS: In studying patients in whom myocardial infarction or ischemia is known or suspected, care should be taken to assure continuous clinical monitoring and treatment in accordance with acceptable procedure. Exercise stress testing should be performed only under the supervision of a qualified physician and in a laboratory equipped with appropriate resuscitation and support apparatus.

Ideally, examinations using radiopharmaceutical drug products — especially those elective in nature — of women of childbearing capability should be performed during the follicular period of the menstrual cycle.

PRECAUTIONS: Data are not available concerning the effect of marked alterations in blood glucose, insulin, or pH (such as is found in diabetes mellitus) on the quality of Thallium TI 201 scans. Attention is directed to the fact that Thallium is a potassium analog, and since the transport of potassium is affected by these factors, the possibility exists that the thallium may likewise be affected.

Thallous Chloride TI 201, as all radioactive materials, must be handled with care and used with appropriate safety measures to minimize external radiation exposure to clinical personnel. Care should also be taken to minimize radiation exposure to patients in a manner consistent with proper patient management.

No long-term animal studies have been performed to evaluate carcinogenic potential.

 Adequate reproduction studies have not been performed in animals to determine whether this drug affects fertility in males or females, has teratogenic potential, or has other adverse effects on the fetus. Thallous Chloride TI 201 should be used in pregnant women only when clearly needed.

It is not known whether this drug is excreted in human milk. As a general rule nursing should not be undertaken when a patient is administered radioactive material.

Safety and effectiveness in children have not been established.

The expiration date for Thallous Chloride TI 201 is six days postcalibration.

ADVERSE REACTIONS: Adverse reactions related to use of this agent have not been reported to date.

DOSE AND ADMINISTRATION: The recommended adult (70 kg) dose of Thallous Chloride TI 201 is 1.15 mCi. Thallous Chloride TI 201 is intended for intravenous administration only.

For patients undergoing rest thallium studies, imaging is optimally begun within 20-20 minutes after injection. Several investigators have reported improved myocardial images when patients are injected in the fasting state, in an upright posture, or after briefly ambulating.

Best results with thallium imaging performed in conjunction with exercise stress testing appear to be obtained if the thallium is administered when the patient reaches maximum stress and when the stress is continued for 30 seconds to one minute after injection. Imaging should begin within 10 minutes post-injection since target-to-background ratio is optimum by that time. Several investigators have reported significant decreases in the target-to-background ratios of lesions attributable to transient ischemia by two hours after the completion of stress testing.

The patient dose should be measured by a suitable radioactivity calibration system immediately prior to administration.

Radioisotopes should be used by persons with specific training in the safe use and handling of radionuclides produced by nuclear reactor or particle accelerator and whose experience and training have been approved by the appropriate government agencies authorized to license the use of radionuclides.

HOW SUPPLIED: Thallous Chloride TI 201 for intravenous administration is supplied as a sterile, non-pyrogenic solution containing at calibration time, 1 mCi/ml of Thallous Chloride, 0.9% sodium chloride, and 0.9% of benzyl alcohol. The pH is adjusted to between 4.5-6.5 with hydrochloric acid and/or sodium hydroxide solution. Vials are available in the following quantities of radioactivity: 1, 3, 5, 10, 15, 20, and 25 picocuries of Thallous Chloride TI 201.

The contents of the vial are radioactive. Adequate shielding and handling precautions must be maintained.

Catalog Number NRP-427

May 1980

NEN New England Nuclear Medical Diagnostics Division
601 Treble Cove Rd., North Billerica, MA 01862
Call Toll-Free: 800-225-1572 / Telex: 94-0996
(In Mass. and International: 617-482-9595)

Canada: NEN Canada, 2453 46th Avenue, Lachine, Que. H8T 3C9
Tel: 514-636-4971
Europe: NEN Chemicals GmbH, D-6072 Dreieich, W. Germany, Postfach 401240
Tel: (06103) 85044 Order Entry: (06103) 81011

NUCLEAR MEDICINE REVIEW SYLLABUS
Peter T. Kirchner, M.D., Editor

The rapid growth of clinical nuclear medicine poses a formidable challenge to the physician who wants to maintain a high level of competence in all areas of nuclear medicine. To help the physician meet this challenge, the Society of Nuclear Medicine has prepared the NUCLEAR MEDICINE REVIEW SYLLABUS, a comprehensive review of the major scientific and clinical advances that have occurred since the early 1970's.

The 619 page NUCLEAR MEDICINE REVIEW SYLLABUS offers a detailed overview of 12 major topic areas in nuclear medicine. Within each chapter there is a clear, timely review of the subject and a substantial bibliography locating additional information. A 32 page index makes all of the volume's data instantly accessible.

The NUCLEAR MEDICINE REVIEW SYLLABUS has chapters on:
- Radiopharmacology
- Gastroenterology
- Instrumentation
- Genito-Urinary System
- Radiation Effects and Radiological Protection
- Hematology- Oncology
- Pulmonary
- Cardiovascular
- Radionuclide Imaging
- Central Nervous System
- Skeletal System
- Endocrinology

This highly readable guide to current practice was prepared by more than fifty recognized authorities, with each chapter written by acknowledged experts in the field.

The NUCLEAR MEDICINE REVIEW SYLLABUS will prove valuable to the practicing physician who wants to keep in touch with current clinical practice in all aspects of nuclear medicine. Those seeking certification will find the SYLLABUS extremely useful as a tool for final review.

Orders are available at $30.00 each (plus $2.50 per copy for postage and handling). All orders must be prepaid or accompanied by a purchase order. Checks must be in U.S. funds only.

Order from: Book Order Dept., Society of Nuclear Medicine, 475 Park Avenue South, New York, NY 10016.

Mail to: Book Order Dept., Society of Nuclear Medicine, 475 Park Avenue South, New York, NY 10016. Make checks payable to: Society of Nuclear Medicine, Inc.

ALL PAYMENT MUST BE IN U.S. DOLLARS.

Sugar Pasting (if postage is required)

Total $  

Send to:  
NAME  
ADDRESS  
ZIP  

THE JOURNAL OF NUCLEAR MEDICINE
"Is there anyone out there?"

The Arecibo Observatory in Puerto Rico houses the world's largest radio telescope dish. One thousand feet across, this ultrasophisticated instrument will soon be used by NASA to scan the heavens for faint radio waves which could indicate intelligent life in distant galaxies.

When it comes to diagnostic bone imaging, however, it takes more than sophisticated electronics. To help your camera produce clear, high-target-to-background bone images, you need a reliable, quality reagent like AN-MDP® from Syncor™.

AN-MDP is made from medronate and that means low soft-tissue uptake and readily demonstrated bone pathology. With only 4% to 10% remaining in circulation after two hours, time between injection and imaging is conveniently short.

Yet, AN-MDP is one medronate bone agent that meets your budgetary needs. That's because Syncor is geared toward producing high-quality nuclear imaging reagents while keeping expensive overhead down. For example, our 30-vial ECONO-PAK can allow you considerable savings on the same excellent product that is in our 5-vial kit.

Maximize your camera's true potential and minimize your costs. Start your bone imaging procedures with AN-MDP.

Syncor International Corporation
12847 Arroyo Street
Sylmar, California 91342
213/365-0655—Inside California
800/423-5620—TOLL FREE Outside California


Please refer to the brief prescribing information on the following page.
AN-MDP® (Technetium Tc 99m Medronate Kit)

For complete prescribing information, consult the package insert, a summary of which follows.

INDICATIONS AND USAGE. Technetium Tc 99m Medronate may be used as a bone imaging agent to delineate areas of altered osteogenesis.

CONTRAINDICATIONS. None known.

WARNINGS. This class of compounds is known to complex cations such as calcium. Particular caution should be used with patients who have, or may be predisposed to hypocalcemia (i.e., alkalosis).

PRECAUTIONS. Contents of the vial are intended only for use in the preparation of Technetium Tc 99m Medronate and are NOT to be administered directly to the patient. Technetium Tc 99m Medronate, as well as other radioactive drugs, must be handled with care, and appropriate safety measures should be used to minimize radiation exposure to the patients consistent with proper patient management. To minimize radiation dose to the bladder, the patients should be encouraged to drink fluids and to void immediately before the examination and as often thereafter as possible for the next 4–6 hours.

Technetium Tc 99m Medronate should be formulated within six (6) hours prior to clinical use. Optimal imaging results are obtained 1–4 hours after administration.

Carcinogenesis, Mutagenesis, Impairment of Fertility: No long-term animal studies have been performed to evaluate carcinogenic potential or whether Technetium Tc 99m Medronate affects fertility in males and females.

Pregnancy Category C. Animal reproductive studies have not been conducted on Technetium Tc 99m Medronate. It is also not known whether Technetium Tc 99m Medronate can cause fetal harm when administered to a pregnant woman or can affect reproductive capacity. Technetium Tc 99m Medronate should be given to a pregnant woman only if clearly needed. Ideally, examinations using radiopharmaceuticals, especially those elective in nature, of a woman of childbearing capability should be performed during the first few (approximately 10) days following the onset of menses.

Nursing Mothers: Technetium Tc 99m Medronate is excreted in human milk during lactation. Therefore, formula feedings should be substituted for breast feedings.

Pediatric Use: Safety and effectiveness in children have not been established.

Radiopharmaceuticals should be used only by physicians who are qualified by training and experience in the safe use and handling of radionuclides and whose experience and training have been approved by the appropriate government agency authorized to license the use of radionuclides.

ADVERSE REACTIONS. No adverse reactions specifically attributable to the use of Technetium Tc 99m Medronate have been reported.

DOSEAGE AND ADMINISTRATION. The suggested dose range for i.v. administration, after reconstitution with oxidant-free sodium pertechnetate Tc 99m injection, to be employed in the average patient (70 kg) is.

Bone Imaging: 10–20 mCi/20 mL Technetium Tc 99m Medronate. Scanning is optimal at 1–4 hours post-injection. The patient dose should be measured by a suitable radioactivity calibration system immediately prior to administration.

HOW SUPPLIED. The AN-MDP® Technetium Tc 99m Medronate Kit is supplied either as a set of 5 or 30 sterile and pyrogen-free vials. Each nitrogen-flushed vial contains in hypotonic form: medronate acid 10 mg, stannous chloride (minimum) 0.51 mg, maximum total stannous and stannic chloride 1.01 mg. The pH is adjusted with HCl or NaOH solutions prior to hypotilization. Included in each 5-vial kit is one package insert and 10 radiation labels. Included in each 30-vial pack is one package insert and 60 radiation labels. Refrigeration is not necessary. Technetium Tc 99m Medronate KItS contain no preservative. Vials are sealed under nitrogen; air or oxygen is harmful to the contents of the vials and the vials should not be vented.

Syncor International Corporation
12847 Arroyo Street
Sylmar, California 91342

CMS PROVIDES

Seven Pinhole and Rotating Slant Scintislice™ Tomography

- SOFTWARE FOR BOTH SYSTEMS
  SPEEDS FROM 3 SECONDS / SLICE
  3 DIMENSIONAL ROTATION

- COLLIMATORS
  QUAD MODE PANORAMIC 7 PINHOLE
  ROTATING BILATERAL & SINGLE SLANT

- UPDATE FROM EITHER SYSTEM

- CALIBRATION EQUIPMENT

- ON-SITE INSTALLATION and TRAINING

BILATERAL TOMOGRAPHY

- TWO ROTATIONS for SIX VIEWS
- IDEAL FOR LARGE or DEEP ORGANS

CMS
WRITE FOR LITERATURE

CARDIAC MEDICAL SYSTEMS CORPORATION
Main Office: 3710 Commercial Ave., Northbrook, IL 60062 USA
UK Branch: 60 Palmerston Pl., Edinburgh EH12 5AY, Scotland
Telephone: USA 312-564-4644, UK 031-225-3097

AN-MDP® is a registered trademark of Syncor International Corporation.
Personal Service

Knowledgeable response to your needs... right now!

