

# Heavyweight



**CintiChem<sup>®</sup> Technetium 99m Generators  
Are The Heaviest You'll Find—  
On Purpose**

# Your Safety Is Our Concern, Too

Technetium 99m Generators from Cintichem, Inc. have 3.77 inches of lead surrounding the column for maximum radiation protection. The secondary shield adds 5/8" more lead to make our generators safer yet. And only MPI Generators offer depleted uranium shielding in higher calibrations, designed to maximize radiation protection, convenience and reduce costs. With 20 sizes and 2 calibration days, we can meet virtually every need.

Convenience is also designed INTO every MPI Generator. It is the only generator with rapid, easy horizontal elution via a shielded elution port. The simple, one-step elution reduces work time while eliminating direct eye exposure during the elution process. Eluate sterility is assured by the 0.22 micron filter on the terminal fluid line and an autoclaved column.

And all CintiChem Technetium 99m Generators from Medi-Physics incorporate the following important advantages:

- A NEW STERILE NEEDLE is utilized for each elution, reducing the chances of a septic or pyrogenic situation occurring in routine clinical usage.
- 5cc, 10cc AND 20cc EVACUATED ELUTION VIALS are available, allowing you to optimize the elution concentration to meet your needs.
- RIGID QUALITY CONTROL TESTING, which includes an elution check on each Generator, assures that it meets our rigid internal specifications. The assurance that 20 years experience in nuclear medicine brings.
- ACCESSIBLE CUSTOMER SERVICE on toll free telephone numbers. Our service personnel have in depth backgrounds in research, development, technical and clinical applications in nuclear medicine.

We are concerned about your safety. That will be evident when you receive your first CintiChem generator from MPI.

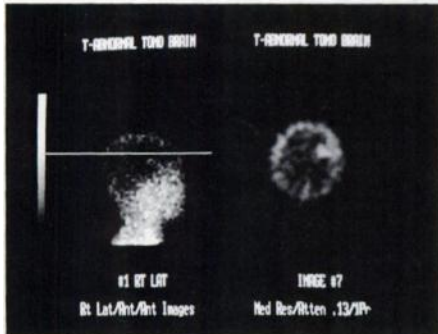
**medi+physics™**

5801 Christie Avenue, Emeryville, CA 94608  
For More Information, Please Call (415) 652-7650  
Inside California Toll Free (800) 772-2477 ■ Outside California Toll Free (800) 227-0492

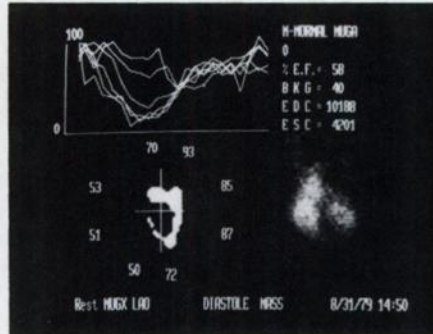
See us at the SNM Show in Miami Beach at Island 21

CintiChem® Technetium Tc99m Generators are jointly manufactured by Union Carbide Corporation and Cintichem, Inc. a wholly owned subsidiary of Medi-Physics, Inc.

# At your fingertips are these results.



These results from Emission Computed Tomography studies.



These results from Gated Blood Pool studies.



These results from Renal studies.

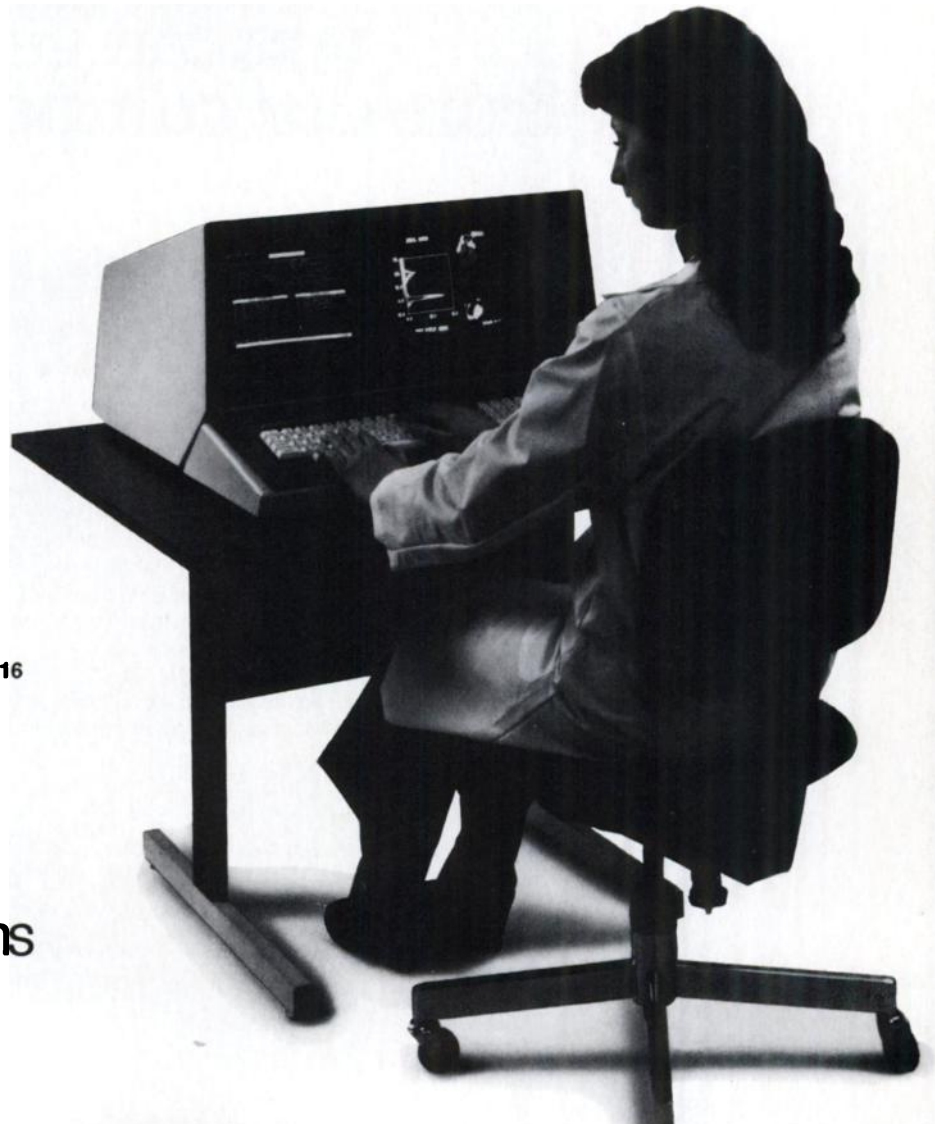
Ask Medical Data Systems' Spectra™ system for results and it produces.

With its built-in protocols, the MDS system can give you information rapidly, even with an inexperienced operator.

And, as you gain experience, it can go far beyond the protocols . . . to give you results in virtually any nuclear medicine procedure.

For details, call Richard Howell, (313) 769-9353. Or write us at 2311 Green Road, Ann Arbor, Michigan 48105.

Either way, you'll get results. And fast.



