Safety • Convenience • Versatility

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

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-V.S.S. (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 radio-pharmaceuticals, especially those elective in nature, of a woman of child-bearing 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:

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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.
Now there's an economical agent AN-MDP™ Technetium Tc 99m Medronate Kit

If you've been waiting for an economical way to produce high-quality, low-background medronate (MDP) bone images, wait no more. AN-MDP™, from Ackerman Nuclear, Inc., gives you all of the advantages of medronate—and a lot of medronate for your money.

Superior images
Medronate produces high-target-to-background scans that readily demonstrate altered osteogenesis!

- 90-94% blood clearance by two hours after administration
- Lowest soft-tissue uptake of all of the phosphonate bone agents in current use.

Convenience
- When necessary, imaging may begin an hour after injection (optimal imaging time is 1 to 4 hours).
- AN-MDP is stored and used at room temperature (15–30°C).

Economy
- You get 6 vials of reagent with each AN-MDP kit, instead of the usual 5.

A 54-year-old male with metastatic CA of the prostate was administered 15 mCi technetium Tc 99m-labeled AN-MDP. The images were recorded at 500K counts. Courtesy of Century City Hospital, Los Angeles.

AN-MDP™ Technetium Tc 99m Medronate Kit

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 who may be predisposed to hypercalcemia (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 patients consistent with proper patient management.

To minimize radiation dose to the bladder, 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 or females.

Pregnancy category C. Animal reproductive studies have not been conducted with 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 reproduction capacity. Technetium Tc 99m should be given to a pregnant woman only if clearly needed. Serial examinations using radiopharmaceuticals, especially those excreted in nature, of a woman of childbearing capability should be performed during the first few (approximately 10) days following the onset of menopause.

Nursing mothers. Technetium Tc 99m 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-99m Medronate have been reported.

Dosage and administration. The suggested dose range for iv administration after reconstitution with oxalat-free sodium perchlorate Tc 99m injection. to be employed in the average patient (70 kg) is:

Bone imaging: 10-20 mCi Technetium To 99m Medronate

Scanning is optimal at about 1-4 hours post-injection. The patient dose should be measured by a suitable radioactivity calibration system immediately prior to administration.

How supplied. AN-MDP is supplied both in the single-dose and multidose form. Both are available in sets of 6 or 30 sterile and nonpyrogenic vials. Each nitrogen-flushed vial contains lyophilized form.

The pH is adjusted to 5.0-5.5 with HCl and NaOH prior to lyophilization. Included in each single-kit is one package insert and 10 radiation labels. In each 30-vial kit is one package insert and 60 radiation labels. Refrigeration is not necessary.

<table>
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<th>Description</th>
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<td>Single dose 6-vial kit</td>
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<td>Single dose 30-vial ECONO-PACK</td>
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When measuring radiopharmaceuticals, the CRC-17 will do the work for you accurately, quickly, easily - and economically.

- Connector provided to interface the calibrator to CRC-U Computer/Printer system
- Push-button operation . . . instant digital readout of total activity of eight most frequently used radionuclides
- Manual radioisotope selection for over 200 radionuclides
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☐ Have representative call.
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Nuclear medicine depends upon industry leaders to convert its research concepts into diagnostic agents for routine clinical use. In the past seven years, nuclear medicine has learned it can depend upon New England Nuclear.

In 1979, we are adding our fourth cyclotron...so you can continue to receive all the thallium-201 and gallium-67 you need, when you need it.

In 1982—tomorrow, at nuclear medicine's pace—we'll be putting the industry's first linear accelerator into production of these important isotopes...and perhaps some new ones you may come up with and help us develop between now and then.

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If that commitment came easy, our competitors wouldn't always be behind us in meeting your needs. But...
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REMEMBER

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Bone

Diagnosis: hypertrophic pulmonary osteoarthropathy

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

Dose: 20 mCi OSTEOLITE

OSTEOLITE™

Technetium Tc 99m Medronate Sodium Kit (MDP)

NEN New England Nuclear®

Please see following page for brief prescribing information.
OSTEOLITE®
Technetium Tc 99m Medronate Sodium Kit (MDP)

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

CONTRAINDICATIONS: None known

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

Ideally, examinations using radiopharmaceuticals — especially those elective in nature — of women 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 medronate sodium is essential in order to accurately interpret pathologic studies.