Mallinckrodt has sales representatives who are strategically located throughout the country; there’s one near you. You have a representative who’s responsive to you... to answer questions, to iron out problems, to place orders.

Our representatives are easy to reach through their own individual 800 numbers and they’ll respond to your needs quickly—ever when they’re away from their phones. They check their answering services at least twice a day... you’ll usually hear from your representative within two hours, if not sooner.

For knowledgeable service and a quick response to your needs, your Mallinckrodt representative is as close as your phone. Call your representative or this toll-free number:

800-325-3688 (in Missouri, 314-344-3880 collect)
For technical assistance it’s 800-325-8131
(In Missouri, 314-895-2405 collect)

MALLINCKRODT COMMITMENT
to Nuclear Medicine

MALLINCKRODT, INC., Post Office Box 5840, St. Louis, MO 63134

© Mallinckrodt Inc. 1980
Please see complete Package Insert before prescribing; a Brief Summary is included on the following page.
The Complete System for the Study of Pulmonary Ventilation

- Single dose system.
- Simplicity of system allows for ease of administration.
- No dilution or transfer of xenon gas required.
- No expensive delivery system required.
- Reduces radiation exposure to patient and technologist.
- Eliminates risk of cross infection as may occur when reusable apparatus is employed.
- Available for daily use in most cities.
- Auxiliary lead shield and xenon valve available as accessories.

DESCRIPTION: The Xenon Xe 133-Ventilation Study System consists of a sealed frangible capsule containing 10 millicuries ±20% of Xenon Xe 133 gas at calibration time and date with less than 1% carrier xenon in air.

INDICATIONS AND USAGE: Study of pulmonary ventilation.

WARNINGS: Xenon Xe 133 should not be administered to children or to patients who are pregnant, or to nursing mothers unless the benefits to be gained outweigh the potential hazards. Ideally, examinations using radiopharmaceuticals, especially those elective in nature, of a woman of childbearing capability should be performed during the first few (approximately 10) days following the onset of menses.

Adequate reproduction studies have not been performed in animals to determine whether this drug affects fertility in males or females, has teratogenic potential, or has other adverse effects on the fetus. There are no well-controlled studies in pregnant women which allow any conclusions as to the safety of Xenon Xe 133 for the fetus. Xenon Xe 133 should be used in pregnant women only when clearly needed.

PRECAUTIONS: Xenon Xe 133 gas, as well as other radioactive drugs, must be handled with care and appropriate safety measures should be used to minimize radiation exposure to clinical personnel and to patients consistent with proper patient management.

Exhaled Xenon Xe 133 gas should be controlled in a manner that is in compliance with the appropriate regulations of the government agency authorized to license the use of radionuclides.

For complete information consult the package insert, a summary of which follows:

Xenon Xe 133-V.S.S. (Xenon Xe 133) Ventilation Study System

Description: Xenon Xe 133 gas delivery systems, i.e., respirators or spirometers, and associated tubing assemblies must be leak-proof to avoid loss of radioactivity into the laboratory environs not specifically protected by exhaust systems.

Xenon Xe 133 adheres to some plastics and rubber and should not be allowed to stand in tubing or respirator containers for such unrecognized loss of radioactivity from the dose for administration may render the study non-diagnostic.

Adverse Reactions: Adverse reactions specifically attributable to Xenon Xe 133 have not been reported.

Dosage and Administration: The recommended activity range for pulmonary ventilation studies in the average patient (70 kg) is 2 to 20 millicuries (0.03 to 0.3 millicuries/kg).

How Supplied: Each Ventilation Study System (V.S.S.) contains Xenon Xe 133 in a sealed frangible capsule containing 10 millicuries ±20% at calibration time and date stated on the label.

The sealed capsule is enclosed in a metal valve-shield which is sealed with a plastic shrink-band to prevent accidental loss of xenon during shipping. A Key is provided to remove the end plugs of the valve-shield and to turn the valve fitting which breaks the sealed capsule of Xenon Xe 133. The V.S.S. also includes a disposable filter/mouthpiece assembly and a breathing-collection bag with an attached CO₂ absorber canister.
Quality, Pride and Dedication...
The Not-So-Secret Formula That Makes Nuclear Pharmacy Inc. The Number One Centralized Commercial Nuclear Pharmacy In The World

Nuclear Pharmacy, Inc. is proud of its record and its "not-so-secret" formula of service. We are proud of our dedicated staff of more than 250 employees, including the largest number of Radiopharmacists under one banner in the world.

We look forward to serving you!

Birmingham  Atlanta  Nashville  Austin
Phoenix    Chicago  Houston  Philadelphia
San Diego  Louisville  El Paso  Miami
Anaheim    Memphis    Dallas  Van Nuys
Lubbock  Milwaukee  P.O. Box 25141

P.O. Box 25141
Albuquerque, New Mexico
(505) 292-5820  87125
a cardiac stress system
that does more and costs less
DESIGNED FOR EXERCISE IMAGING

Model
056-180

Atomic Products Corporation
ATOMLAB DIVISION • ESTABLISHED 1949
P.O. BOX 657 CENTER MORICHES, NEW YORK 11934 USA
(516) 876-1074
TWX #510-228-0449

AUDIOVISUALS IN NUCLEAR CARDIOLOGY

- SI-18 Basic Concepts in Cardiac Anatomy and Physiology by Glen W. Hamilton, M.D.
- SI-19 The Measurement of Ejection Fraction by William Ashburn, M.D.
- SI-20 Intracardiac Shunts and Cardiac Output by William Ashburn, M.D.
- SI-21 Perfusion Studies of the Ischemic Heart by Glen W. Hamilton, M.D.
- SI-22 Detection of Acute Myocardial Infarction by B. Leonard Holman, M.D.
- SI-23 Instrumentation for Nuclear Cardiology by Trevor D. Craddock, Ph.D.

Each Audiovisual kit comes complete with expert narration and carefully selected supporting visual materials. Consisting of 35 mm color slides and standard audio cassette, each kit forms a complete self-teaching package. Suitable for individual or group instruction, these units offer active learner participation to reinforce the most important concepts. Each kit has been prepared by an authority in the field, making expert instruction available to you in your home, office or hospital.

SNM Audiovisuals cost $55.00 each for members of the Society of Nuclear Medicine, $75.00 each for nonmembers. **There is a 10% discount if all six nuclear cardiology units are ordered at once.** A complete list of SNM Audiovisuals is available on request.

MAIL TO: Audiovisual Department, Society of Nuclear Medicine, 475 Park Ave., So, NY, NY 10016.

Please send the following Audiovisual units. (Check units desired.)

<table>
<thead>
<tr>
<th>Units</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SI-18</td>
<td>Basic Concepts in Cardiac Anatomy and Physiology by Glen W. Hamilton, M.D.</td>
</tr>
<tr>
<td>SI-19</td>
<td>The Measurement of Ejection Fraction by William Ashburn, M.D.</td>
</tr>
<tr>
<td>SI-20</td>
<td>Intracardiac Shunts and Cardiac Output by William Ashburn, M.D.</td>
</tr>
<tr>
<td>SI-21</td>
<td>Perfusion Studies of the Ischemic Heart by Glen W. Hamilton, M.D.</td>
</tr>
<tr>
<td>SI-22</td>
<td>Detection of Acute Myocardial Infarction by B. Leonard Holman, M.D.</td>
</tr>
<tr>
<td>SI-23</td>
<td>Instrumentation for Nuclear Cardiology by Trevor D. Craddock, Ph.D.</td>
</tr>
</tbody>
</table>

$55.00 each for members; $75.00 each for nonmembers.
Total $_____
Deduct 10% if ordering all six units $_____
Total enclosed $_____

SEND TO:
NAME ______________________
ADDRESS ______________________
______________________________ ZIP

Check or purchase order must accompany all orders. Make checks payable to the Society of Nuclear Medicine, Inc. U.S. funds only please.
Nuclear Medicine: you have a bright future.

And now, as Syncor International Corporation, we are even better equipped to contribute to your growth.

- The rest of the medical profession is counting on you for timely, accurate, non-invasive diagnostic procedures, so Syncor is bringing you a growing family of high-quality nuclear imaging kits.

- Departmental quality control is becoming increasingly important. Syncor has developed products which help maximize labeling efficiency and which allow your practitioners to determine tagging efficacy prior to patient injection.

- And with your costs escalating faster than funds, Syncor is committed to producing products — of established quality — that minimize preparation time and give you the most for your money.

Our name may be new, but we have years of experience in radiopharmaceuticals as Ackerman Nuclear, Inc. We plan to be with you for a long time to come, helping you meet the challenges and opportunities of the future.

Syncor International Corporation
12847 Arroyo Street,
Sylmar, California 91342.
213/365-0655—Inside California
800/423-5620—TOLL FREE Outside California

Syncor™ is a trademark of Syncor International Corporation.
Let us brighten your future. If you are a nuclear medicine professional, just fill out this coupon, mail it to us and we will send you a handy pocket flashlight. Small enough to fit in your pocket or purse, the light has a bright, far-reaching beam that will amaze you. For work, home or car, the pocket flashlight is yours free, just for letting us become acquainted with you. But hurry—this offer is limited to the first 1500 requests.

TO: Syncor International Corporation
12847 Arroyo Street
Sylmar, California 91342

Please send me a pocket flashlight. I am looking forward to knowing more about your products.

Name
Position
Institution
Address
City State Zip

Offer extended to nuclear medicine professionals until January 31, 1981; limit of one flashlight per original coupon.

AN-MDP® Technetium Tc 99m Medronate Kit
SULFUR COLLOID Technetium Tc 99m Sulfur Colloid Kit
AN-MAA® Technetium Tc 99m Aggregated Albumin Kit
AN-DTPA® Technetium Tc 99m Pentetate Kit
LDO® Sodium Chloride Injection U.S.P. with Low Dissolved Oxygen
TECH® Quality Control Testing System
Keep your eyes safe from radiation... comfortably and confidently.

Nuclear Pacific's optically clear Wrap Around shielding glasses provide 0.60 mm lead equivalent protection—as much radiation protection as a lead apron. Now you can confidently reduce the possibility of cataracts and still work comfortably without impaired vision. The lightweight (2.8 oz.) eyeglasses feature anti-reflection coated lenses that provide light transmission higher than standard optical glass. Quality constructed for long life, every lens is tested to assure strict conformance to FDA impact resistance requirements. In recent Dose Reduction studies*, Nuclear Pacific's Wrap Arouinds had the highest dose reduction for direct as well as peripheral radiation sources. Nuclear Pacific also offers a standard style frame and clip-ons for regular glasses. Prescription lenses are available. Remember, for 30 years Nuclear Pacific has set the standard for visibility and protection in the radiation shielding industry.


*Study available upon request.