See us at the SNM Show in Miami Beach at Island 16

**Medtronic**   
Medical Data Systems

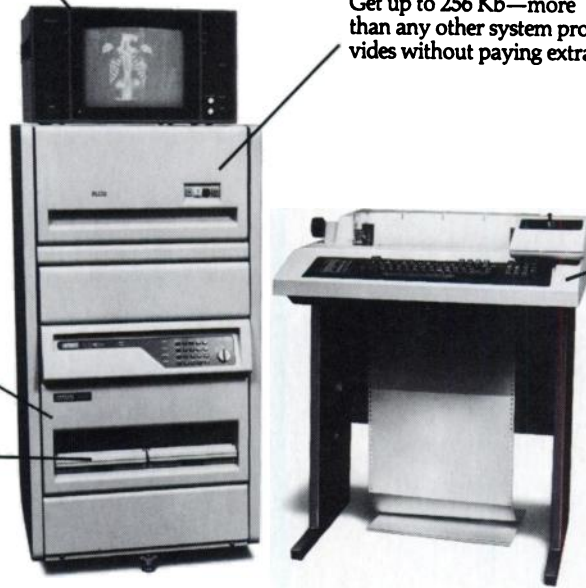
**Color Monitor**  
Make dynamic or static images of single or multiple studies in color, monochrome or black and white.

**Extra Memory**  
Get up to 256 Kb—more than any other system provides without paying extra.

**Disk Drive**  
Store up to 10 megabytes of data in both matrix and list mode.

**Floppies**  
Create permanent patient files for quick access to vital data.

**Hard Copy Printer**  
Make crisp, permanent copies for ready reference.



# Digital's new Gamma-11 delivers five essential features you can get from our competitors.

## And one you can't. \$49,900.\*

Digital's new Gamma-11 offers by far the most complete imaging system available. And at a price no one else can touch.

Because everything you see here, and some things you don't see, are standard equipment. So while you may be able to get the same features from other companies as options, we don't surprise you with their option prices.

Plus Gamma-11 has all the reliability, ease of use and full support that have made Digital's Medical Systems Group the leading supplier of imaging systems for hospitals and research centers throughout the world.

And that's another feature you can't get from the other guys.

For complete details, write Digital Equipment Corporation, Medical Systems Group, 428 Main Street, Hudson, MA 01749.

\*U.S. price only

See us at the SNM Show in Miami Beach at Island 24

digital

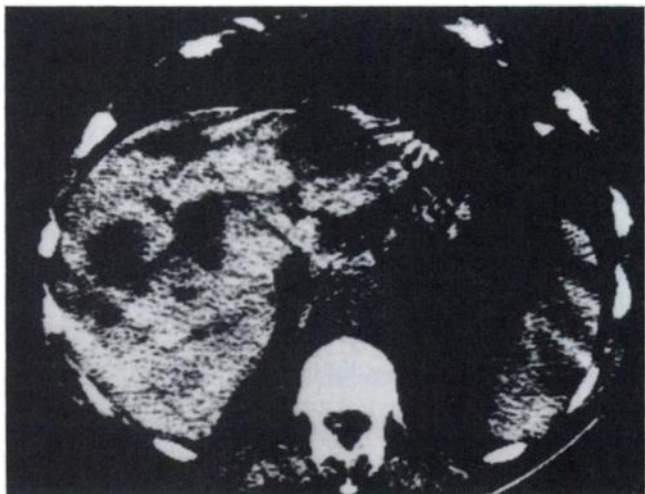
# Single Photon Emission Tomography

GAMMA II™ and 400T™ great names with great potential but it is Us who make it happen. Single Photon Emission Tomography and Pseudoholography.

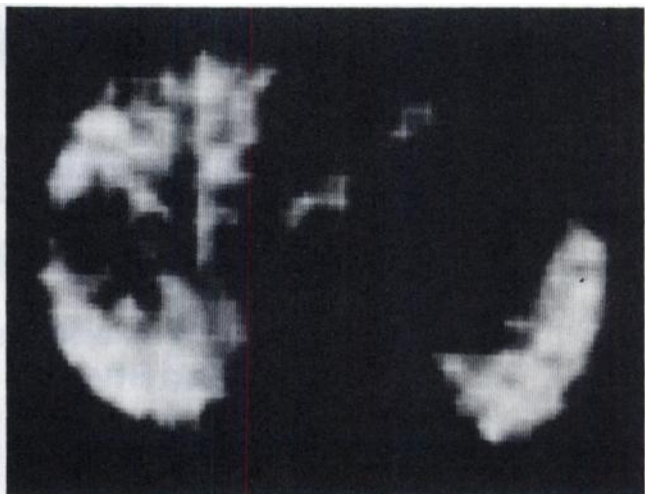
You do not need a floating point processor, DRII™ interface or a "black box". You do not even need a physicist to figure it out how to use it.

*Can anyone else offer that?*

We interface directly to the NCVII™ and allow the data to be acquired as a regular dynamic study. The acquired data can be immediately displayed in a pseudoholographic form without additional processing. The data can also be reconstructed by a technique of filtered backprojection and re-formated to transaxial slices. The slices to be reconstructed are selected by the operator by means of a cursor. Adding of adjacent slices allows thickening of the slices and the program provides a choice of filters. The reconstructed data is analysable by the existing library of GAMMA II™ commands.



\* Conventional Xray CT scan of liver showing numerous metastatic tumours.  
Note several artifacts in the spleen



\* Single photon Emission tomography obtained by the above mentioned system. Cut through the liver for direct comparison with corresponding Xray CT cut.

## DSA Digital Systems & Applications Inc.

31 WOODLAWN AVE. EAST,  
TORONTO, ONTARIO, CANADA M4T 1B9  
(416) 964-2080

*\* Courtesy of University Hospital, London, Ontario, Canada  
GAMMA II, DRII and NCVII are trademarks of Digital Equipment Corporation  
400T is a trademark of General Electric*



# CIS

## Our skills are yours worldwide

A wide range  
of in-vivo and in-vitro diagnostic products

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Telex 692431

SORIN BIOMEDICA-S. p. A.  
DIVISIONE BIOCHIMICA  
SETTORE DIAGNOSTICI

**SUBSIDIARIES:**

CIS (UK) Ltd-Rex house  
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Tel. 1-446-4405

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Einsteinstrasse 9-11 -  
6072 Dreieich  
bei Frankfurt-am-Main  
Tel. (49)3-3855 - Germany

International CIS  


**INTERNATIONAL CIS**  
**Immeuble P3 "International"**  
**2, rue Stephenson**  
**78181 Saint-Quentin Yvelines**  
**Cedex-France**  
**Tel. (33) 3-043.00.09**

# Single Photon Emission Tomography

GAMMA II™ and 400T™ great names with great potential but it is Us who make it happen. Single Photon Emission Tomography and Pseudoholography.

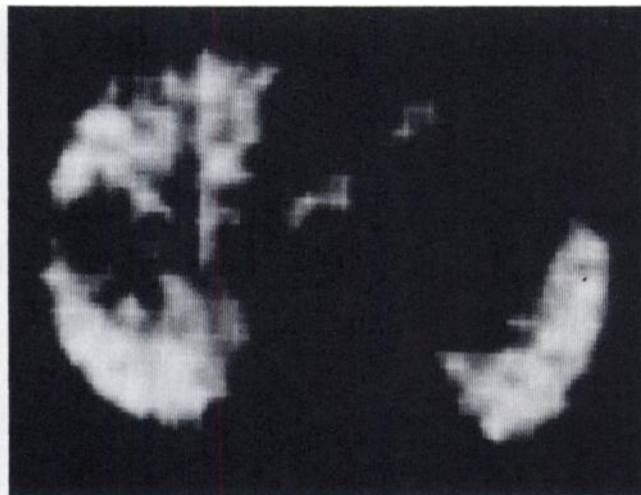
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(416) 964-2080

*\*Courtesy of University Hospital, London, Ontario, Canada  
GAMMA II, DRII and NCVII are trademarks of Digital Equipment Corporation  
400T is a trademark of General Electric*



**SIEMENS**

## Expanding the dimensions of our nuclear imaging capabilities...

Siemens set new standards in detector technology with ZLC. Now we will present advanced SPECT imaging with ZLC 3700/7500 S camera systems at the 29th Annual Meeting of the Society of Nuclear Medicine, June 15-18, at the Miami Beach Convention Center.