Technetium Tc 99m medronate 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 medronate sodium depends on the maintenance of its 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 medronate 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.

DOSEAGE 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.

OSTEOLITE 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 OSTEOLITE™ Technetium Tc 99m Medronate Sodium Kit is supplied as a set of five or thirty vials, sterile and non-pyrogenic. Each nitrogen-flushed vial contains in lyophilized form:

Medronate 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 vial were lyophilized 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 kit vials are not radioactive; however, after reconstitution with sodium pertechnetate Tc 99m the contents are radioactive and adequate shielding and handling precautions must be maintained.

Do not use if there is a vacuum in the immediate drug container or if air is injected into the container when the dose is withdrawn.

Catalog Number NRP-420 (5 vial kit)
Catalog Number NRP-420C (30 vial kit)

April 1978

THE LOWEST-PRICED ERGOMETER SYSTEM
ON THE MARKET!

- can be used with largest cameras
- smoother pedaling action
- fully adjustable for patient comfort

(patient studies with camera shown, available upon request)

O'NEILL ENTERPRISES 221 FELCH ST. ANN ARBOR MICHIGAN 48103 (313) 973-2335
Heart

Exercise

Redistribution

Diagnosis: reversible ischemia, apical, septal, anterior segments

Imaging information: Instrument: Ohio Nuclear Sigma 400 Gamma Camera, VIP 450

Collimator: General, all purpose

Dose: 1.5 mCi thallous chloride TI 201

Scan time: exercise — 4 minutes postinjection, redistribution — 4 hours

Acquisition time: 10 minutes

Thallous Chloride TI 201

Please see following page for brief prescribing information.

New England Nuclear
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 safe, accepted 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 first ten days following the onset of menses.

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.

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

DOSE AND ADMINISTRATION: The recommended adult (70kg) dose of Thallous Chloride Ti 201 is 1-1.5mCi. Thallous Chloride Ti 201 is intended for intravenous administration only.

For patients undergoing resting thallium studies, imaging is optimally begun within 10-20 minutes after injection. Several investigators have reported improved myocardial-to-background ratios when patients are injected in the fasting state, in an upright posture, or after brief ambulation. 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 the stress is continued for 30 seconds to one minute after injection. Imaging should begin within ten minutes post-injection since target-to-background ratio is optimal 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.

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 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, 1mCi/ml of Thallium Ti 201, 9mg/ml sodium chloride, and 3mg/ml 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: 1.5, 3.0, 4.5, 6.0, and 9.0 millicuries of Thallium Ti 201. The contents of the vial are radioactive. Adequate shielding and handling precautions must be maintained.

Catalog Number NRP-427

November 1977

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Gallium Citrate Ga67

INDICATIONS AND Usage: Gallium Citrate Ga 67 may be useful in demonstrating the presence and extent of the following malignancies: Hodgkin's disease, lymphomas and bronchogenic carcinoma. Positive Ga 67 uptake in the absence of other symptoms warrants follow-up as an indication of a potential disease state.

Gallium Citrate Ga 67 may be useful as an aid in detecting some acute inflammatory lesions.

CONTRAINDICATIONS: None known.

WARNINGS: Gallium Citrate Ga 67 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 radiopharmaceutical drug products, especially those elective in nature of a woman of childbearing capability should be performed during the first few (approximately ten) days following the onset of menses.

PRECAUTIONS: A thorough knowledge of the normal distribution of intravenously administered Gallium Citrate Ga 67 is essential in order to accurately interpret the diagnostic studies.

The findings of an abnormal gallium concentration usually implies the existence of underlying pathology, but further diagnostic studies should be done to distinguish benign from malignant lesions. Gallium Citrate Ga 67 is intended for use as an adjunct in the diagnosis of certain neoplasms. Certain pathological conditions may yield up to 40% false negative gallium studies. Therefore a negative study cannot be definitely interpreted as ruling out the presence of disease.

Lymphocytic lymphoma frequently does not accumulate Gallium Ga 67 sufficiently for unequivocal imaging, and the use of gallium with this histologic type of lymphoma is not recommended at this time.