Nuclear Pacific, Inc.
6701 Sixth Ave. S., Seattle, WA 98108
(206) 763-2170
Diagnostic Exclusivity

Technetium Tc 99m Pyrophosphate Kit...the only pyrophosphate kit indicated for gated cardiac blood pool imaging.

Mallinckrodt's Technescan PYP is the only pyrophosphate kit available that gives you the additional diagnostic capability of an advanced method for the dynamic assessment of cardiac function.

Other indications in nuclear cardiology include: use as an adjunct in the diagnosis of acute myocardial infarction.

For more information about Technescan PYP—and all the other organ-imaging kits available from Mallinckrodt—just call your Mallinckrodt representative or this toll-free number:

800-325-3688 (In Missouri, 314-344-3880 collect)

For technical assistance it's 800-325-8181

(in Missouri, 314-695-2405 collect)

See brief summary on following page.

The Mallinckrodt Commitment to Nuclear Medicine

MALLINCKRODT, INC., Post Office Box 5840, St. Louis, MO 63134
BRIEF SUMMARY

CLINICAL PHARMACOLOGY

When injected intravenously TechneScan PYP Tc-99m has a specific affinity for areas of altered osteogenesis. It is also concentrated in the injured myocardium, primarily in areas of irreversibly damaged myocardial cells.

One to two hours after intravenous injection of TechneScan PYP Tc-99m, an estimated 40 to 50 percent of the injected dose has been taken up by the skeleton and approximately 0.01 to 0.02 percent per gram of acutely infarcted myocardium. Within a period of one hour, 10 to 11 percent remains in the vascular system, declining to approximately 2 to 3 percent twenty-four hours post injection. The average urinary excretion was observed to be about 40 percent of the administered dose after 24 hours.

TechneScan PYP also has an affinity for red blood cells. When administered 30 minutes prior to the intravenous administration of sodium pertechnetate Tc-99m approximately 76 percent of the injected activity remains in the blood pool providing excellent images of the cardiac chambers.

INDICATIONS AND USAGE

TechneScan PYP Tc-99m is a skeletal imaging agent used to demonstrate areas of altered osteogenesis, and a cardiac imaging agent used as an adjunct in the diagnosis of acute myocardial infarction.

As an adjunct in the diagnosis of confirmed myocardial infarction (ECG and serum enzymes positive), the incidence of false negative images has been found to be 6 percent. False negative images can also occur if made too early in the evolutionary phase of the infarct or too late in the resolution phase. In a limited study involving 22 patients in whom the ECG was positive and serum enzymes questionable or negative, but in whom the final diagnosis of acute myocardial infarction was made, the incidence of false negative images was 23 percent. The incidence of false positive images has been found to be about 7 to 9 percent. False positive images have also been reported following coronary bypass graft surgery, in unstable angina pectoris, old myocardial infarcts, and in cardiac constrictions.

TechneScan PYP is a blood pool imaging agent which may be used for gated cardiac blood pool imaging. When administered intravenously 30 minutes prior to the intravenous administration of sodium pertechnetate Tc-99m approximately 76 percent of the injected activity remains in the blood pool.

CONTRAINDICATIONS

None.

WARNINGS

This radiopharmaceutical should not be administered to patients who are pregnant or lactating unless the information to be gained outweighs the potential hazards.

Ideally, examinations using radiopharmaceuticals, especially those elective in nature, of a woman of childbearing capability should be performed during the first few (approximately 10) days following the onset of menses.

Warning: Preliminary reports indicate impairment of brain scans using pertechnetate Tc-99m which have been preceded by bone scan. The impairment may result in false positives or false negatives. It is recommended, where feasible, that brain scans precede bone imaging procedures.

Radiopharmaceuticals should be used only by physicians who are qualified by specific training in the safe use and handling of radionuclides produced by nuclear reactor or particle accelerator and whose experience and training have been approved by the appropriate government agency authorized to license the use of radionuclides.

The TechneScan PYP Kit must be maintained at refrigerator temperature until use.

The contents of the TechneScan PYP reaction vial are intended for use in the preparation of Technetium Tc 99m Stannous Pyrophosphate. TechneScan PYP may also be reconstituted with sterile, pyrogen-free normal saline containing no preservatives and injected intravenously prior to the administration of sodium pertechnetate Tc-99m.

Sodium pertechnetate Tc-99m solutions containing an oxidizing agent are not suitable for use with the TechneScan PYP Kit.

The contents of the kit are not radioactive. However, after the sodium pertechnetate Tc-99m is added, adequate shielding of the final preparation must be maintained.

TechneScan PYP Tc 99m should not be used more than six hours after preparation.

PRECAUTIONS

As in the use of any other radioactive material, care should be taken to ensure minimum radiation exposure to the patient, consistent with proper patient management, and to insure minimum radiation exposure to occupational workers.

Bone Imaging

Both prior to and following TechneScan PYP Tc-99m administration, patients should be encouraged to drink fluids. Patients should void as often as possible after the TechneScan PYP Tc-99m injection to minimize background interference from accumulation in the bladder and unnecessary exposure to radiation.

Cardiac Imaging

Patient's cardiac condition should be stable before beginning the cardiac imaging procedure.

If not contraindicated by the cardiac status, patients should be encouraged to ingest fluids and to void frequently in order to reduce unnecessary radiation exposure.

Interference from chest wall lesions such as breast tumors and healing rib fractures can be minimized by employing the three recommended projections.

Blood Pool Imaging

TechneScan PYP should be injected by direct venipuncture. Heparinized catheter systems should be avoided.

ADVERSE REACTIONS

None.

HOW SUPPLIED

Catalog Number—094 TechneScan PYP Technetium Tc-99m Pyrophosphate Kit.

Kit Contains:

5—Stannous Pyrophosphate Reaction Vials (lyophilized) for the preparation of Technetium Tc-99m Stannous Pyrophosphate.

Reaction Vials Contains:

12.0 mg sodium pyrophosphate and 3.4 mg stannous chloride (lyophilized).

Hydrochloric acid is added for pH adjustment prior to lyophilization.

5—Radioassay Information String Tags.

Mallinckrodt Diagnostics

Mallinckrodt, Inc.
P.O. Box 5840, St. Louis, Missouri 63134
Diagnosis: normal ventilation, abnormal perfusion — pulmonary embolism

Imaging information: Instrument: Picker Model 4/15 Gamma Camera
Dose: 15 mCi Xenon 133; 3 mCi PULMOLITE
Information density: 1,000 counts/cm²; 2,000 counts/cm²

Xenon Xe 133 Gas (CALIDOSE™) Dispensing System
PULMOLITE™ Technetium Tc 99m Aggregated Albumin Kit

Please see following page for brief prescribing information.
Xenon Xe 133 Gas
(CALIDOSE®) Dispensing System

INDICATIONS: Inhalation of xenon Xe 133 gas has proved valuable for the evaluation of pulmonary function and for imaging the lungs. It may also be applied to assessment of cerebral flow.

CONTRAINdications: To date, no known contraindications to the use of xenon Xe 133 gas have been reported.

WARNINGS: This radiopharmaceutical should not be administered to pregnant or lactating women unless the benefits to be gained outweigh the potential hazards.

Radiopharmaceuticals should be used only by physicians who are qualified by specific training in the safe use and handling of radionuclides produced by the method of preparation, and whose experience and training have been approved by the appropriate governmental agency authorized to license the use of radionuclides.

PRECAUTIONS: As in the use of any other radioactive material care should be taken to insure minimum radiation exposure to the patient, consistent with proper patient management, and to insure minimum radiation exposure to occupational workers. Expired xenon Xe 133 gas should be controlled in a manner that is in compliance with the appropriate governmental agency regulations.

Xenon Xe 133 adheres to some plastics and rubber and should not be allowed to stand in tubing or respirator containers. Such unrecognized loss of radioactivity from the dose for administration may render the study nondiagnostic. Xenon Xe 133 gas delivery systems, ie, respirators or spirometers, and associated tubing assemblies must be leakproof to avoid loss of radioactivity into the laboratory environs not specifically protected by exhaust systems.

ADVERSE REACTIONS: To date, no adverse reactions based on the use of xenon Xe 133 gas have been reported.

DOSEAGE AND ADMINISTRATION: Xenon Xe 133 gas is administered by inhalation from closed respirator systems or spirometers.

The suggested activity range employed for inhalation by the average adult patient (70kg) is:

Pulmonary function including imaging: 2-30 mCi in 3 liters of air.

Cerebral blood flow: 10-30 mCi in 3 liters of air.

The patient dose should be measured by a suitable radioactivity calibration system immediately prior to administration.

HOW SUPPLIED: The xenon Xe 133 gas is supplied as part of the Calido® system, consisting of 2 ml unit dose vials and the Calido® dispenser® for shielded dispensing.

Normally vials containing either 10 or 20 mCi/vial, packed up to 5 vials per shield tube, are supplied. Vial sets containing up to 100 mCi/vial are available.

Catalog Number NRP-127  *Patent Pending  *JO 127 July 1975, Rev 1

---

PULMOLITE™
Technetium Tc 99m Aggregated Albumin Kit

INDICATIONS AND USAGE: Technetium Tc 99m aggregated albumin is indicated as a lung imaging agent to be used as an adjunct in the evaluation of pulmonary perfusion.

CONTRAINdications: Technetium Tc 99m aggregated albumin should not be administered to patients with severe pulmonary hypertension.

The use of Tc 99m aggregated albumin is contraindicated in persons with a history of hypersensitivity reactions to products containing human serum albumin.

WARNINGS: The possibility of allergic reactions should be considered in patients receiving multiple doses.

Theoretically, the intravenous administration of particulate material such as aggregated albumin imposes a temporary small mechanical impediment to blood flow which is probably insignificant in most patients. The administration of aggregated albumin is possibly hazardous in acute cor pulmonale and other states of severely impaired pulmonary blood flow.

This radiopharmaceutical preparation should not be administered to children or to pregnant or lactating women unless the expected benefits to be gained outweigh the potential risks.

Ideally, examinations using radiopharmaceuticals, especially those elective in nature, of a woman of childbearing capability should be performed during the first few (approximately 10) days following the onset of menses.

PRECAUTIONS: In cases of right-to-left cardiac shunt, additional risk may exist due to the rapid entry of aggregated albumin into the systemic circulation.

The contents of the kit are not radioactive. However, after the sodium perchentenate Tc 99m is added, adequate shielding of the final preparation must be maintained.

The labeling reactions involved in preparing the agent depend on maintaining the reduced state. Any oxidant present in the sodium perchentenate Tc 99m supply may thus adversely affect the quality of the prepared agent. Hence, sodium perchentenate Tc 99m containing oxidants, or other additives, should not be employed without first demonstrating that it is without adverse effect on the properties of the resulting agent.

The contents of the vial are sterile and non-pyrogenic. It is essential that the user follow the directions carefully and adhere to strict aseptic procedures during preparation of the radiodiagnostic.

Technetium Tc 99m aggregated albumin is physically unstable and as such the particles will settle with time. Failure to mix the vials contents adequately before use may result in non-uniform distribution of radioactivity.

It is also recommended that, because of the increasing probability of agglomeration with aging, a batch of Technetium Tc 99m aggregated albumin not be used after eight hours from the time of reconstitution. Refrigerate at 2° to 8°C after reconstitution. If blood is withdrawn into the syringe, unnecessary delays prior to injection may result in clot formation in situ.

The contents of the vial are under a nitrogen atmosphere and should be protected from air. Do not use if clumping or foaming of the contents is observed.