We look forward to telling you all about the latest addition to our expanding product line.

**Siemens...  
an investment in diagnostic confidence.**

MG/5310-011 SIO 132

See us at the SNM Show in Miami Beach at Island 3



# What do these names have in common?

**GENERAL ELECTRIC  
BELL LABORATORIES  
FORD DuPONT XEROX  
POLAROID IBM BOEING  
NUCLEAR PHARMACY, INC.**

It's not only that these companies are leaders in their fields. They started it all. And Nuclear Pharmacy, Inc. pioneered the nuclear pharmacy field. We are the leaders because you, our customers, like the job that we do! We place the highest priority on radiation safety and rigid quality control. We have a "Pharmacy Service Center" near you. Call us.



**We're No. 1 and we earn  
the right every day.**

**For Service...With Speed!**

505/ 292-5820

P.O. Box 25141, Albuquerque, NM 87125

**ALA:** Birmingham, Mobile\* • **ARIZ:** Phoenix, Tucson • **ARK:** Little Rock • **CALIF:** Van Nuys, Anaheim, San Diego, Irwindale, Riverside\*, Long Beach\* • **COLO:** Denver, Colorado Springs • **FLA:** Miami, Ft. Lauderdale, Ft. Meyers, St. Petersburg, Tampa, Orlando, Jacksonville, Palm Beach\*, Daytona Beach\* • **GA:** Atlanta • **IDAHO:** Boise\* • **ILL:** Chicago • **IOWA:** Des Moines, Davenport\* • **KAN:** Wichita\* • **KY:** Louisville • **LA:** New Orleans, Baton Rouge • **MASS:** Boston\* • **MISS:** Jackson • **NEV:** Las Vegas • **NM:** Albuquerque\* • **NC:** Charlotte • **PA:** Philadelphia, Harrisburg • **SC:** Columbia • **SD:** Sioux Falls\* • **TENN:** Nashville, Knoxville, Memphis • **TEXAS:** El Paso, Lubbock, Ft. Worth, Dallas (2), Austin, San Antonio, Houston (3), Beaumont • **WIS:** Milwaukee, Madison\*, Green Bay\* • **WYO:** Cheyenne\* • \*soon to open

**See us at the SNM Show in Miami Beach at Booth 802**

# A message to our customers...

In this, our ninth year of operation, we would like to take this opportunity to thank you, our customers, for making Nuclear Pharmacy, Inc., the leading chain of nuclear "Pharmacy Service Centers" in the world.

Nuclear Pharmacy, Inc. wasn't far behind the isotope. We created the first nuclear pharmacy service center to serve hospitals, doctors and patients who demanded the highest priority in quality products with rigid quality control, with emphasis on radiation safety and rapid service.

Today, Nuclear Pharmacy, Inc. has 44 "Pharmacy Service Centers" throughout the nation with 14 more to open soon.

You have made us No. 1 and our pledge to you is that we will continue to earn the right every day. Thank you for your continued support.



505/ 292-5820  
P.O. Box 25141, Albuquerque, NM 87125

*Robert Lee Sanchez*

**Robert Lee Sanchez, R. Ph.**

Chairman of the Board,  
President and Chief Executive Officer

*Nunzio DeSantis*

**Nunzio DeSantis, R. Ph.**

Executive Vice President

*Art Solomon*

**Art Solomon, R. Ph.**

Vice President, Professional Affairs

Visit us at Booth #9 at the SNM Miami Beach Meeting

# Techneplex<sup>®</sup> (Technetium Tc 99m Pentetate Kit) from Squibb

For kidney imaging, brain imaging, to assess renal perfusion, and to estimate glomerular filtration rate

Does not accumulate in choroid plexus  
Rapid clearance rate of DTPA allows:

- brain imaging in less time than with sodium pertechnetate Tc 99m
- delayed brain imaging in 30-40 minutes, as compared with 3-4 hours with technetium Tc 99m pertechnetate

Easy two-step procedure

Kit contains 10 multidose reaction vials.

For further information, call Technical Customer Service, 609-921-4100.

See next page for brief summary.



**TECHNEPLEX®**  
**Technetium Tc 99m Pentetate Kit**  
**DIAGNOSTIC—FOR INTRAVENOUS USE**

**DESCRIPTION:** The kit consists of 10 multidose reaction vials, each containing a sterile, pyrogen-free lyophilized mixture of 10 mg pentetate calcium trisodium, 0.50 mg stannous chloride under a nitrogen atmosphere. When sterile, pyrogen-free sodium pertechnetate Tc 99m in isotonic saline is added to the vial, a chelated technetium Tc 99m pentetate is formed. The product as supplied is sterile and pyrogen-free.

**INDICATIONS AND USAGE:** Technetium Tc 99m pentetate may be used to perform kidney imaging, brain imaging, to assess renal perfusion, and to estimate glomerular filtration rate.

**CONTRAINDICATIONS:** None known.

**WARNINGS:** None known.

**PRECAUTIONS:** Contents of the vial are intended only for use in the preparation of technetium Tc 99m pentetate and are **not** to be administered directly to the patient except after the addition of sodium pertechnetate Tc 99m. 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. Technetium Tc 99m pentetate 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 and to insure minimum radiation exposure to occupational workers.

To minimize radiation dose to the bladder, the patients should be encouraged to drink fluids and to void immediately before the examination, and for the next 4 to 6 hours thereafter, as often as possible.

Technetium Tc 99m pentetate should be formulated within 6 hours prior to clinical use for brain and kidney imaging, and for assessing renal perfusion. For estimating glomerular filtration rates Tc 99m pentetate should be used within 1 hour after formulation.

The components of the Technetium Tc 99m Pentetate Kit (Chelate) are supplied sterile and non-pyrogenic. Aseptic procedures normally employed in making additions and withdrawals from sterile, non-pyrogenic containers should be used during addition of pertechnetate solution and the withdrawal of doses for patient administration.

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.

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

**Pregnancy Category C:** Animal reproductive studies have not been conducted with technetium Tc 99m pentetate. It is also not known whether technetium Tc 99m pentetate can cause fetal harm or affect reproduction capacity when administered to a pregnant woman. Technetium Tc 99m pentetate 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 (approx. 10) days following the onset of menses.

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

**Pediatric Use:** Safety and effectiveness in children below the age of 18 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:** None specifically attributable to the use of technetium Tc 99m pentetate have been reported.

**Drug Abuse and Dependence:** There is no report of any drug abuse or dependence with this diagnostic agent.

**Overdosage:** Increased radiation exposure would be expected if an overdosage of the diagnostic agent occurred.

For complete prescribing information, consult package insert.

**HOW SUPPLIED:** Technplex (Technetium Tc 99m Pentetate Kit) is supplied as a sterile, pyrogen-free kit containing 10 sterile multidose reaction vials and 20 pressure-sensitive labels.

**SQUIBB®** The Priceless Ingredient of every product is the honor and integrity of its maker.™

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## Convenience... Hi-D lead glass syringe and vial shields.



### The Nuclear Regulatory Commission now requires their Medical Licensees to use protective syringe and vial shields.

Nuclear Pacific products give you more than safe protection; they give you 360 degrees of visibility. The optical clarity and lead content of Hi-D® glass is unsurpassed in the industry. The importance of shielding has recently been re-emphasized by NRC studies that find failure to use protective shields can result in radiation dose rates to fingers and hands of 100 mrad to one rad per minute, or a projected lifetime dose of 4,000 to 100,000 rads.