Gallium Citrate Ga 67, 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. Also, care should be taken to minimize radiation exposure to patients 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. Gallium Citrate Ga 67 should be used in pregnant women only when clearly needed.

Gallium Citrate Ga 67 has been found to accumulate in breast milk and should not be used in nursing mothers.

Safety and effectiveness in children have not been established.

Gallium Ga 67 localization cannot differentiate between tumor and acute inflammation; and other diagnostic studies must be added to define the underlying pathology.

The expiration date of the drug is seven days after the date of calibration.

ADVERSE REACTIONS: Severe itching, erythema and rash were observed in one patient of 300 studied.

DOSE AND ADMINISTRATION: The recommended adult (70kg) dose of Gallium Citrate Ga 67 is 2-5mCi. Gallium Citrate Ga 67 is intended for intravenous administration only. Approximately 10% of the administered dose is excreted in the feces during the first week after injection. Daily laxatives and/or enemas are recommended from the day of injection until the final images are obtained in order to cleanse the bowel of radioactive material and minimize the possibility of false positive studies.

Studies indicate the optimal tumor to background concentration of ratios are often obtained about 48 hours post-injection. However, considerable biological variability may occur in individuals, and acceptable images may be obtained as early as 6 hours and as late as 120 hours after injection.

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

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 government agencies authorized to license the use of radionuclides.

HOW SUPPLIED: Gallium Citrate Ga 67 is supplied sterile and non-pyrogenic for intravenous use. Each ml contains 2mCi of Gallium Ga 67 on the calibration date, as a complex formed from 9mg gallium chloride Ga 67, 2mg of sodium citrate, 6.8mg sodium chloride, and 0.9% benzyl alcohol w/v as preservative. The pH is adjusted to between 4.5-7.5 with hydrochloric acid and/or sodium hydroxide solution.

Vials are available from 3mCi to 18mCi in increments of 3mCi on calibration date.

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

Catalog Number NRP-121

December 1979
Abscess

Diagnosis: intranephric abscess

Imaging information: Instrument: Cleon 760 Whole Body Imager
Scan time: 48 hours postinjection
Speed: 5 cm/min

Gallium Citrate Ga67

Dose: 5 mCi Gallium Citrate Ga 67

Please see preceding page for brief prescribing information.
The never ending struggle for product popularity often leads a manufacturer to add gadgets. It’s called “one-upmanship.” We sometimes lose sight of what YOU, the user, wants.

By customer demand, Radx has gone “Back to Basics” and developed the Assayer 1, a simple dosecalibrator, a reliable dose-calibrator, an economical dosecalibrator. The return to basics does not require a return to the 1960’s technology. The Assayer 1 is microprocessor controlled, totally solid state, with a method of isotope selection way ahead of its time (an optical scanner) which is so precise, reproducible, and reliable that it will soon be copied.

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THE JOURNAL OF NUCLEAR MEDICINE
SORIN’s TCK-2 kit gets over the difficulty of rendering $^{99m}$Tc-labelled human albumin stable “in vivo”. This kit is designed for examination of the vascular pool and can be recommended as the instrument of choice for the measurement of several cardiovascular parameters.

When determination of ventricular volume curves is required, in fact, the ideal tracer would remain within the intravascular pool and not disperse to any significant extent during the recording. This is ensured by the TCK-2, a kit with a high labelling efficiency, slow blood clearance and long stability in vitro.
Some nuclear medicine computers are here today and obsolete tomorrow.
Not ADAC.
Take the very first system we ever made (Serial No. 76-001).
Today it can still \textit{easily} handle every new clinical procedure developed for nuclear cardiology in the last five years.
This makes ADAC owners very happy.
Unlike non-ADAC owners. Who suffer the significant disadvantages of clinical obsolescence.
This is only one reason doctors have called the ADAC Nuclear Medicine Computer the finest system of its kind in the world.