---

New England Nuclear
601 Trebie Cove Rd., North Billerica, MA 01862
Call Toll-Free: 800-225-1572  *Telex: 94-0996
(In Mass. and International: 617-482-9595)
Canada: NEN Canada, 2453 46th Avenue, Lachine, Que., H8T 3C9  *Tel: 514-636-4971
Europe: NEN Chemicals GmbH, D-6072 Dreieich, W Germany, Postfach 401240  *Tel: (06103) 85034  *Order Entry: (06103) 81011

August 1976
Diagnosis: pyelonephritis of right upper pole

Imaging information:
- Instrument: Ohio Nuclear Sigma 410 Gamma Camera
- Dose: 15 mCi GLUCOSCAN
- Counts/image: 800 K for first postflow images, then same time for succeeding images

Please see following page for brief prescribing information.
GLUCOSCAN
Technetium Tc 99m Glucopate Sodium Kit

INDICATIONS AND USAGE: Technetium Tc 99m Glucopate Sodium is used for brain imaging. Technetium Tc 99m Glucopate Sodium is indicated for renal perfusion imaging as an adjunct in the diagnosis, localization, and evaluation of kidney disease. It may provide useful information about renal size, shape, and position and may delineate lesions affecting renal blood flow.

CONTRAINDICATIONS: None known.

WARNINGS: The contents of the GLUCOSCAN vial are intended only for use in the preparation of Technetium Tc 99m Glucopate Sodium and are NOT to be directly administered to the patient.

Ideal examinations using radiopharmaceuticals — especially those elective in nature — of a woman of childbearing capability should be performed during the first ten days following the onset of the menses. Dehydration and/or patient positioning may result in failure to visualize urinary excretory structures in the presence of normal function. Adequate patient fluid intake and repositioning may reduce the incidence of such false positive studies.

PRECAUTIONS: Technetium Tc 99m Glucopate Sodium, as well as any radioactive agent, must be handled with care. Once sodium pertechnetate Tc 99m is added to the kit, appropriate safety measures should be used to minimize external radiation exposure to clinical personnel.

Care should also be taken to minimize radiation exposure to patients in a manner consistent with proper patient management.

The Technetium Tc 99m labeling reaction involved in preparing Technetium Tc 99m Glucopate Sodium depends on the maintenance of pH in the divalent state. Any oxidant present in the sodium pertechnetate Tc 99m employed may adversely affect the quality of the prepared agent. Thus, sodium pertechnetate Tc 99m containing oxidants should not be used without first demonstrating that it is without adverse effect on the properties of the resulting agent.

The use of bacteriostatic sodium chloride as a diluent for sodium pertechnetate Tc 99m may adversely affect the biologic distribution of the prepared agent, and its use is not recommended.

No long-term animal studies have been performed to evaluate carcinogenic potential.

Adequate reproduction studies have not been performed in animals to determine whether this drug affects fertility in males or females, has teratogenic potential, or has other adverse effects on the fetus. Technetium Tc 99m Glucopate Sodium should be used in pregnant women only when clearly needed. It is not known whether this drug is excreted in human milk. As a general rule, nursing should not be undertaken when a patient is administered radioactive material.

SAFETY AND EFFECTIVENESS: In children have not been established.

ADVERSE REACTIONS: Although infrequent, erythema has been reported in association with the use of Technetium Tc 99m Glucopate Sodium.

DOSE AND ADMINISTRATION: The recommended dose for the average (70kg) adult patient is 10-20 millicuries for both renal and brain imaging. Technetium Tc 99m Glucopate Sodium is intended for intravenous administration only.

Technetium Tc 99m Glucopate Sodium should be used within six hours after aseptic reconstitution with sodium pertechnetate Tc 99m. For optimal results, this time should be minimized. The reconstituted technetium Tc 99m should be administered as soon as possible after preparation.

Optimal results for both renal and brain imaging are obtained one hour after administration. Studies have shown that although optimal target-to-background ratios for brain lesions are obtained at two hours post-injection, there is no improvement in diagnostic efficacy after one hour.

Radiopharmaceuticals should be used by persons with specific training in the safe use and handling of radionuclides produced by nuclear reactor or particle accelerator and whose experience and training have been approved by the appropriate governmental agencies authorized to license the use of radionuclides.

* The components of the New England Nuclear GLUCOSCAN Kit are supplied sterile and non-pyrogenic. Aseptic procedures normally employed in making additions and withdrawals from sterile containers should be followed. The GLUCOSCAN vial is to be used during administration of pertechnetate solution and the withdrawal of doses for patient administration.

HOW SUPPLIED: NEN's GLUCOSCAN Technetium Tc 99m Glucopate Sodium Kit is supplied as a set of five or thirty vials, sterile and non-pyrogenic. Each vial contains in hypolzhized form: Glucopate Sodium — 200mg

Maximum Tin — 0.07mg

Stannous Chloride (min.) — 0.06mg

Prior to hypolization the pH is adjusted with hydrochloric acid and/or sodium hydroxide solution.

Store at room temperature (15°-30°C). Included in each five vial kit is one package insert and six radiation labels. Included in each thirty vial kit is one package insert and thirty-six radiation labels.

The contents of the kit vials are not radioactive; however, after reconstitution with sodium pertechnetate Tc 99m the contents are radioactive and adequate shielding and handling procedures must be maintained.

This reagent kit is approved for use by persons licensed by the U.S. Nuclear Regulatory Commission pursuant to Section 35.14 and 35.100 Group III of 10 CFR or under equivalent licenses of Agreement States.

Catalog Number NFR-180 (5 vial kit) August 1978
Catalog Number NFR-190C (30 vial kit)

OSTEOUTE
Technetium Tc 99m Midronate Sodium Kit (MDP)

INDICATIONS AND USAGE: Technetium Tc 99m OSTEOUTE may be used as a bone imaging agent to delineate areas of altered osteogenesis.

CONTRAINDICATIONS: None known.

WARNINGS: The contents of the OSTEOUTE vial are intended only for use in the preparation of Technetium Tc 99m midronate sodium and are NOT to be directly administered to the patient.

Ideal examinations using radiopharmaceuticals — especially those elective in nature — of a woman of childbearing capability should be performed during the first ten days following the onset of menses.

PRECAUTIONS: A thorough knowledge of the normal distribution of intravenously administered Technetium Tc 99m midronate sodium is essential in order to accurately interpret pathologic studies.

Technetium Tc 99m midronate sodium, as well as any radioactive agent, must be handled with care. Once sodium pertechnetate Tc 99m is added to the kit, appropriate safety measures should be used to minimize external radiation exposure to clinical personnel. Care should also be taken to minimize radiation exposure to patients in a manner consistent with proper patient management.

Since 50-75% of the administered dose is renally excreted, good patient hydration and frequent voiding for 4-6 hours post-injection will significantly reduce the bladder wall dose.

The Technetium Tc 99m labeling reaction involved in preparing Technetium Tc 99m midronate sodium depends on the maintenance of pH in the divalent state. Any oxidant present in the sodium pertechnetate Tc 99m employed may adversely affect the quality of the prepared agent. Thus, sodium pertechnetate Tc 99m containing oxidants should not be used without first demonstrating that it is without adverse effect on the properties of the resulting agent.

The use of bacteriostatic sodium chloride as a diluent for sodium pertechnetate Tc 99m may adversely affect the biologic distribution of the prepared agent, and its use is not recommended.

Adequate reproduction studies have not been performed in animals to determine whether this drug affects fertility in males or females, has teratogenic potential, or has other adverse effects on the fetus. Technetium Tc 99m midronate sodium should be used in pregnant women only when clearly needed. It is not known whether this drug is excreted in human milk. As a general rule, nursing should not be undertaken when a patient is administered radioactive material.

SAFETY AND EFFECTIVENESS: In children have not been established.

ADVERSE REACTIONS: None reported.

DOSE AND ADMINISTRATION: The recommended dose for the average 70kg adult patient is 15mCi with a range of 10-20mCi. The patient dose should be measured by a suitable radioactivity calibration system immediately prior to administration. Optimal imaging results are obtained within one to four hours after administration.

OSTEOUTE should be used within six hours after aseptic reconstitution with sodium pertechnetate Tc 99m. For optimum results this time should be minimized.

The vial contains no bacteriostat.

Radiopharmaceuticals should be used by persons who are qualified by specific training in the safe use and handling of radionuclides produced by nuclear reactor or particle accelerator and whose experience and training have been approved by the appropriate governmental agencies authorized to license the use of radionuclides.

HOW SUPPLIED: NEN's OSTEOUTE Technetium Tc 99m Midronate Sodium Kit is supplied as a set of five or thirty vials, sterile and non-pyrogenic. Each nitrogen-flushed vial contains in hypolzihed form:

Midronate Disodium — 10mg

Stannous Chloride Dihydrate — 0.85mg

The pH is adjusted to between 7.0-7.5 with hydrochloric acid and/or sodium hydroxide solution. The contents of the vials were hypolzihed under nitrogen.

Store at room temperature (15°-30°C). Included in each five (5) vial kit is one (1) package insert and six (6) radiation labels. Included in each thirty (30) vial kit is one (1) package insert and thirty-six (36) radiation labels.

The contents of the vials are not radioactive; however, after reconstitution with sodium pertechnetate Tc 99m the contents are radioactive and adequate shielding and handling procedures must be maintained.

This reagent kit is approved for use by persons licensed by the U.S. Nuclear Regulatory Commission pursuant to Section 35.14 and 35.100 Group III of 10 CFR or under equivalent licenses of Agreement States.

Catalog Number NFR-420 (5 vial kit) April 1978
Catalog Number NFR-420C (30 vial kit)

THE JOURNAL OF NUCLEAR MEDICINE
Diagnosis: hypertrophic pulmonary osteoarthropathy

Imaging information:
- Instrument: GE MaxiCamera™ 535
- Dose: 20 mCi OSTEOLITE
- Scan time: 2.5-3.0 hours postinjection
- Acquisition time: 6 minutes/view

OSTEOLITE™
Technetium Tc 99m Medronate Sodium Kit (MDP)

Please see the preceding page for brief prescribing information.
NUCLEAR IMAGES ON KODAK FILM: SHARP.
Obtaining high-quality images in nuclear medicine requires both skilled personnel and valuable time. Reason enough to record the information you require on Kodak NMB or NMC film.

**Sharp.** Kodak NMB (blue base) and NMC (clear base) films feature single-coated emulsions to eliminate parallax. Since they are orthochromatic and, therefore, sensitive to both blue and green CRT phosphors, they record all the information on blue or green cathode-ray tubes. The built-in halation control provides for the imaging of crisp sharp dots, resulting in images with clearly defined edges.

**Informative.** Whether you use a multi- or single-image format, Kodak NMB and NMC films have the "view-box" quality that no other medium can match. The inherent contrast level and excellent resolution of these films enable dot concentration patterns to image both flow and uptake studies effectively.

**Durable.** Both films are coated on a tough 7-mil Estar base. These films resist curling or cracking and can form a convenient and reliable part of a patient's record for years to come.

Kodak NMB and NMC films can be processed in 90 seconds and are available in a variety of sheet film sizes. If you would like to know more about these and other Kodak films for nuclear medicine, ask your Kodak Technical Sales Representative, or write: Eastman Kodak Company, Health Sciences Markets Division, Dept. 740-B, Rochester, New York 14650.