Visibility allows efficient handling of radiopharmaceuticals, reducing exposure time. For 99mTc exposure, radiation protection from 10 to 40 HVL is offered in eight different models of the vial shield. Shields are available for all leading generator brands. Each shield loads with a twist and centers the vial for easy needle access to the rubber septum. Removable twist lock caps enable ease of cleaning and needle insertion.

Remember, for 30 years Nuclear Pacific, Inc., has set the standard for visibility and protection in the radiation shielding industry.



**Nuclear  
Pacific,  
Inc.**

6701 Sixth Ave. S.  
Seattle, WA 98108 (206) 763-2170 Telex: 32-8891

\*Registered U.S. Patent Office. Platinum melted ultra high density optical glass.

See us in Miami Beach Booth #709

**MORE FOR LESS**

**MORE PERFORMANCE for LESS COST**

Radcal Corporation  
announces the introduction of

**The Model 4045  
Radionuclide Dose Calibrator**

at the 29th Annual Meeting of the Society of Nuclear Medicine in Miami Beach.

To see the prototype and discuss the many  
features of this microprocessor-based instrument,  
stop at BOOTH 1008  
(next to the concession stand)

**TYPEWRITER  
KEYBOARD ENTRY  
w/RADIONUCLIDE &  
SPECIAL FUNCTION  
SELECTION**

**INTEGRAL  
PRINTER FOR  
PERMANENT  
RECORDS**

**ALPHA-NUMERIC  
DISPLAY**

**PRINTS INTERNALLY  
GENERATED FORMS  
ON PLAIN PAPER**

**DECAY FUNCTION  
COMPUTATION  
PAST OR FUTURE**

**LARGE INVENTORY  
CONTROL CAPABILITY  
w/PRINTED RECORD**

**QUALITY  
CONTROL**

**MO ASSAY**

**DOSE  
COMPUTATION**

**USER PROMPTING**

**REMOTE  
IONIZATION  
CHAMBER**

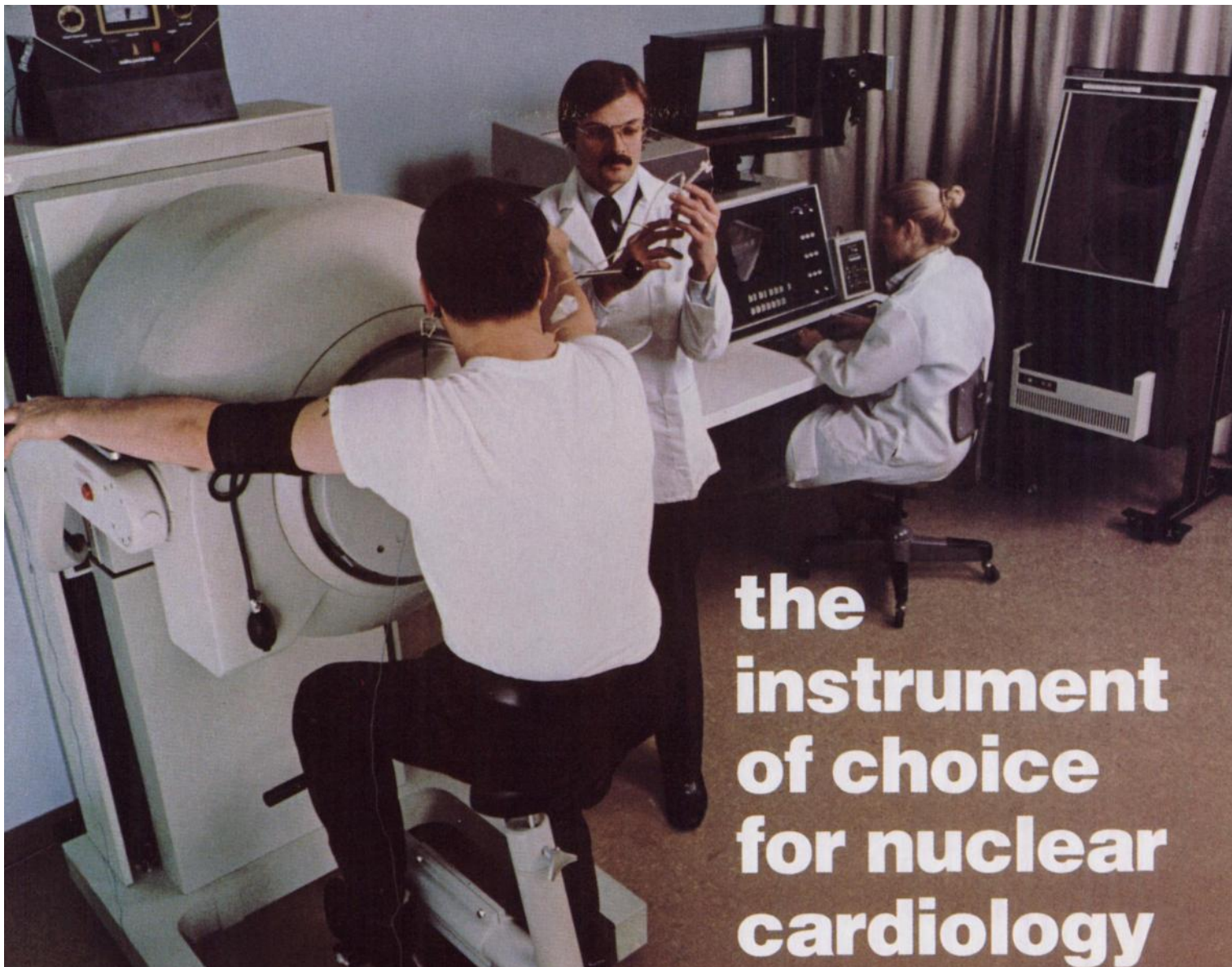
**NO BATTERIES**

**SPLASH-PROTECTED  
DESIGN**

T.M. *Radcal Corporation*

An **mdh** Subsidiary

426 West Duarte Road • Monrovia, CA 91016 • (213) 357-792



# the instrument of choice for nuclear cardiology

**and the only computerized multicrystal camera for first-pass studies at rest and with exercise stress: System Seventy-Seven.**

#### **Complete Data**

Get all the cardiac pump parameters and images: ejection fraction, left ventricular volumes, stroke volume, cardiac output, REFI, cines (two displayed simultaneously for rest/exercise comparisons), and wall motion displayed with reference end-diastolic perimeters for easy detection of hypokinetic or akinetic segments.

#### **Versatility**

Get definitive diagnostic measurements of the patient who has CAD complicated by valvular regurgitation – or congenital shunt – or aneurysm – the data most specific for defining the patient's problem.

#### **View Independence**

Get quantitative data from any view, including RAO, LAO, AP.

#### **Operational Simplicity**

Get complete cardiac data on the upright exercising patient, routinely, in 10 seconds at the patient's maximum exercise level. There is no need to perform long acquisitions

at sub-maximum levels of exercise to avoid complete data loss.

#### **Turnkey Operation**

Get complete hardware and software for nuclear cardiology in one system. Training is arranged for physicians and technologists in the factory classroom and/or on-site. A quality control program monitors ongoing data reduction accuracy.

For excellence in clinical nuclear cardiology, you should be talking to Baird Corporation, 125 Middlesex Turnpike, Bedford, MA 01730, Telephone 1-800-225-1487, Extension 6500. Telex 923491. Cable BAIRDCOBFDR.

**See us at the SNM Show in Miami Beach at Island 20**

# BAIRD

**Toward certainty in cardiac diagnostics**

# The most beautiful thing about our Dyna Camera Series 5 is the way it performs.

We're proud of the way our new Dyna™ Camera system looks. We think it's the industry's most attractive gamma camera system package. But we're far prouder of just how well Dyna Camera Series 5 works.