\textit{Shade Program:}
A three dimensional representation of the left ventricle is constructed for each segment using the 8 areas of interest of each plane in each segment. The even spacing of the planes is known since it was specified to perform the reconstruction; therefore, the areas of interest, \(x\) and \(y\) dimensions, can be connected to create the depth, \(z\) dimension. The operator can specify the projection for the constructed three dimensional image or \textquotedblright birdcage\textquotedblright. Rotation can be done on the heart's \(x\), \(y\) and \(z\) axis. Clinically, it is very valuable to rotate to the RAO, LPO, Superior Aspect, and Inferior Aspect. For example, the RAO projection allows the viewing of the long axis of the left ventricle without the right ventricle superimposed, since the edge detection did not include the right ventricle.
Why? Among other things, a $512 \times 512$ display format and 64 shades of gray that deliver an image nearly identical to original analog scintiphotos.

And an easy-to-use computer language in plain English.

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- Pump a handle to operate
- Puncture vial after it is attached to system
- Interrupt study to administer $O_2$
- Purchase expensive one-time use products

Yes, the Auto-Mate Xenon Gas Dispenser eliminates a lot of hassle now associated with Ventilation System studies. This new instrument from Diagnostic Isotopes offers the following advantages: simplifies loading; delivers Xenon by merely pressing a button; punctures vial automatically; delivers full dose in a one breath bolus, administers oxygen by simply reattaching dispenser to tubing and works with all delivery and trap systems. The Auto-Mate provides technician safety because the shipping container is the radiation shielding. Made of lightweight aluminum and brass for extreme durability.

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Tomovision is a New Dimension in Nuclear Imaging.

Tomovision. As dramatic an advance over current nuclear tomography as tomography was over planar imaging. Large organ and area studies are now possible. And Tomovision gives you clearer images with more detail, fewer artifacts, and better contrast. How does it work? The real secret is in our collimators and programming.

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So the role of nuclear medicine in research and diagnosis has suddenly expanded. Because tomography is ready to augment the classic diagnostic procedures. Ready to become a routine diagnostic tool.

All Tomovision equipment is manufactured by the Technicare Corporation. So we take care of it all. And we're building our one source reputation with a commitment to excellence. Excellence in training of our field service engineers. Excellence in providing prompt, local service throughout the nation.

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Image uniformity and resolution improvements are immediately obvious, without loss to image integrity. ZLC offers a higher degree of confidence in the fidelity of the presented information.

The combination of energy output correction and linear restoration without having to manipulate the information received represents a high achievement in camera performance. No information (noise) is added; no counts are subtracted. Only data received from the patient appears in the image presentation.

The Pho/Gamma ZLC Standard Camera is a complete imaging system that includes the ZLC Detector and microprocessor-based Standard Console with Micro Dot Imager™. ZLC is offered in both 37 tube and 75 tube versions, each having a full 15.25 inch field of view. If you already own a Pho/Gamma LFOV, we offer a complete ZLC package to improve the performance of your camera.

A HISTORY
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A COMMITMENT TO THE FUTURE.

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

<table>
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<tr>
<th>STAT INCUBATION:</th>
<th>DBI RADIOIMMUNOAASSAY</th>
<th>IMMUNOENZYME ASSAY</th>
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<tr>
<td>15 minutes at 37°C</td>
<td>1 minute</td>
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<tr>
<th>SENSITIVITY:</th>
<th>DBI RADIOIMMUNOAASSAY</th>
<th>IMMUNOENZYME ASSAY</th>
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<tr>
<td>0.0004 µM (700 times more sensitive)</td>
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<td>0.3 µM</td>
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<th>EXOGENOUS INTERFERENCE:</th>
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<th>IMMUNOENZYME ASSAY</th>
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<tr>
<td>None</td>
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<td>Lypemic Icterus Hemolysis</td>
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<th>STANDARDS SUPPLIED:</th>
<th>DBI RADIOIMMUNOAASSAY</th>
<th>IMMUNOENZYME ASSAY</th>
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<table>
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<th>PRICE:</th>
<th>DBI RADIOIMMUNOAASSAY</th>
<th>IMMUNOENZYME ASSAY</th>
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<tr>
<td>$0.57\frac{1}{2}$ cents per tube</td>
<td>$1.86 per tube</td>
<td></td>
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Also available:
- 125\textsuperscript{i} Doxorubicin-RIA Kit
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- 125\textsuperscript{i} Folate Kit
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<tr>
<td>SI-19</td>
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<td>SI-21</td>
<td>$55.00</td>
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<td>SI-22</td>
<td>$55.00</td>
</tr>
<tr>
<td>SI-23</td>
<td>$55.00</td>
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- GAMMATOME T 9000 is used with the CGR ACTICAMERA 3400 large field of view detector (400 mm diameter) and the CGR standard data processing system IMAC 7300.
- Continuous head rotation allows minimum examination durations on an adjustable tomographic exploration diameter from 400 to 600 mm.
- Tomographic examination parameters are selected from the CGR ACTICAMERA 3400 console:
  - head rotation speeds: 1 rev/mn to 1 rev/20 mn.
  - number of projections: 32 - 40 - 64 - 80.
- The tomographic imaging table is completely retractable and its height is adjustable. As it can be motorized, it allows standard whole body scintigraphy.
- Conventional scintigraphy is still made possible as the free space under the detection head allows any position of the patients on any examination table.
Typical tomographic applications examples