© Eastman Kodak Company, 1979
TECHNETIUM 99m GENERATOR
TECHNETIUM Tc 99m GENERATOR
FOR THE PRODUCTION OF SODIUM PERTECHNETATE Tc 99m

description—The Union Carbide TECHNETIUM Tc 99m Generator is a proven-proportioned solution of Sodium Pertechnetate Tc 99m in isotonic saline from elution of the 99mTc generator containing pertechnetate and sodium bicarbonate, in the case of which no drugs have been used for gel stabilization. The generator is designed with a radioactive source, a vessel containing a suitable solution, and a means for preparing and delivering the solution. The generator may be replaced by a solution containing a radioactive source and a suitable solution, or a solution containing a radioactive source and a suitable solution and a means for preparing and delivering the solution. The generator may be replaced by a solution containing a radioactive source and a suitable solution, or a solution containing a radioactive source and a suitable solution and a means for preparing and delivering the solution.

physical characteristics
Technetium Tc 99m is a radioisotope with a physical half-life of 6.02 hours. Photon that is useful for imaging studies and procedures contributing to the internal dose rates are listed in Table I. Table I. Radiation emission data

<table>
<thead>
<tr>
<th>Radiation</th>
<th>mean energy (MeV)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alpha</td>
<td>4.0 +/- 0.3</td>
</tr>
<tr>
<td>Beta</td>
<td>1.0 +/- 0.1</td>
</tr>
<tr>
<td>Gamma</td>
<td>0.8 +/- 0.1</td>
</tr>
<tr>
<td>Emission</td>
<td>1.0 +/- 0.1</td>
</tr>
</tbody>
</table>

Table II. Radiation attenuation by lead (Pb) shielding

<table>
<thead>
<tr>
<th>Thickness (in)</th>
<th>Coefficient of attenuation</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5</td>
<td>1.0</td>
</tr>
<tr>
<td>1.0</td>
<td>0.5</td>
</tr>
<tr>
<td>2.0</td>
<td>0.25</td>
</tr>
<tr>
<td>3.0</td>
<td>0.125</td>
</tr>
<tr>
<td>4.0</td>
<td>0.0625</td>
</tr>
</tbody>
</table>

Table III. Physiological chart

<table>
<thead>
<tr>
<th>Molybdenum 99</th>
<th>Tc 99m half-life 2.7 days</th>
<th>Tc 99m half-life 6.02 hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.8</td>
<td>1.0</td>
<td>1.0</td>
</tr>
<tr>
<td>1.0</td>
<td>1.0</td>
<td>1.0</td>
</tr>
<tr>
<td>2.0</td>
<td>0.5</td>
<td>0.5</td>
</tr>
<tr>
<td>3.0</td>
<td>0.25</td>
<td>0.25</td>
</tr>
<tr>
<td>4.0</td>
<td>0.125</td>
<td>0.125</td>
</tr>
</tbody>
</table>

Table IV. Generator dosimetry readings

<table>
<thead>
<tr>
<th>TECHNETIUM Tc 99m Generator</th>
<th>measurements at 8:00 AM prior to elution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Generation up to 1.410 mCi</td>
<td>Generation up to 1560 mCi</td>
</tr>
<tr>
<td>0 mCi</td>
<td>12.0 mCi</td>
</tr>
<tr>
<td>1.410 mCi</td>
<td>14.6 mCi</td>
</tr>
<tr>
<td>2.820 mCi</td>
<td>16.2 mCi</td>
</tr>
<tr>
<td>4.220 mCi</td>
<td>17.8 mCi</td>
</tr>
<tr>
<td>5.620 mCi</td>
<td>19.4 mCi</td>
</tr>
<tr>
<td>6.020 mCi</td>
<td>20.0 mCi</td>
</tr>
</tbody>
</table>

Table V. Elution radiation dosimetry

<table>
<thead>
<tr>
<th>TECHNETIUM Tc 99m Generator</th>
<th>activity (mCi)</th>
</tr>
</thead>
<tbody>
<tr>
<td>200 mCi</td>
<td>200 mCi</td>
</tr>
</tbody>
</table>

First Elution
1. Prepare generator system and accessories from carton.
2. Lift hinged cover exposing dispencer end. Remove protective cap from dispencer end and attach sterile needle—REMOVE PLASTIC NEEDLE COVER (Figure 2). Return cover to closed position.
3. Place an elution vial in the elution shield (Figure 1) and clean septum of elution vial with an anti-septic swab.
Position elution shield on dispensing platform (Figure 3).
4. Rotate fluid path shut off valve several full turns counterclockwise until valve is located on left side of generator.
5. Place elution shield to far left position (Figure 4). The dispensing needle will pierce the septum of the evacuated elution vial. The elution will occur (Figure 5).
6. Step away to reduce your radiation exposure. Allow 3 to 5 minutes for elution.

NOTE: If vacuum in elution vial is lost, i.e., no eluate pressurized against septum, reinsert the needle and allow to elute an additional 2 to 3 minutes.

7. When elution is complete, slide elution shield to far right position. Place elution shield on dispensing platform (Figure 6).
8. Replace dispensing needle with sterile needle with plastic cover in place. Do NOT REMOVE COVER FROM NEEDLE until decreased radiation level.

Subsequent elutions
1. Lift hinged cover exposing dispencer needle. Remove plastic needle cover from dispencer needle and discard. Return cover to closed position.
2. Repeat steps 3, 6, 7, 8 in sequence.
3. If elution of the larger size elution vial, remove the spacer in the elution shield and replace with the spacer described in the procedures.

radiochemical purity—The radiochemical purity of the Sodium Pertechnetate Tc 99m distributed uniformly in the total body of subjects not pretreated with blocking agents (such as 50% x-ray contrast medium) is 99.5% or greater for 99mTc. For placentation localization studies when a maximum dose of 3 mCi is administered, the radiochemical purity equilibrated between maternal and fetal tissues.

Table IV. Radiation dosimetry readings

<table>
<thead>
<tr>
<th>TECHNETIUM Tc 99m Generator</th>
<th>measurements at 8:00 AM prior to elution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Generation up to 1.410 mCi</td>
<td>Generation up to 1560 mCi</td>
</tr>
<tr>
<td>0 mCi</td>
<td>12.0 mCi</td>
</tr>
<tr>
<td>1.410 mCi</td>
<td>14.6 mCi</td>
</tr>
<tr>
<td>2.820 mCi</td>
<td>16.2 mCi</td>
</tr>
<tr>
<td>4.220 mCi</td>
<td>17.8 mCi</td>
</tr>
<tr>
<td>5.620 mCi</td>
<td>19.4 mCi</td>
</tr>
<tr>
<td>6.020 mCi</td>
<td>20.0 mCi</td>
</tr>
</tbody>
</table>

Table V. Elution radiation dosimetry

<table>
<thead>
<tr>
<th>TECHNETIUM Tc 99m Generator</th>
<th>activity (mCi)</th>
</tr>
</thead>
<tbody>
<tr>
<td>200 mCi</td>
<td>200 mCi</td>
</tr>
</tbody>
</table>

storage

Molybdenum 99 breakthrough test
1. Determine the equivalent TECHNETIUM Tc 99m value for a Cobalt Co 57 standard by multiplying the number of milliCi of Cobalt Co 57 standard by the appropriate equivalent factor. The equivalent value of Cobalt Co 57 for the standard used need only be decayed daily for use as a secondary standard.
2. Place the standard in the chamber and record amp readings.
3. Transfer the TECHNETIUM Tc 99m sample from the shield to the chamber. Record the amp reading.
4. Calculate activity: x milliCi = amps of Tc 99m Sample / amps of Co 57 std. = activity in mCi (Figure 7). The mCi of Cobalt Co 57 used are 5 microcuries per human dose at the time of injection.

generator dosage
- 1. Determine the equivalent TECHNETIUM Tc 99m value for a Cobalt Co 57 standard by multiplying the number of milliCi of Cobalt Co 57 standard by the appropriate equivalent factor. The equivalent value of Cobalt Co 57 for the standard used need only be decayed daily for use as a secondary standard.
- 2. Place the standard in the chamber and record amp readings.
- 3. Transfer the TECHNETIUM Tc 99m sample from the shield to the chamber. Record the amp reading.
- 4. Calculate activity: x milliCi = amps of Tc 99m Sample / amps of Co 57 std. = activity in mCi (Figure 7). The mCi of Cobalt Co 57 used are 5 microcuries per human dose at the time of injection.
INCORPORATE THE FOLLOWING ADVANTAGES:

- **CINTICHEM® TECHNETIUM 99m GENERATORS** come in 40 activity and day of calibration combinations, which can satisfy the range of activity needs for any size lab.

- Unique horizontal elution procedure increases ease of use and eliminates needle-vial alignment problems.

- Simple one-step elution. No charging of the column is necessary. Column does not have to be dried after each elution.

- A new sterile needle is utilized for each elution, reducing the chances of a septic or pyrogenic situation occurring in routine clinical usage. This method offers an advantage compared to competitive dry column systems where the needle assembly is used for the life of the product.

- Evacuated elution vials are available in 5 cc, 10 cc, and 20 cc volumes, allowing you to optimize the elution concentration to meet your needs.

- Optimum shielding design minimizes radiation to personnel and to work areas, maximizes protection with minimum weight.

- Rigid Quality Control testing, which includes an elution check on each Generator, assures that your UNION CARBIDE CINTICHEM® TECHNETIUM 99m GENERATOR meets our high internal specifications. Our experience obtained in over 19 years of involvement in Nuclear Medicine assures you of the highest quality product possible.

- **CINTICHEM® CUSTOMER SERVICE** is readily accessible on our toll free telephone numbers. Personnel in this department have in-depth backgrounds covering the research, development, technical, and clinical application aspects of Nuclear Medicine. CINTICHEM® TRAFFIC, with over 19 years of experience in shipping radioactive materials, provides you with optimum delivery service and support.
1 Union Carbide Nuclear Products Research Nuclear Reactor where radiochemicals such as Mo 99, Xe 133, I 125, and I 131 are manufactured.

2 Self-photograph of Union Carbide's 5 megawatt Research Nuclear Reactor in operation. This reactor is used to produce high specific activity fission Mo 99 for use in CintiChem® Technetium 99m Generators.

3 Research Nuclear Reactor control station, where our safe operating record of over 19 years is maintained by highly skilled and experienced Reactor Operators.

4 Radiochemical hot cells shielded with 4 feet of high density concrete and 4 feet of high density lead glass. High specific activity fission Mo 99 is prepared from reactor targets in these hot cells by skilled personnel using manipulators. The unique process used in the preparation of the Mo 99 is patented by Union Carbide for use in your CintiChem® Technetium 99m Generator.

5 One of radiopharmaceutical clean-room hot cells at Sterling Forest where Union Carbide CintiChem® Technetium 99m Generator columns are loaded with Sodium Molybdate solution by a unique proprietary process. This process provides for extremely pure eluate and high yields from your CintiChem® Technetium 99m Generator. The columns are then autoclaved to assure sterility.

6 Part of the clean-room in which the final CintiChem® Technetium 99m Generator assembly is performed.

7 Rigid Quality Control testing, which includes an elution check on each Generator, assures that your CintiChem® Technetium 99m Generator meets our high internal specifications. Our experience obtained in over 19 years of involvement in Nuclear Medicine assures you of the highest quality product possible.