**A beautiful design.** Our central workstation, for instance, is stylish. But it was designed to meet your needs for efficiency, comfort and patient throughput. And, unlike its complicated and cluttered competitors, our control console has been fashioned to facilitate the performance of all the many manipulations necessary in the practice of modern nuclear medicine.

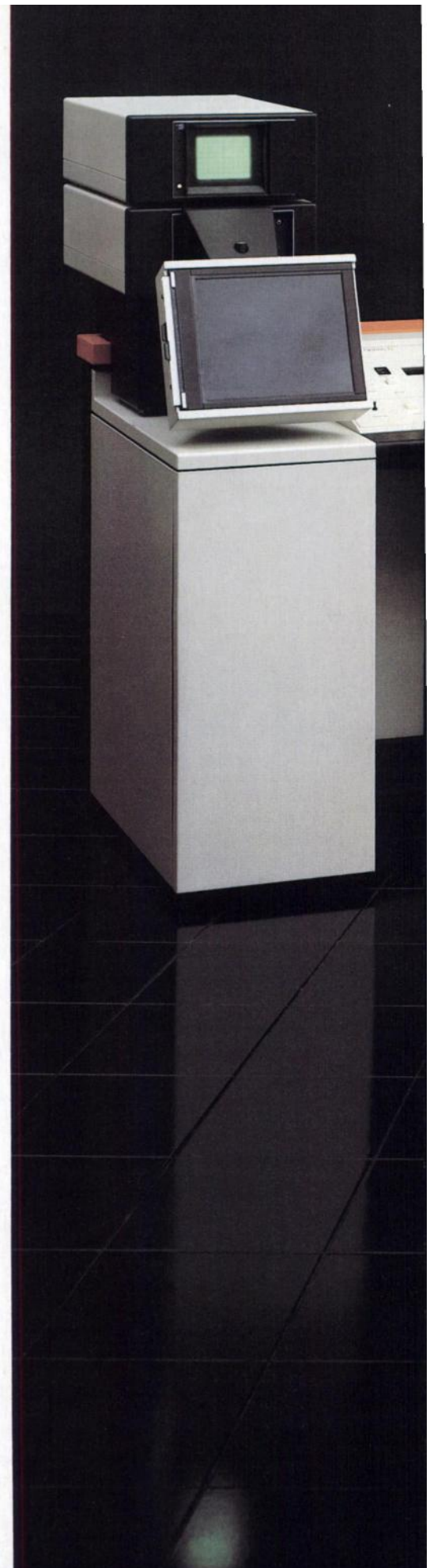
**A beautiful image.** Picker International continues to supply you with the leading edge in gamma camera technology in its Dyna Camera Series 5 system. Your choice of high performance detectors, exclusive Micro Z ACE™ Imaging for unequaled contrast enhancement, built-in Dyna Dot photographic camera system for high resolution films, and a host of other accessories insure top performance in all nuclear medicine modalities.

**A beautiful choice.** The Dyna Camera Series 5 represents the latest evolutionary step in the continuing development of Picker International's renowned gamma camera system. It's a performance-engineered package available in a number of upgradable system configurations, one of which is sure to fill your specific needs for both today and tomorrow.

Precision performance. Sophisticated styling. The new Dyna Camera Series 5 has it all. And it all works beautifully. For you. Contact Picker International, Nuclear and Ultrasound, P.O. Box 99, 12 Clintonville Road, Northford, CT 06472.

## PICKER INTERNATIONAL

See us at the SNM Show in Miami Beach at Island 2







Put them together with Amersham

# Vitamin B<sub>12</sub>/Folate

## Dual Radioassay

Now...a convenient  
**NO-BOIL** procedure  
with results in as little  
as **2 HOURS**.

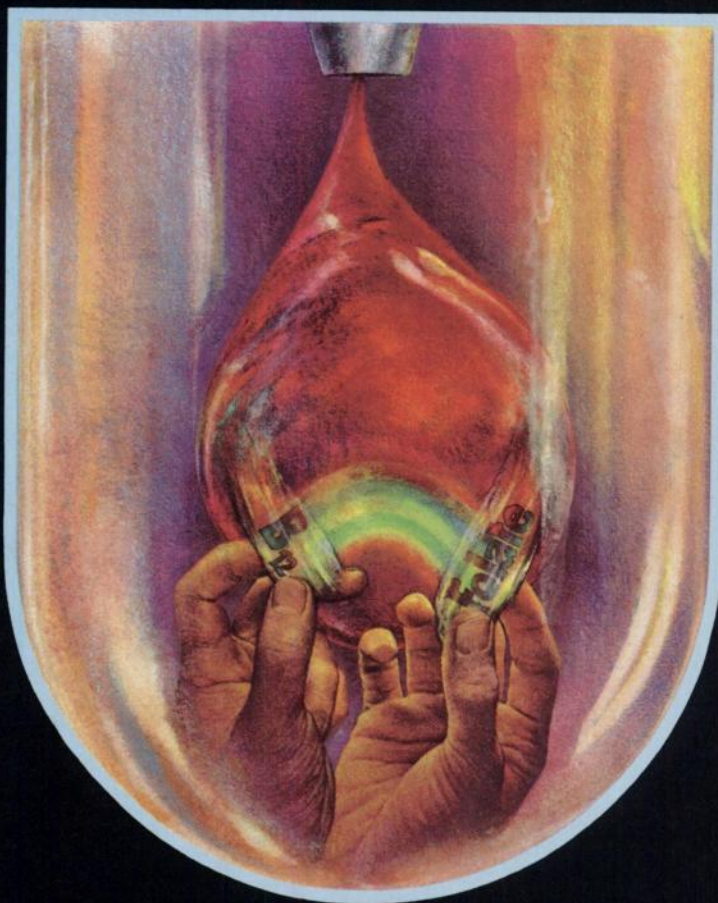
Amersham now offers a rapid and flexible assay for Vitamin B<sub>12</sub> and Folate which brings the convenience, reliability, performance and savings you need for more cost-effective anemia testing in your laboratory.

### CONVENIENCE

- No-boil assay with results in as little as 2 hours
- 2 - 4°C storage of standards — no freezing required
- Elimination of daily tracer preparation
- Dual or single assay capabilities
- Log-logit data reduction capability

### RELIABILITY

- Purified intrinsic factor
- Clinically validated ranges
- Excellent precision and low range sensitivities
- Stable tracers with high count rates and low non-specific binding



### VALUE

- Red blood cell folate capability
- 100- and 200- test kits available — competitively-priced

We would like to tell you more about the best Vitamin B<sub>12</sub>/Folate Dual Radioassay kit available. Write us or use our toll-free hotline.