**LUNGS**
- Dose 4 mCi - Albumin serum $^{99m}$Tc
- Examination performed 5' after injection

- Examination duration 4'
- Slice thickness 20 mm
- Pulmonary embolism.

**LIVER**
- Dose 4 mCi - Colloidal $^{99m}$Tc sulphide
- Examination performed 5' after injection

- Examination duration 4'
- Slice thickness 20 mm
- Pathologic liver.

Tomographic reconstruction program is stored on a standard IMAC floppy disc. It allows the selection a posteriori of any number of slices up to 32 on any area of the examined organ.
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The new A²* Single Terminal Systems contribute significant benefits to image processing and display, and a few surprises to our competition.

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3. Price
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Please write or call for more information on A² Image Processing Systems.

MDS products, hardware and software, are tools for diagnosis and research which do not come in contact with, and cannot cause direct injury to the patient. Refer to the operation manual and instructions accompanying the gamma camera and injectable imaging agent for further information on their use. To ensure proper clinical results, an MDS product must be used under the direction of, and using procedures verified by a qualified physician.

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Technetium Tc 99m Medronate Kit

BRIEF SUMMARY OF PRESCRIBING INFORMATION

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

This radiopharmaceutical drug product should not be administered to children, to pregnant women, or to nursing mothers, unless the expected benefit to be gained outweighs the potential risk.

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
- general
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 clinical personnel. Also, care should be taken to minimize radiation exposure to the patients consistent with proper patient management.
To minimize radiation dose to the bladder, the patient should be encouraged to void when the examination is completed and as often thereafter as possible for the next 4-6 hours.
This preparation contains no bacteriostatic preservative. Technetium Tc 99m Medronate should be formulated within six (6) hours prior to clinical use.

- pregnancy category C
Adequate reproductive 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 Medronate should be used in pregnant women only when clearly needed.

nursing mothers
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 the drug since many drugs are excreted in human milk.

- pediatric use
Safety and effectiveness in children have not been established.

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

how supplied
Union Carbide’s Technetium Tc 99m Medronate Kit is supplied as a sterile, pyrogen-free kit containing 5 vials.
Each 10 ml vial contains 10 mg medronic acid, 0.17 mg (minimum) stannous chloride (maximum stannous and stannic chloride 0.29 mg), and 2 mg ascorbic acid. The pH has been adjusted to 4-8 with either HCl or NaOH prior to lyophilization. Following lyophilization, the vials are sealed under a nitrogen atmosphere.
Product #17500502 Multi-dose vial shield with cap and retainer ring available separately.

For ordering, customer service, and technical information, call toll-free 800-431-1146 (in NYS call 914-351-2131, ext. 227).
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When thallium-201 imaging is indicated:

Seven months following coronary bypass, he reports return of chest pain.
As the population of successful coronary bypass patients continues to grow, physicians will encounter an increasing number who report a return of chest pain after varying postoperative periods.

Complaints of chest pain in post-bypass patients deserve thorough, progressive workup . . . usually including exercise electrocardiography. Without exercise ECG evidence of myocardial ischemia, the clinician must decide on symptoms alone whether or not to suggest repeat coronary angiography. In such a setting, myocardial perfusion imaging with thallium-201 may rule out—or confirm—the possibility of electrically silent graft occlusion or extension of disease.