8 CintiChem® Technetium 99m Generators coming off the production line and on their way to our customers.

9 Union Carbide Nuclear Products CintiChem® Technetium 99m Generator and CintiChem® diagnostic kits, both manufactured at the same Sterling Forest site, when used together can provide the optimum solutions to your imaging needs... FROM ATOM TO IMAGE.
NUCLEAR PRODUCTS
Shielded Elution Transfer Point

Rapid Elution Vial-Needle Engagement Reduces the Radiation Exposure Time Factor

Elution Transfer Point Shielded Hood Maximizes Radiation Protection During the Elution Process Itself

"Automatic" Elution Vial-Needle Alignment Eliminates the Need for Direct Eye Exposure

Union Carbide...involved in nuclear medicine for over 19 years

From Atom to Image

Union Carbide Corporation • P.O. Box 324 • Tuxedo, New York 10987
For product information call toll free (800) 431-1146. In N.Y.S. call (800) 942-1986
PRESENTING THE DOSE CALIBRATOR WITH A GREAT FUTURE.

Now there's another innovation in our CRC-30 radioisotope calibrator. Capintec's FUTURE-DOSE adds a new dimension to calibration technology. It lets you supply precalibrated doses for specific injection times. Lets you plan injection schedules a week in advance or calculate dose requirements for seven radioisotopes scheduled up to six months in advance. Naturally, a printed record is made available for all these calculations. With the addition of this new Capintec technology, you have a complete picture of every phase of dose calibration. 

What's more, with a CRC-30 calibrator or a CRC-U upgrade you can enjoy the most advanced automated assay capabilities — dose computation, isotope inventory control, radiochemical purity analysis. You'll have complete permanent printed records including 99mTc assay records and injection site records. In addition, you'll be able to meet NRC or state requirements for accountability. Importantly, keeping your department operating as controls get tighter.

Why wait? Now's the time to replace your department's radioisotope dose calibration system (or upgrade your Capintec system) with the best selling, most respected, most capable equipment, from Capintec.

Capintec, Inc.,
136 Summit Avenue,
Montvale, NJ 07645,
Toll Free (800) 631-2557,
In New Jersey (201) 391-3930,
Telex 642375 CAPINTEC MTE.

Capintec, Inc.,
The Measure of Excellence
Stressing your needs... and your patients!

Hi-Lo Cardiac Stress Imaging System

A sensitive design for a sensitive test. The 8407 Hi-Lo stress system's "drop-leaf" ergometer is essential for radionuclide imaging with large field-of-view cameras. Drop the leaf for that needed margin of safety between patient and camera head—even with standard or mobile cameras.

Just one example of EDC's response to clinical problems—design solutions.

With your patient in a supine position, you may image continuously during myocardial stress perfusion scintigraphy or radionuclide exercise ventriculography. Add patient participation and eliminate incessant directions via a color-coded meter that allows self-monitoring of pedal speed.

A more relaxed, better-imaged patient. It adds up to better medicine.

The 8407 control console displays actual workload, pedal speed and elapsed time. Optional automatic heart-rate-control-of-workload enables the clinician to select the specific, individual heart rate at which cardiac stress imaging will be conducted.

The versatile table can be used for other nuclear imaging studies, radiology and ultrasound. Image from above or below table. Vary patient position—supine or sitting.

"Connect-able" Unit

To stay current and within your budget, attach the 8414 modular stress imaging unit to your present table for use in nuclear imaging or cardiac catheterization. The "Connect-able" includes multi-position ergometer and electronic control console with all options. Specially-designed casters provide easy mobility as well as rigid locking power.

EDC stress imaging systems... for the progressive nuclear medicine department... for the cardiologist who demands the diagnostic sensitivity of stress imaging.

EDC Engineering Dynamics Corporation
120 Stedman Street
Lowell, Massachusetts 01851
Tel. (617) 458-1456
Get BOTH…and all positions between

Erect stress test position.

Supine stress test position. Far side of table is unobstructed to easily accommodate a gamma camera.

With this

Nuclear Cardiology Stress System*

- Motorized patient positioning.
- Compatible with all cameras.
- Motion-free for high resolution.
- Converts to standard imaging table.

Here is the most versatile, easy-to-operate, stress imaging table available. It permits radio-nuclide imaging under stress in ANY position, from supine to upright. Just flip a switch, and the patient is moved effortlessly to the desired position. Unlike with other stress tables, you are not restricted to supine imaging.

Whatever your nuclear cardiology requirements, this unique system fills them quickly and easily…full gamma camera clearance, complete mobility, motion-free stability, positive (but comfortable) patient restraints, unobstructed access to the patient and controls, choice of Collins or Quinton ergometers, and much more. The unit can even be used for conventional imaging.

Send for full details.
Ask for Bulletin 2891-B

VICTOREEN
NUCLEAR ASSOCIATES
100 Voice Road
Carle Place, N.Y. 11514
(516) 741-6360

*Patent Pending
A study by Dr. J. Anthony Parker,* Harvard Medical School, found that radionuclide ventriculography with the EDC 30° slant hole collimator provides "an accurate measure of ejection fraction at equilibrium and a qualitative assessment of regional changes in ventricular volume."

Refined resolution of the cardiac apex is obtained in the RAO view.

Other applications of the slant hole collimator include imaging of the spleen and posterior cranial fossa.

The EDC slant hole can be mounted on any commercial Anger scintillation camera. Rotatability of the slant hole inserts facilitates correct positioning. Computed tomography is made possible via indexing of the collimator with detents at up to 24 angles.

Other collimators available from EDC: Seven Pinhole, Bifocal Diverging, Div/Con, Parallel Hole.

EDC collimators . . . To improve your image and your patients'. Write or call EDC for further information:

Engineering Dynamics Corporation
120 Stedman Street
Lowell, Massachusetts 01851
Tel. (617) 458-1458

We can't say who we are -

but we can give you the first and only tried, tested and trusted computerised emission tomography system, fully operational in 24 of Europe’s leading hospitals for 2 years.

A system which can give you:

- 3 rotation modes
- Automatic calibration
- Attenuation correction
- Image enhancement
- Colour displays
- Coronal and sagittal sections at any angle to the transversal plane
- ECG synchronised triggering

In short, a diagnostic tool which was described by our clients as “useful” before they used it, and “essential” ever since.

Interested?
If you’d like more information, please write to the box number below, and we’ll be only too happy to send you more details (including our name!):

Please direct inquiries to:

Box #203
Society of Nuclear Medicine
475 Park Avenue South
New York, NY 10016
Elution Flexibility

4 vial sizes for one-step elution & dilution.

With a Mallinckrodt generator, you can elute 5, 10, 20 or 30 ml volumes with no time-consuming dilutions. And you don’t have to load saline vials, so there’s less exposure time.

When generator activity is high, simply use a larger vial. By use of the proper size vial, the internal saline reservoir automatically provides the proper volume for the concentration you need. Saves preparation time, minimizes handling and reduces contamination risk. And eluting flexibility is part of every package because all the vial sizes you need are available at no extra charge. Just let us know the sizes you need.

Find out more about the generator that gives you a choice of elution volumes with no extra steps. Call your Mallinckrodt representative or this toll-free number.

800-325-3688 (In Misisouri, 314-344-3800 collect)
For technical assistance it’s 800-325-8181
(In Misisouri, 314-895-2405 collect)

THE MALLINCKRODT COMMITMENT

to Nuclear Medicine

MALLINCKRODT, INC., Post Office Box 5840, St. Louis, MO 63134

© Mallinckrodt Inc., 1980
PLACEMENT

POSITIONS OPEN

NUCLEAR MEDICINE TECHNICIAN-Registered or registry-eligible technician for full time fixed or 410-hour acute care hospital. Expanding section with nuclear cardiology. Contact: Personnel Department, St. Mary's Hospital, 900 Lake Shore Drive, Decatur, IL (217) 429-2966.

NUCLEAR MEDICINE TECHNICIAN Two positions available at Vermont Administration Medical Center, Bennington, Vermont. Affiliates with the University of California, San Francisco, Medical School. Applicants must possess baccalaureate degree with major in nuclear science, physics, mathematics, computer science, chemistry, health or biological science with at least 12 semester hours of nuclear medicine courses. They must be registered Nuclear Medicine Technicians or certified by the Society of Nuclear Medicine. Starting salary ranges from $15,193 to $16,826 based on years of experience. Fringe benefits include regular pay increases, nine paid holidays, 13 days vacation, and low-cost health and life insurance. Must be a U.S. citizen. Equal Opportunity Employer. For information contact: Juan J. Toyota, M.D., Chief, Nuclear Medicine, Vermont Administration Medical Center, 35 E. Clouton Avenue, Farnham, VT 05736. Phone: (201) 252-6100, ext. 237.

NUCLEAR MEDICINE TECHNICIAN Vacancy exists for registered technologist with experience in progressive department. Must have a working knowledge of latest NISI scanning and radioimaging equipment operations. Good salary and superior benefits. Send resume or contact Director, Employee Relations, University Community Hospital, 3100 E. Fletcher Avenue, Tampa, FL 33612.

NUCLEAR MEDICINE TECHNICIAN Full-time positions available at Vermont Administration Medical Center, Barre, VT. This is a teaching hospital affiliated with the University of Vermont Medical Center. These positions are located 6 miles north of Barre with easy access to the northern Vermont area. A Nuclear Medicine position is also available at Fletcher Allen Memorial Hospital, Burlington, VT. Send resume or contact Personnel Service, VAMC, Barre, VT 05641, or call (201) 252-6080, ext. 221. Equal Opportunity Employer.

NUCLEAR MEDICINE TECHNICIAN Opportunity for a registered or registry-eligible technologist in a recently expanded department which has a School of Nuclear Medicine. Equipment includes: Searle and Ohio nuclear cameras; whole body table; digital Gamma-2; cardiac computer; Reticulocyte Scanner. 250-bed regional medical center, 125 miles south of St. Louis. A university city of 40,000. Contact: Sharon, Personnel Department, St. Francis Medical Center, 211 St. Francis Drive, Cape Girardeau, MO 63701, or call collect, (314) 651-6152. E.O.E.

NUCLEAR MEDICINE SUPERVISOR St. Luke's of Milwaukee, a 600-bed acute care hospital is looking for a supervisor in our large Nuclear Medicine department. We are involved in all phases of Cardiac Scanning. You will be responsible for the day to day operation of our department which includes the supervision of the technologist staff in this area. The ideal candidate will be a Registered Nuclear Medicine Technologist with at least 3-4 years of experience in Nuclear Medicine technology and be a definite asset. St. Luke's is the largest private hospital in the state of Wisconsin located in a residential area of Milwaukee. The city itself offers many opportunities both professionally and recreationally. For further information about the position, please contact Colleen Gollon. Call collect, (414) 647-5861. St. Luke's Hospital, 2900 W. Oklahoma Ave., Milwaukee, WI 53215. An Equal Opportunity Employer.

NUCLEAR MEDICINE RESIDENCY Opportunity exists for an A.A.M.A. approved program affiliated with George Washington University, Washington, DC. The one year residency is a 700-bed general medical and surgical hospital. The program includes training in Radionuclide in-vivo and in-vitro computer tomography as well as diagnostic ultrasound. At least two years of prior training in radiology, internal medicine or pathology is required. Equal Opportunity Employer. Contact: B.J. Sauerbrunn, M.D., Chief, Nuclear Medicine Service, VA Medical Center, 30 Irving St., N.W., Washington, D.C. 20422.