Amersham Corporation  
2636 S. Clearbrook Drive  
Arlington Heights, IL 60005  
800/323-0668 or 312/364-7100

**In Canada**

505 Iroquois Shore Road  
Oakville, ONT L6H 2R3  
800/268-5061 or 416/842-2720

See us at the SNM Show in Miami Beach at Booths 602, 604, 606

**Amersham**

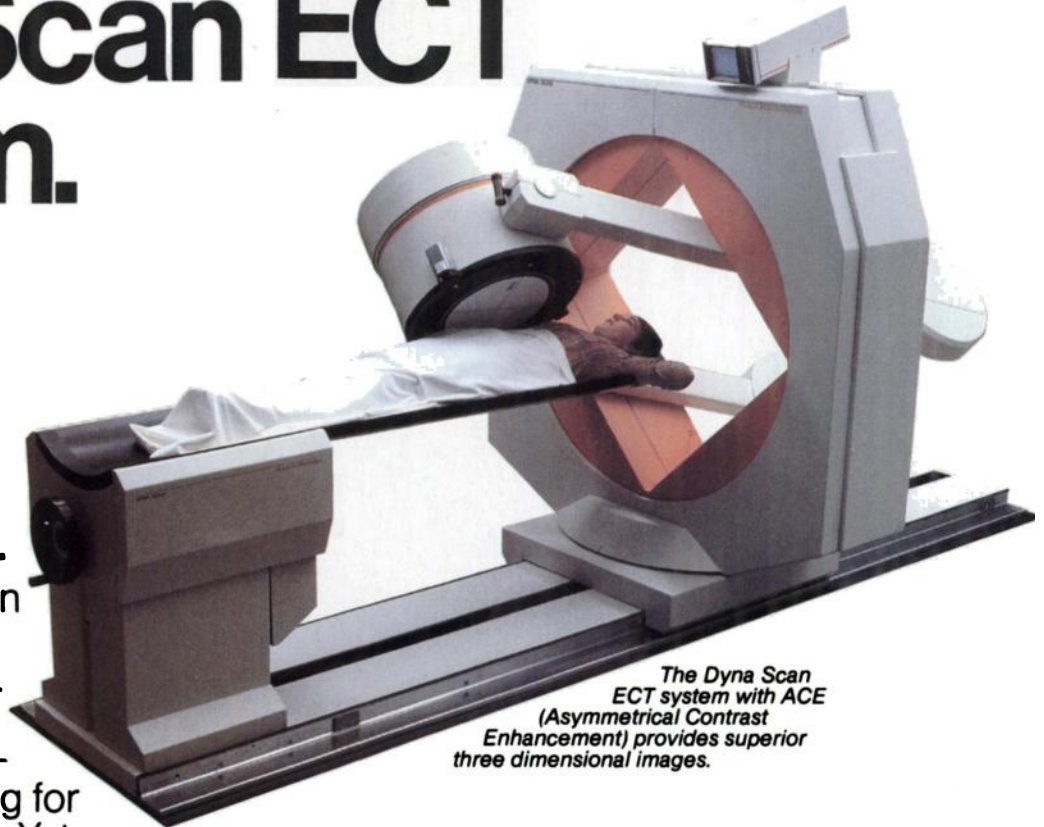
# Now, more accurate images from Picker International's new Dyna Scan™ ECT System.

**Dyna Scan with Micro Z and ACE™ Imaging for increased contrast and resolution.**

Now, you can attain superior three dimensional ACE images. The Dyna Scan system provides rock-solid rotation and body contouring for clearer, sharper images. Yet this system preserves the positioning flexibility required for routine spot-view imaging, while adding the capacity for single or multi-pass whole body scanning. The Dyna Scan system is compatible with Dyna Cameras 4, 4C and Series 5. And unlike other ECT manufacturers, we didn't compromise on our shielding which remains at 500 KeV.

**Easily interfaces with all computers.** Our microprocessor-based gantry allows trouble free interface with your present computer. You can also purchase the system with a complete turnkey work station with computer.

See the Dyna Scan difference in image quality. Call your local representative, or write Picker International, Nuclear and Ultrasound, 12 Clintonville Road, P.O. Box 99, Northford, CT 06472.



*The Dyna Scan ECT system with ACE (Asymmetrical Contrast Enhancement) provides superior three dimensional images.*

See us at the SNM Show in Miami Beach at Island 2

## PICKER INTERNATIONAL

**We were first to  
make ECT practical...**



By working closely with clinicians, we were able to introduce the MaxiCamera™ 400T as the first nuclear diagnostic system with tomographic capability. It effectively meets real clinical needs, such as better contrast enhancement with more sensitive transaxial images in liver and soft tissue studies, and positive identification of cardiac infarcts. And for greater productivity, it can perform the whole range of routine and specialized nuclear procedures, including single pass, whole body studies.

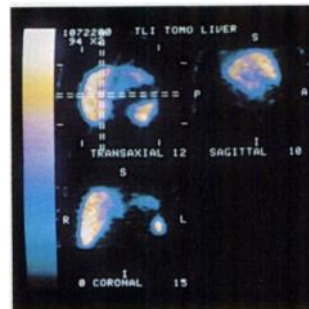
### MaxiCamera 400A makes spatial distortion corrections practical.

Now you can achieve even better resolution, linearity and uniformity with the advanced MaxiCamera 400A with Autotune ZS. This camera automatically retunes each photomultiplier tube many times each second to provide the stable detector response necessary to make real time spatial distortion and energy corrections practical for an analog system. With no delays in your system's operation, and no decrease in sensitivity.

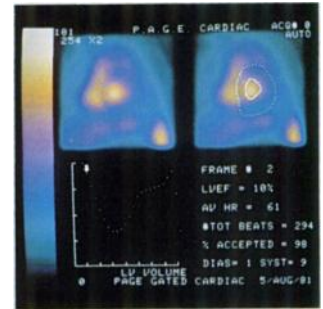
### Star computer provides automatic ECT data acquisition and analysis.

By adding the Star™ data acquisition system and tomographic software to your MaxiCamera 400T system you can have comprehensive ECT capability, with touch-button convenience. Camera movement and data acquisition are automatically controlled according to your specifications. And you can display reconstructions as transaxial, sagittal, coronal and oblique angle projections. The Star system also features a full range of automatic programs for routine and specialized liver and cardiac studies, which dramatically increase diagnostic information while saving you precious time.

For greater investment value, GE nuclear systems are designed for upgradeability. And backed by our worldwide service network and parts availability. With practical, proven nuclear imaging systems from a single source, your choice could be practically automatic.