**Localizes in perfused myocardium**

Thallium-201 is a radioactive isotope that, following intravenous injection, distributes within myocardial cells in proportion to regional perfusion. Nuclear medicine imaging performed following injection will display relative regional perfusion and myocardial cell viability.

When used in conjunction with stress electrocardiography, thallium-201 has proven successful in demonstrating regional ischemia that may escape detection by ECG. A region that appears "cold" following exercise and injection, but "fills in" on repeat imaging a few hours later, suggests stress ischemia secondary to fixed stenosis that restricts perfusion during exercise. A region that remains persistently "cold" generally indicates irreversible myocardial scarring.

**Reveals graft patency/occlusion**

Many institutions routinely perform preoperative and postoperative stress thallium studies to obtain functional evidence of graft-mediated reperfusion of formerly ischemic regions. This sequence of studies can serve as a valuable baseline in the event that the patient returns with a complaint of chest pain:

- If a repeat thallium study discloses ischemia in the regions formerly perfused by the grafts, occlusion may be suspected.
- If the repeat study suggests new areas of ischemia, progression of atherosclerotic disease may have occurred.
- If the repeat study is essentially unchanged from the postoperative findings, nonischemic etiology should be explored.

**Useful with/without baseline**

Even if baseline stress-thallium studies are not available, this procedure can still provide valuable diagnostic guidance—particularly if it is negative, or displays clear evidence of ischemia in the grafted regions.

**Information, teaching program available**

New England Nuclear offers an extensive range of journal reprints on the use of thallium-201 imaging, and provides teaching rounds material and reference monographs at no charge, as a service to the profession. For more information on thallium-201, use the coupon below, or call 800-225-1572, ext 2234 toll free.

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See following page for full prescribing information.
Thallous Chloride
TI 201
For Diagnostic Use

November 1977

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 studies 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 safe, accepted 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 effective in nature—of women of childbearing capability should be performed during the first ten days following the onset of menses.

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 is intended for intravenous administration only.

Dosage and Administration: The recommended adult (50kg) dose of Thallous Chloride TI 201 is 1-5mCi. Thallous Chloride TI 201 is intended for intravenous administration only.

For patients undergoing resting thallium studies, imaging is optimally begun within 10-20 minutes after injection. Several investigators have reported improved myocardial-to-background ratios 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 ten minutes post-injection since target-to-background ratios 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.

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 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, 1mCi/ml of Thallous Chloride TI 201, 9mg/ml sodium chloride, and 9mg/ml 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, 1.5, 2.0, 4.3, 6.0, and 10.0 millicuries of Thallous Chloride TI 201.

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

Catalog Number: NRP-427

JNM CLASSIFIED PLACEMENT SERVICE SECTION

This section in the Journal of Nuclear Medicine contains "Positions Open", "Positions Wanted", and "For Sale" listing. Non-display "Positions Wanted" ads by members of the Society are billed at $60 per word for each insertion with no minimum rate. Non-display "Positions Wanted" ads by nonmembers and all non-display "Positions Open" and "For Sale" ads by members and nonmembers are charged at $510 per word. Display advertisements are accepted at $125 for ¼ page, $185 for ½ page, $295 for ¾ page, and $510 for a full page. Closing date for each issue is the 1st of the month preceding publication. Agency commissions and cash discounts are allowed on display ads only. Box numbers are available for those who wish them.

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ASSISTANT CHIEF, NUCLEAR MEDICINE Service. The Minneapolis Veterans Administration Medical Center seeks a candidate for the position of Assistant Chief, Nuclear Medicine Service effective July 1, 1980. Requirements include ABNM, a strong patient orientation and expertise in all phases of clinical nuclear medicine, including imaging, research and internal radionuclide therapy. In addition, the Assistant Chief, Nuclear Medicine Service, will have specific responsibilities in research and education. Applications from all qualified candidates are welcomed. Inquiries, including a letter of interest, signed curriculum vitae, and an authentic letter, should be sent to: Rex B. Shafer, M.D., Chief, Nuclear Medicine Service (115), Veterans Administration Medical Center, 4th Street & 48th Avenue South, Minneapolis, MN 55417. An Equal Opportunity Employer.