NUCLEAR MEDICINE RESIDENCY—Registered or registry-eligible to join seven other technologists in a progressive Nuclear Medicine Department. PDP-11 DEC computer for cardiovascular Nuclear Medicine studies. No radioummunooassay. Send resume to: Personnel, L P O D , Allegheny General Hospital, 320 East North Avenue, Pittsburgh, PA 15212.

NUCLEAR MEDICINE TECHNICIAN—We are seeking a staff technician for our 560-bed Medical Center in Central Illinois. Proficiency required in imaging instrumentation, quality control and radiopharmaceutical preparation. No in-vitro experience required. The Department of Nuclear Medicine is on the progressive level in stationary and mobile battery systems and computer capabilities. We offer excellent benefits and salary ($30,695 - $52,600) with additional for overtime and emergency call coverage. Send resume in confidence to: Employment Manager, Methodist Medical Center, 1616 Glen Oak Ave., Peoria, IL 61636. (309) 672-5554. Equal Opportunity Employer.

NUCLEAR PHARMACIST, PHARMACON Nuclear, Inc. presently has positions open for radiopharmacists in the Southeastern United States. We offer excellent fringe benefits and salaries commensurate with experience. If interested, contact: Myron Wexler, President, Pharmacan Nuclear, Inc., 811 N.W. 33 St, Miami, FL 33122 or call (305) 592-0720.

NUCLEAR MEDICINE TECHNICIAN Immediate, excellent opportunity for an experienced registered or registry eligible technologist. Will work in large department of a 700-bed General Teaching Hospital which is affiliated with the Southwestern Medical School. The Department has a full-time Nuclear Pharmacists, new GE Maxi-II, 2 Standard Cameras and computer. Associated with research facilities in Radiology and Pharmacology. Position offers potential for advancement and provides an interesting opportunity with a busy but not boring atmosphere for a dedicated technologist. Excellent employee benefits and opportunities. Submit credentials to: Mr. Warren Garfield, Director of Personnel, Veterans Hospital of Dallas, 6200 Walnut Hill Lane, Dallas, TX 75231.

NUCLEAR MEDICINE TECHNICIAN—Staff positions available immediately in central nuclear pharmacies located throughout the United States. Pharmacists with nuclear pharmacy experience preferred. Also good opportunities for management oriented appointments. Excellent fringe benefits packages. Salary commensurate with experience. Send resume and salary history to Personnel Department, Nuclear Pharmacy, Inc., P.O. Box 25141, Albuquerque, NM 87125, or call (505) 292-5820. EOE.

THE HARRIS COUNTY HOSPITAL DISTRICT, located in Houston, Texas, the most expansive city in the Southwest, has an immediate full-time position for a Research Biologist in the Nuclear Medicine Department of Ben Taub General Hospital, a 300-bed acute care hospital. The successful candidate must have one year of nuclear medicine experience and the ability to perform a variety of technical duties including autoradiography, computers, image processing, and radiopharmaceuticals. By applying now you will be assured you will be considered for the position when it becomes available. Contact: Dr. Warren E. Overby, Director, Nuclear Medicine Department, Ben Taub General Hospital, 3000 Ben Taub Loop, Houston, Texas 77030. (713) 791-7600. An Equal Opportunity Employer. M/F/H.

TECHNOLOGIST JOBS—STAFF, CHIEF, RIA, computer, etc.—are available throughout the country immediately and in the future. If you are concerned with the present and you are looking for a change, contact National Technologist Referral Service for confidential and immediate referral. (212) 274-6003, 509 Langley Ave., West Hempstead, NY 11552.

NUCLEAR MEDICINE TECHNICIAN—Registered or eligible. Are you interested in moving to Houston? Call collect today! (713) 791-2273. Talk to Mrs. Smith at Harris County Hospital. Opportunities at St. Luke's Episcopai Hospital, Texas Children's Hospital and the Texas Heart Institute. We have progressive bas, as well as opportunities in both the in-vitro and in-vivo areas. Basic science and clinical exposure including in-vitro studies. Active staff with opportunity for independent research. Contact: Richard A. Holmes, M.D., Chief Medicine, University of Colorado Hospital Medical Center, Columbus, Ohio 43212. (314) 882-2541.
STAFF PHYSICIAN AND RESIDENCY position. Available at Walter Reed Army Medical Center, Washington, D.C. Applications are invited for residency and full time staff/faculty position in Nuclear Medicine. Walter Reed is a new 1200-bed teaching hospital with "world wide" referral and university affiliation. The Nuclear Medicine Service offers an outstanding experience in all aspects of Nuclear Medicine. The Service performs 12,000 clinical imaging procedures, 80,000 radiopharmaceuticals, and 100 treatments each year. A new Nuclear-Cardiology laboratory is available with state-of-the-art exercise, camera and computer capabilities. Both clinical and animal research facilities are available. An active two year residency program (with two positions available each year) offers an extensive training experience leading to Nuclear Medicine board eligibility. Successful candidates for the staff position will join two other staff physicians, two radiopharmacists, physician and large support team. Applications for residency will be considered for the training program beginning July 1982 and should be submitted by September 1981. The staff physician would receive an academically competitive salary with fringe benefits based on previous experience. Faculty appointment commensurate with experience is available with affiliated university. Residents qualify for a minimum salary of $25,000 and with specialty board eligibility $38,000 annually. Please contact Douglas Van Nostrand, M.D., D.C. of Nuclear Medicine Service, Walter Reed Army Medical Center, Nuclear Medicine Service, Washington, D.C. 20012, Telephone: (202) 576-1186.

FULL-TIME POSITION IMMEDIATELY available for experienced Nuclear Medicine Technologist in a 116-bed acute care hospital with active out-patient imaging services. Department equipped with two cameras, including brand new Technicare wide field of view camera and whole body table. Excellent opportunity for technologist who wishes to live in a beautiful east Florida coastal community 15 miles south of Daytona Beach, offering year-round sun-filled living. Competitive salary and liberal benefits. Contact Mr. Wayne Pearson at (904)427-3401 or write Fish Memorial Hospital, 401 Palmetto Street, New Smyrna Beach, Florida 32069.

RADIONUCLIDE NUCLEAR MEDICINE Seeking a fifth diagnostic technologist. Must have special competence in nuclear medicine including cardiac, to head nuclear medicine section of a 35-physician multispecialty group practice with two large newly and fully equipped offices in suburban Detroit. Will participate also in general radiology. Immediate opening. Contact: Harold J. Daiches, M.D., Woodland Medical Group, 22341 W. Eight Mile Rd., Detroit, MI 48219. (313) 338-4700, ext. 266.

NUCLEAR MEDICINE TECHNOLOGIST Registered or registry eligible nuclear medicine technologist. This is a challenging and dynamic department and is equipped with an LEM, and LFOV, and ON 400 and three DEC Gamma II computers. This position will provide an interesting opportunity for a dedicated technologist. Contact Royal Davis Jr. Dr. S. Treves, Division of Nuclear Medicine, Children's Hospital Medical Center, 300 Longwood Ave., Boston, MA 02115 or call (617) 732-7510. An affirmative Action/Equal Opportunity Employer.

NUCLEAR MEDICINE TECHNOLOGIST Position available for registered or registry eligible technologist in a progressive 561-bed hospital. The Nuclear Medicine Department performs a full range of RIA and imaging procedures, including nuclear cardiology. The department has the latest in computer systems, a full-time Medical Physicist on staff, and an expanding continuing education program. We offer an excellent benefit package and competitive salary. For more information on joining one of Kansas City's largest health care teams, contact Charlotte Ament, Nuclear Medicine Department, Research Medical Center, 2316 East Meyer, Kansas City, MO 64112 or call (816) 276-4235.

NUCLEAR MEDICINE—DIAGNOSTIC Ultrasound Physician (ABNM) to join one full-time and one part-time physician in multi-hospital practice in a major Pacific Northwest city. Reply: Frederick N. Hegge, M.D., Department of Nuclear Medicine and Diagnostic Ultrasound, Emanuel Hospital, 2801 North Gantenbein Ave., Portland, OR 97227.

NUCLEAR MEDICINE TECHNOLOGIST Full-time position for registered Nuclear Medicine Technologist in University Medical Center one-year old facility. Full range of in-vivo and in-vitro procedures. Five gamma cameras, including mobile with on-board computer and computer interfaced to stationary cameras. Base salary range: $15,626 per year. Good benefits. Contact Sara Jane Davis, CMNT, Supervisor, Division of Nuclear Medicine, University of Kansas Medical Center, 2015 W. 39th Street, Kansas City, MO 66103. Telephone, (913) 588-6843.

POSITIONS WANTED


NUCLEAR MEDICINE PHYSICIAN, ABNM, ABR, ABR (Nuclear Radiology), seeks position as director of nuclear medicine department, preferably Midwest hospital. Extensive background in developing nuclear medicine department, administration, imaging, RIA, computers and nuclear cardiology. Reply Box 202, Society of Nuclear Medicine, 475 Park Ave., So., New York, NY 10016.

GROW WITH WESLEY—Nuclear Medicine Technologist/Technician

NOW: 715-bed medical center needs Technologist or Technician, registered or registry-eligible. Rapidly expanding Nuclear Medicine Dept.'s has 5 cameras, 2 whole-body imagers, MD computer; operates a fully accredited school for NMT.

SUPERIOR BENEFITS. Wide choice of working hours. Evenings, weekends pay shift and weekend differentials. Vacation, holidays, well pay/sick pay, insurance, Wellness program. Bus service, free parking. Day care available 6 a.m. to midnight.

WE NEED YOU NOW! Contact our Supervisor Nuclear Medicine:

Roy Aldridge CNMT
Wesley Medical Center
550 N. Hillsdale
Wichita, Kansas 67214
(316) 688-2844 or 688-2841

Bachelor of Science Degree

The University of Nevada Las Vegas offers a Bachelor of Science Degree to individuals registered in Radiography, Radiation Therapy or Nuclear Medicine. Technologists who have an Associate of Science Degree in their respective technological discipline, enter the program as a junior. Hospital trained registered technologists are eligible to challenge up to 30 academic credits.

Students may choose to major in either the Professional Specialization (Administration, Angiography or Education) or Nuclear Medicine Option. The number of clinical positions available limits enrollment in the Nuclear Medicine and Angiography classes.

For more information write: Department of Radiologic Technology, College of Allied Health Professions, University of Nevada Las Vegas, 4506 Maryland Parkway, Las Vegas, NV 89154.

Deadline for entrance into the Fall Semester is approximately the first of July. Deadline for the Spring Semester is approximately the middle of December.

UNIVERSITY OF NEVADA-LAS VEGAS

The University is an equal opportunity employer.
TECHNOLOGIST
Develop your professional talents within the surroundings of the Windy City... Our teaching hospital is looking for a registered or registry eligible technologist to work in our growing nuclear medicine department. MacNeal Memorial Hospital is conveniently located close to both the Stevenson and Eisenhower expressways with the Burlington at our front door and we’re only minutes away from the Loop.

We offer professional growth along with an excellent salary, and a liberal benefit program which includes 100% tuition reimbursement. Contact Personnel:

795-9100 Ext. 3333
MacNeal Memorial Hospital
3249 S. Oak Park Ave.
Berwyn, IL 60402
Equal Employment Opportunity M/F

RESIDENCY IN NUCLEAR MEDICINE
Two-year approved program offering broad clinical experience including tertiary care and community hospitals; oncology and pediatrics; ultrasound and CT; strong basic science teaching; radiation safety; central radiopharmacy and RIA; opportunity for research; an integrated program at State University of New York at Buffalo School of Medicine; available July 1, 1981.