*Liver data shown in a transaxial, sagittal and coronal view projection.*



*Fully automatic cardiac analysis with the P.A.G.E. software program.*

# Now we've made it practically automatic.

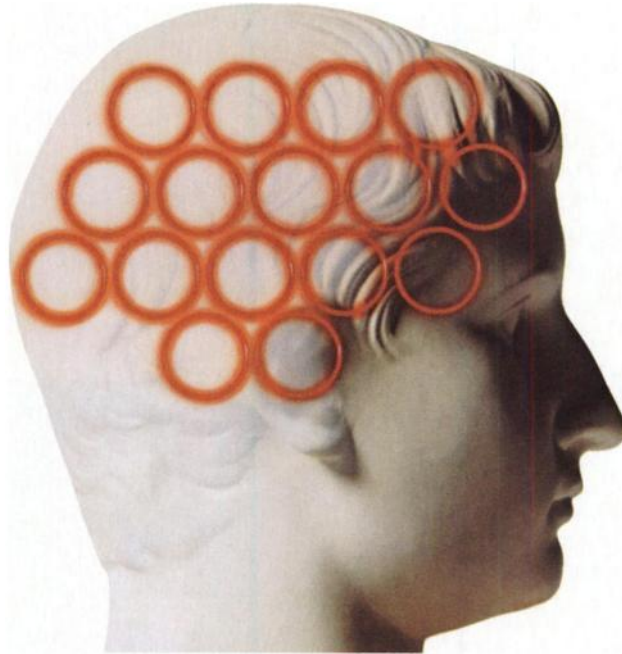
**We bring good things to life.**

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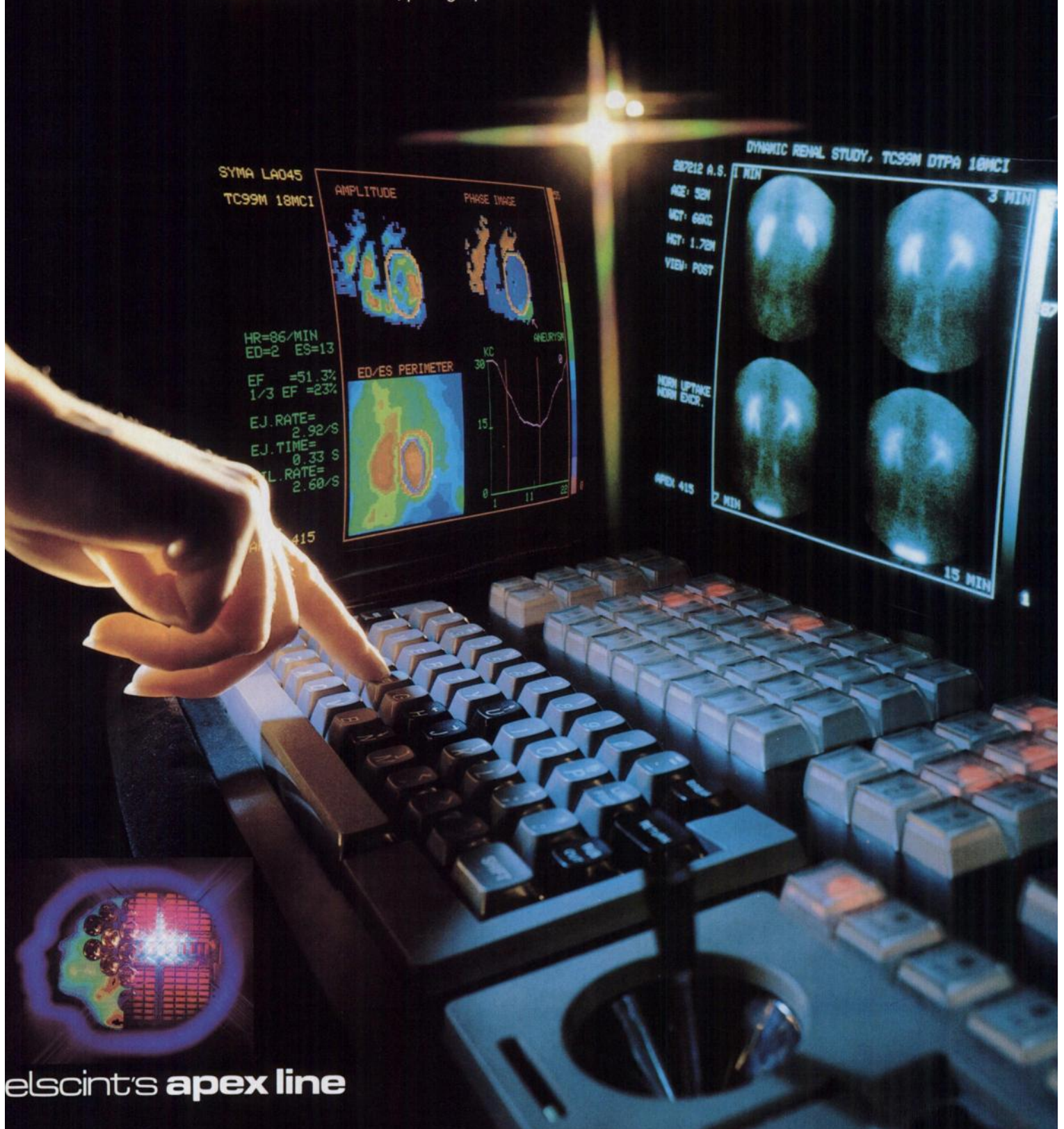
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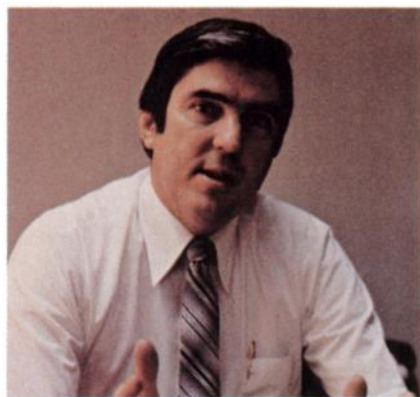
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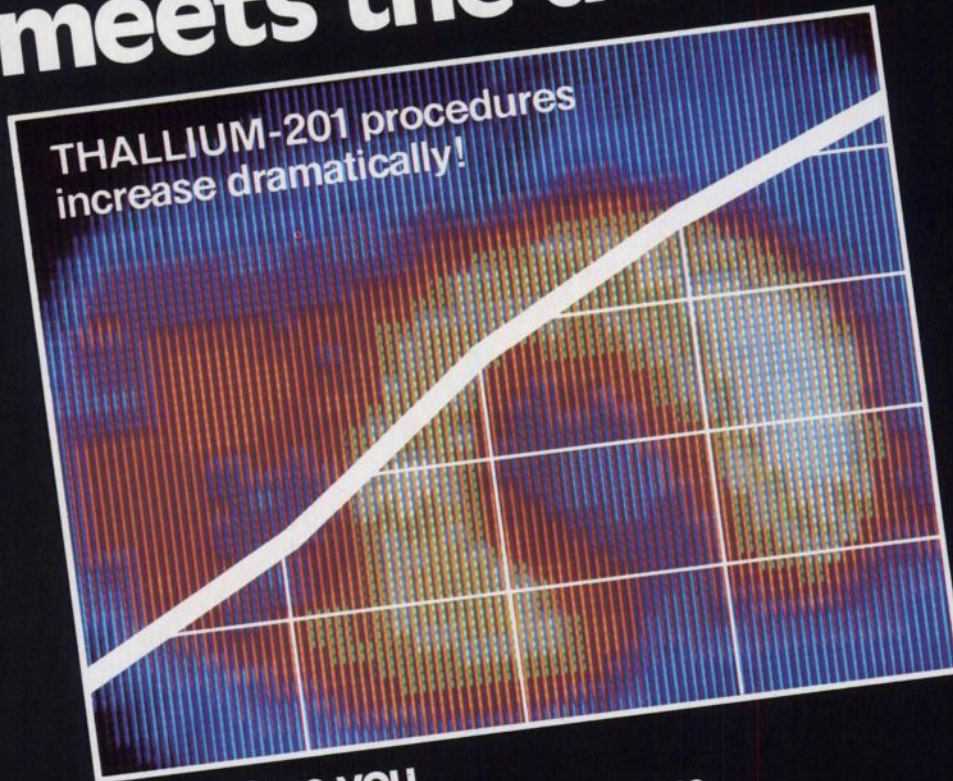
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\*Diagnostic Imaging, June 1981.

# THALLOUS CHLORIDE TI 201 INJECTION

Diagnostic—For Intravenous Use

Brief Summary—for full prescribing information consult package insert.

## DESCRIPTION

**Thallous Chloride TI 201 Injection** is supplied in isotonic solution as a sterile, nonpyrogenic diagnostic radiopharmaceutical for intravenous administration. Each ml contains 1 mCi Thallous Chloride TI 201 at calibration time made isotonic with 9 mg sodium chloride and preserved with 0.9% (v/v) benzyl alcohol. The pH is adjusted to between 4.5-7.0 with hydrochloric acid and/or sodium hydroxide. Thallium TI 201 is cyclotron produced. It is essentially carrier-free and contains no more than 1.0% Thallium TI 200 and no more than 1.0% Thallium TI 202.

## CLINICAL PHARMACOLOGY

Carrier-free **Thallous Chloride TI 201** has been found to accumulate in viable myocardium in a manner analogous to potassium. Experiments employing labeled microspheres in human volunteers have shown that the myocardial distribution of **Thallous Chloride TI 201** correlates well with regional perfusion.

In clinical studies, thallium images show areas of infarction as "cold" or nonlabeled regions which are confirmed by electrocardiographic and enzyme changes. Regions of transient myocardial ischemia corresponding to areas perfused by coronary arteries with partial stenoses have been visualized as cold spots when thallium was administered in conjunction with an exercise stress test.