NUCLEAR MEDICINE, FRESNO, CALIFORNIA. The University of California (San Francisco) Medical Education Program seeks a Nuclear Medicine Physician for a rapidly expanding service at its affiliated Veteran's Administration Medical Center in Fresno, California. Certification (or eligibility) by ABNM is necessary. Strong existing programs in Cardiology and Pulmonary Disease make a background in Internal Medicine highly desirable. The position combines active clinical teaching, resident patient care in nuclear medicine and opportunity for private practice. Inquiries should be addressed to Malcolm Jones, M.D., Chief of Nuclear Medicine, Veterans Administration Medical Center, 2615 E. Clinton Avenue, Fresno, CA 93703. The University of California is an Equal Opportunity Employer.

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ACADEMIC POSITION AT THE ASSOCIATE or Assistant Professor level available in the Nuclear Radiology Division of the Department of Radiology at the University of Texas Medical School at Houston. The Department of Nuclear Medicine, or in Radiology with Special Competence in Nuclear Radiology is required. Applicant should have a sincere interest and a performance record in relevant clinical or basic nuclear research. Please send curriculum vitae to: Robert W. McConnell, M.D., Director, Division of Nuclear Radiology, Department of Radiology, The University of Texas Medical School at Houston, 6431 Fannin Street, Houston, Texas 77030.

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RADIOCHEMIST / RADIOPHARMACIST-Position available for a qualified individual specializing in radiochemistry to work with radio-pharmaceuticals and in vivo-active material. Position includes responsibility for operation of departmental radiopharmacy & computerized control. Applicants must be board certified. Forward summary of training & experience & a statement of career interest to: Stanley J. Goldsmith, M.D., Director, Department of Physics-Nuclear Medicine, THE MOUNT SINAI MEDICAL CENTER, One Gustave L. Levy Place, New York, N.Y. 10029. An Equal Opportunity Employer.

POSITION FOR RESEARCH ORGANIC Chemist. Experience with radiochemistry & synthesis for synthesis of positron labeled biological active agents. Extensive experience desirable, excellent research opportunity for collaborative work at U. P. Contact: Martin Retivich, M.D. Cerebrovascular Research Center, 36th & Spruce Streets, Philadelphia, PA. 19104.

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NUCLEAR MEDICINE TECHNICIAN

Veterans Administration Medical Center has an immediate full-time opening for Nuclear Medicine Technologist in a large teaching Medical Center, with emphasis on nuclear imaging, including 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 $17,035 per annum. Fringe benefits include regular pay increases, 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. PHONE: (216) 791-3800. Ext. 7511 or 7512. An Equal Opportunity Employer.
**POSITION ANNOUNCEMENT**

Chairperson, Department of Radiologic Technology position available July 1, 1980 for a 12 month appointment negotiated annually. Position includes administration and supervision of the activities and personnel in a multidisciplinary department of Radiologic Technology offering degree options in Radiography, Radiation Therapy, Nuclear Medicine Technology and Medical Diagnostic Ultrasound. Person is expected to participate in teaching, research and service activities in the Department, College, University and Community. Minimum qualification are master's degree in a health related field; certification/credentialing as an AAR, ASCP, ARDMS or NMTCB, teaching, administrative and leadership experience in an institution of higher learning; and evidence of continuing education and professional participation. Doctoral degree, evidence of research activity, and multiple disciplinary certification are preferred. Salary and rank are negotiable depending on qualifications and experience. Send application, resume and references by May 25, to Terry Curtis, Chairperson, Search Committee, P.O. Box 26901, College of Health, Oklahoma City, Oklahoma 73190. The University of Oklahoma is an Affirmative Action Employer.