Contact: M.A. Bender, M.D. Program Director, Dept. of Nuclear Medicine, Roswell Park Memorial Institute, 666 Elm Street, Buffalo, NY 14263; or M. Blau, Ph.D., Chairman, Dept. of Nuclear Medicine, SUNY/Buffalo, 3495 Bailey Avenue, Buffalo, NY 14215.

NUCLEAR MEDICINE TECHNOLOGIST
Immediate full-time position available for a Registered or Certified Nuclear Medicine Technologist in a modern 358-bed general acute care hospital. Emphasis on Nuclear Imaging, Stress Thallium Myocardial Imaging and Graded Stress Cardiac Blood Pool Studies.

Equipment: Two 10" Ohio Nuclear Cameras, Ohio Nuclear LFOV and Rectilinear Scanner and Multi-terminal Ohio Nuclear 450 VIP Computer System.

Good salary and fringe benefits. Contact: Doug Cheatham, Wadley Hospital, 1000 Pine Street, Texarkana, TX 75501. (214) 794-7334.

NUCLEAR MEDICINE TECHNOLOGIST
Full-time position available in downtown private office outfitted with modern radiographic, fluoroscopic, ultrasound, CT and nuclear imaging equipment.


NUCLEAR MEDICINE TECHNOLOGIST
Riverside Hospital, a 641-bed acute care facility, located in the beautiful and historic tidewater area of Virginia, currently has a full-time position available for a nuclear medicine technologist. This is an excellent opportunity to become an integral member of a progressive and growing department.

Qualified candidates must be registered or eligible by ARRT or NMTCB. Excellent salary and benefits, as well as relocation assistance offered. Resumes may be submitted to Michael D. Lulof, Personnel Department, Riverside Hospital, 500 J. Clyde Morris Blvd., Newport News, VA 23601 or call collect (804)599-2025.

RIVERSIDE HOSPITAL

UNIVERSITY OF NEVADA-LAS VEGAS
The University of Nevada Las Vegas, College of Allied Health Professions, Department of Radiologic Technology is anticipating an opening for a faculty member to serve as the Nuclear Medicine Educational Coordinator.

Position will begin approximately August 24, 1981, and involves planning and administration of the Bachelor Degree Program of Nuclear Medicine. The position also requires teaching responsibilities. Qualifications include Doctorate preferred; registry in Nuclear Medicine awarded by the American Registry of Radiologic Technologists or Nuclear Medicine Technologist Certification Board (a second registry in Radiography preferred); a minimum of two years of clinical experience; and two years of teaching at the collegiate level. Salary commensurate with qualifications. Deadline for application is April, 1981. Send Curriculum Vita to the Department of Radiologic Technology, University of Nevada, Las Vegas, 4505 Maryland Parkway, Las Vegas, NV 89154. The University of Nevada Las Vegas is an Equal Opportunity/Affirmative Action Employer.

62A
R.I.A. PROFICIENCY TESTING PROGRAM

RAS-1
($100/yr.)

Single vial providing 5 ml. when reconstituted.
Constituents:
Cortisol, Digoxin, Triiodothyronine (T3), T3 uptake (developmental), Thyroxine (T4), Free T4, Compensated T4 (developmental), Thyroid Stimulating Hormone (TSH), Thyroxine Binding Globulin (TBG), Insulin, Human Growth Hormone (HGH), Follicle Stimulating Hormone (FSH), Luteinizing Hormone (LH), Folic Acid, Vitamin B-12, Gastrin, Ferritin, Tobramycin.

RAS-2
($140/yr.)

Two identical vials, each providing 5 ml. when reconstituted. Constituents identical to RAS-1.

Shipped Quarterly
Enrollment Accepted Now

For information call (202) 857-1135 or write:
AMERICAN COLLEGE OF NUCLEAR PHYSICIANS
1101 Connecticut Avenue N.W. Box 831
Suite 700
Washington, D.C. 20036

NUCLEAR MEDICINE TECHNOLOGIST

Veterans Administration Medical Center has an immediate full time opening for Nuclear Medicine Technologist in large teaching hospital, with emphasis on nuclear imaging, especially cardiovascular studies. No radioimmunoassay procedures. Certification as Nuclear Medicine Technologist desirable. Applicant must possess bachelor's degree and two (2) years professional experience or three (3) years academic study, plus one (1) year technology course and two (2) years experience to qualify for a beginning salary of $18,585 per annum. Fringe benefits include regular pay increases, 13 days sick leave each year which may be accrued without limit, 13-26 days annual vacation, generous retirement plan, and low-cost life and health insurance. Must be a U.S. citizen. For more information, contact:
Robert N. Class, M.D., Chief, Nuclear Medicine Service, Veterans Administration Medical Center, 10701 East Blvd. Cleveland, Ohio 44106; (216)791-3800, ext. 7511 or 7512
An Equal Opportunity Employer

You saw it in Detroit
AT THE SNM ANNUAL MEETING

Help your Heart...
Help your Heart Fund
American Heart Association

NUCLEAR MEDICINE TECHNOLOGISTS

University medical center, 500-bed facility has positions available for registry-eligible or registered staff technologists in modern Nuclear Medicine laboratory. Department has 4 gamma cameras, active nuclear cardiology program, DEC and ADAC computers. Salary commensurate with experience.

Contact:
John Gochoco
Chief Technologist
Georgetown University Hospital
Division of Nuclear Medicine
Washington, DC 20007
Tel: (202) 625-7316
Technical Support

Technical questions answered by experts.
Just give us a toll-free call.

Mallinckrodt gives you an open line to our comprehensive technical support system...a system designed to meet all your technical needs.
If you have a question about test procedures, applications or need technical assistance on any of our radiopharmaceuticals, we're here to help. If you encounter any problems, no matter how minor, we want to make things right...right away. Need information on the U.S. Nuclear Regulatory Commission or other State or Federal agencies? Call us for that too.
Whatever technical support you need, Mallinckrodt is just a toll-free call away.

800-325-8181, Your Technical Support Number
(In Missouri, 314-895-2405 collect)
For ordering information, call: 800-325-3688
(In Missouri, 314-344-3688 collect)

THE MALLINCKRODT COMMITMENT to Nuclear Medicine

MALLINCKRODT, INC., Post Office Box 5840, St. Louis, MO 63134

© Mallinckrodt Inc., 1980
**AMR Presents**

**AccuSync**

The finest R-wave Triggering device available for computerized gated cardiac studies.

<table>
<thead>
<tr>
<th>FEATURES</th>
<th>BENEFITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Exclusive Double Discrimination provides precise definition of R-wave.</td>
<td>• Computer is gated only on the R-wave. High amplitude T-waves are ignored.</td>
</tr>
<tr>
<td>• ECG Strip Chart Recorder</td>
<td>• Provides permanent record of patient ECG. Insures proper lead placement.</td>
</tr>
<tr>
<td>• Four digit LED Display</td>
<td>• Indicates R-R Interval or Heart Rate during stress studies.</td>
</tr>
<tr>
<td>• Trigger Pulse LED</td>
<td>• Monitors presence of output signals to the computer.</td>
</tr>
<tr>
<td>• Unlimited Heart Rate Capability</td>
<td>• Both Heart Rate display and R-trigger pulses have unlimited tracking capability during stress studies.</td>
</tr>
<tr>
<td>• ONE YEAR WARRANTY</td>
<td>• ONE YEAR WARRANTY</td>
</tr>
</tbody>
</table>

**MODEL**

<table>
<thead>
<tr>
<th>FEATURES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>AccuSync-I</strong></td>
</tr>
<tr>
<td><strong>AccuSync-II</strong></td>
</tr>
<tr>
<td><strong>AccuSync-III</strong></td>
</tr>
<tr>
<td><strong>AccuSync-IV</strong></td>
</tr>
</tbody>
</table>

**Advanced Medical Research Corp./P.O. Box 3094 PPS/301 Brewster Road Milford, CT 06460/Telephone: (203) 877-1610**
Help your cardiologist study heart kinetics non-invasively with Brattle-gated scintiphotos.

The RAO view shows akinesis of the lower antero-lateral wall and apex; and contraction of the inferior wall and high up the antero-lateral wall. The LAO view shows good contraction posteriorly and akinesis of the septal aspect of the chamber. Patient was injected IV with 20mCi of $^{99m}$Tc labelled Human Serum Albumin. The agent was prepared using the New England Nuclear Electrolysis Kit for labelling HSA. Write or call for a portfolio of Brattle-gated lung, liver and heart studies.

No knobs, no meters, no errors

The spartan panel above tells the second-best part of our story. If you want to photograph peak systole, press the SYSTOLE button. If, say, you want systole only at full expiration, press the EXPIRATION button as well. If only breathing is relevant, don’t press the heart button.

The Brattle is connected to the patient and to your gamma (or x-ray or ultrasonic) camera. Whenever the patient is in the selected phase, both the scope and the scaler on your gamma camera are gated ON, and film is exposed. Otherwise, they are OFF.

Brattles lock onto patients — and stay locked on

It doesn’t matter if the patient’s heart rate and breathing depth change while he’s under the collimator because we stay right with him. Brattles contain an ECG to track heart, a plethysmograph to track respiration, and a tiny computer to deduce systole and diastole times from the heart signal. And because it’s all built in, your operator need not be a physiologist.

We don’t cover our tracks — we print them

The panel lights flash whenever the patient reaches the selected phases; and pushing the RECORDER-ON button gets you an ECG tracing marked with breathing and camera-on times. You can verify function before, during and after exposure.

A single pair of axillary electrodes captures both heart and breath

It’s easy. And we supply disposable, pre-filled electrodes.

Some Brattles have been in clinical use for over three years — in community and major hospitals

More than half of our instruments are in community hospitals and the list is growing rapidly. Upon request, we’ll supply names of happy users in your area.

What’s the next step?

Get in touch

Ask our NEN man about Brattles and HSA Kits. He can show you a portfolio of clinical pictures and arrange to have one of our people give you a demo. Or write or call us direct. We’ll send you brochures on this and other models, and will give you your own set of clinical pictures and a bibliography on gated scintigraphy. If you wish, we’ll even make you a Brattle owner. (This is the best part of our story.)

Brattle Instrument Corporation
243 Vassar Street • Cambridge, Massachusetts 02139 • 617-661-0300
INCORPORATE THE FOLLOWING ADVANTAGES:

ONLY UNION CARBIDE CINTICHEM®

Technetium 99m Generators are produced in total at one domestic production site which:

- Possesses a ten million dollar* commitment to Nuclear Medicine through its own Nuclear Reactor for the production of high specific activity Fission Product Mo 99,
- manufactures and purifies by a patented process high specific activity Fission Product Mo 99,
- loads Fission Product Mo 99 onto columns,
- assembles the Generators,
- performs quality control procedures including an elution check on each Generator,
- ships Generators directly to the user

This provides you with a reliable product supply and a uniformly high quality product.

UNION CARBIDE NUCLEAR PRODUCTS

TECHNETIUM
Tc 99m
GENERATORS
DIRECT FROM
THE SOURCE

*Estimated 1980 construction value.