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**NUCLEAR MEDICINE TECHNICIAN**

Veterans Administration Lakeside Medical Center, teaching hospital, has a full-time opening for nuclear medicine technician. Emphasis is on nuclear imaging, including cardiovascular computer studies. No radioimmunoassay procedures. Some academic study and nuclear medicine experience highly desirable. Salaries based on experience. Fringe benefits include regular pay increases, 13 days sick leave each year which may be accumulated without limit. 13-26 days annual leave based on government service. Generous retirement and low-cost life and health insurance are offered on matching basis. U.S. citizenship required. For information contact:

**TOM MOORE, Personnel Service**
**VALMC**
333 East Huron St., Chicago, IL 60611
Phone: (312)943-6600, Ext. 468

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English Proficiency Required.

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**REGISTERED NUCLEAR MEDICINE TECHNOLOGIST**

Immediate openings for a Progressive Thinking Nuclear Medicine Technologist in a University Affiliated Teaching Medical Center located in the capital city of West Virginia. Competitive salary and benefits. Applicants will be involved in a broad range of Imaging and Imaging studies, including Tomography, Resting and Stress Thallium Myocardial Imaging as well as Resting and Graded Stress Cardiac Blood Pool Studies.

The two Ohio Nuclear Cameras, Searle LFOV and Pho/Con Tomographic Imager are complimented by a Multi-Terminal MDS A2 Computer system. The Nuclear Pharmacy within the department is supervised by a licensed Pharmacist. Contact:

**Charleston Area Medical Center**
**Employment Office**
**P.O. Box 4396**
**Charleston, West Virginia 25304**
Equal Opportunity/Affirmative Action Employer
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**Associate Technical Specialist (Chemical Engineering Technician)**

As a growing leader in the field of nuclear, medical, and industrial technology, New England Nuclear currently has an opening for an Associate Technical Specialist. This position is in the Development Department of our Medical Diagnostic Division. Applicants must have an Associate's degree in Chemistry or Nuclear Engineering plus 1-3 years of appropriate industrial experience.

Duties for this position will consist of performance of laboratory functions such as filtrations, reactions, dispensing and freezes-drying in sterile room environment, as well as minor equipment repair and preparation of designs of otherwise unobtainable equipment. Additional responsibilities will include counting studies, trouble-shooting generators, and other processes involving radio-active and non-radioactive components.

We are offering a starting salary of $13,000 plus time and one-half for overtime, with medical insurance and 2 weeks vacation to candidates who meet the above qualifications. Applicants who feel their background is applicable to the above position should submit a resume to Janice Nay, New England Nuclear, 601 Treble Cove Road, North Billerica, MA 01862.
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NUCLEAR MEDICINE REVIEW SYLLABUS Peter T. Kirchner, M.D., Editor

Designed to help physicians bring themselves up to date in all areas of clinical practice in nuclear medicine, this brand new, 619 page book provides a thorough update on methodological advances that have occurred in nuclear medicine since the early 1970's.

The Nuclear Medicine Review Syllabus has chapters titled: Radiopharmacology; Instrumentation; Radiation Effects and Radiation Protection; Cardiovascular; Central Nervous System; Endocrinology; Gastroenterology; Genito-Urinary System; Hematology-Oncology; Pulmonary; Radioassay; and Skeletal System.

The clear prose of each of the book's 12 chapters describes advances and outlines current practice, with a detailed bibliography at the end of each chapter serving as a guide to additional information. A 32-page index makes the Nuclear Medicine Review Syllabus' wealth of information instantly accessible. Individuals seeking a vehicle for final review prior to taking a certification (or recertification) examination will find the Nuclear Medicine Review Syllabus particularly valuable.

Soft cover, 619 pages, $30.00 plus $2.50 postage and handling.


This 867 page, copiously illustrated, large format volume has chapters titled: Quality Control; Organic Radiopharmaceuticals; Inorganic Radiopharmaceuticals; Functional Imaging; Radioimmunoassay; Oncology; Hematology; Pharmacokinetics; Renal; Cardiopulmonary System; RES/Biliary; Skeletal; Thyroid; Pancreas; Prostate, and Adrenals; and Radionuclide Production. For each of these chapters, Radiopharmaceuticals II has an introductory paper summarizing the state of the science in the field. The introductory papers are supplemented by papers describing current research. Also included in the book are papers from a panel discussion entitled 'International Regulatory Affairs Relating to Pharmaceuticals,' and excerpts from the keynote address given by former AEC Chairman and now Governor of the State of Washington, Dixy Lee Ray.

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