After intravenous administration, **Thallous Chloride TI 201** clears rapidly from the blood with maximal concentration by normal myocardium occurring at about ten minutes.

Five minutes after intravenous administration only 5-8 percent of injected activity remained in the blood. A biexponential disappearance curve was obtained, with 91.5 percent of the blood radioactivity disappearing with a  $T_{1/2}$  of about 5 minutes. The remainder had a  $T_{1/2}$  of about 40 hours.

Approximately 4 to 8 percent of the injected dose was excreted in the urine in the first 24 hours. The whole body disappearance half-time was  $9.8 \pm 2.5$  days. Kidney concentration was found to be about 3 percent of the injected activity and the testicular content was 0.15 percent. Net thyroid activity was determined to be only 0.2 percent of the injected dose, and the activity disappeared in 24 hours. From anterior and posterior whole-body scans, it was determined that about 45 percent of the injected dose was in the large intestines and contiguous structure (liver, kidneys, abdominal musculature!).

Atkins, H. L., et al. Thallium-201 for Medical Use. Part 3: Human Distribution and Physical Imaging Properties, *Journal of Nuclear Medicine*, 18(2):133-140, Feb. 1977.

## INDICATIONS AND USAGE

**Thallous Chloride TI 201** may be useful in myocardial perfusion imaging and 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).

It is usually not possible to differentiate recent from old myocardial infarction, or to differentiate exactly between recent myocardial infarction and ischemia.

## CONTRAINDICATIONS

None known.

## WARNINGS

When studying patients suspected or known to have myocardial infarction or ischemia, 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.

## PREGNANCY CATEGORY C

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 not be used in pregnant women except when benefits clearly outweigh the potential risks.

## PRECAUTIONS

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.

## NURSING MOTHERS

It is not known whether this drug is excreted in human milk. Because many drugs are 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.

## CARCINOGENESIS

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

Data are not available concerning the effect on the quality of Thallium TI 201 scans of marked alterations in blood glucose, insulin or pH (such as is found in diabetes mellitus). 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 thallium may likewise be affected.

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

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.

This drug should not be used six (6) days after the calibration date.

## ADVERSE REACTIONS

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

## HOW SUPPLIED

**Thallous Chloride TI 201 Injection** is supplied in a sterile, nonpyrogenic solution for intravenous administration. Each ml contains 1 mCi Thallium TI 201 at calibration time, 9 mg sodium chloride and 0.9 percent (v/v) benzyl alcohol. The pH is adjusted to between 4.5-7.0 with hydrochloric acid and/or sodium hydroxide solution. Vials are available in the following quantities of radioactivity: 2.0, and 4.0 millicuries of Thallium TI 201.

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

# Atlas of Radionuclide Hepatobiliary Imaging

Christopher C. Kuni, M.D., Chief, Nuclear Medicine Service, Veterans Administration Medical Center, Denver; Assistant Professor of Radiology, University of Colorado Health Sciences Center, Denver

William C. Klingensmith III, M.D., Director, Division of Nuclear Medicine, University of Colorado Health Sciences Center, Denver; Associate Professor of Radiology, University of Colorado Medical School

Now, for the first time in one easy-to-use reference, the most current information is available on the performance and interpretation of hepatobiliary scans. The authors have drawn on their experience with more than 1500 such scans to present the most representative examples of virtually every liver-related disease the nuclear medicine physician is likely to encounter. **Atlas of Radionuclide Hepatobiliary Imaging** presents a logical, tailored approach to patient preparation and imaging protocol, with many invaluable "tricks of the trade" revealed so that the physician can easily perform and evaluate hepatobiliary scans with optimal efficiency and diagnostic accuracy.

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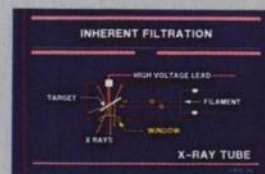
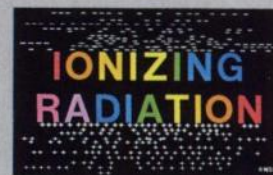
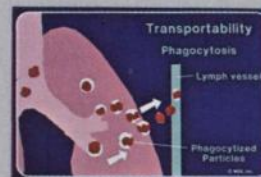
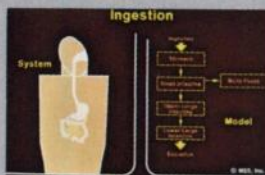
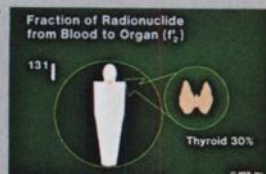
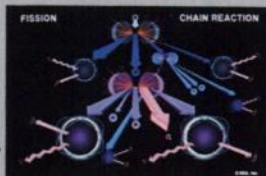
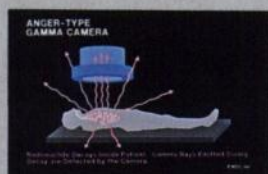
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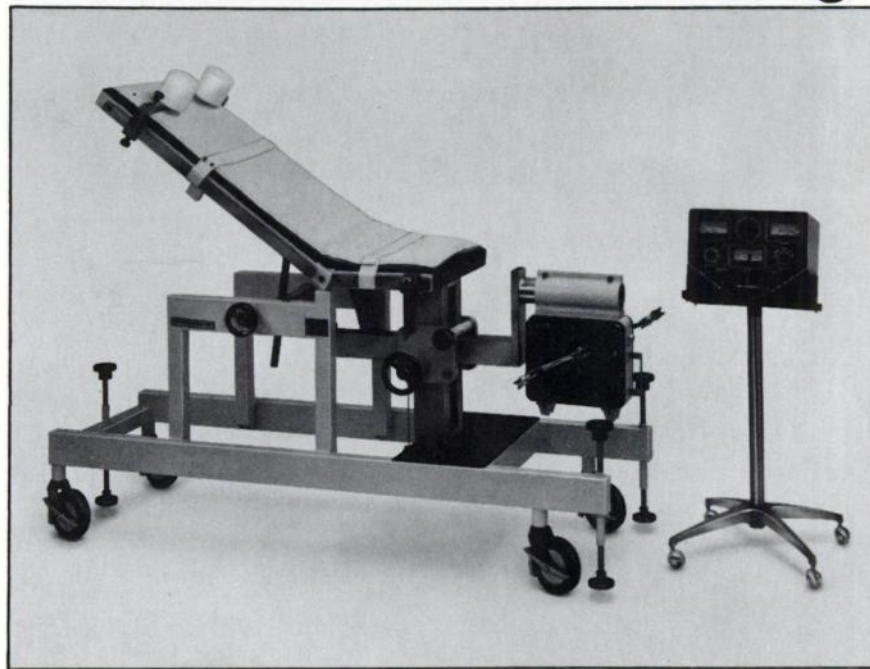
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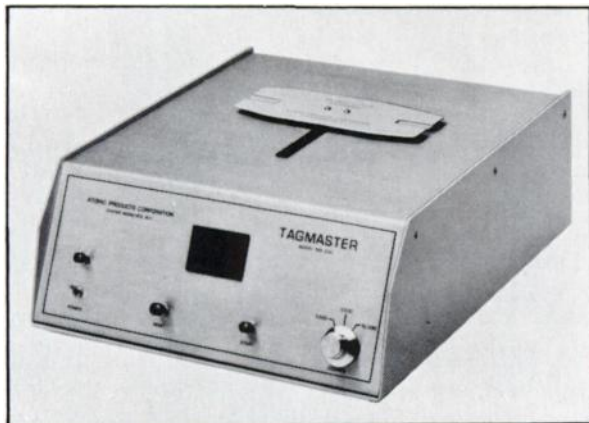
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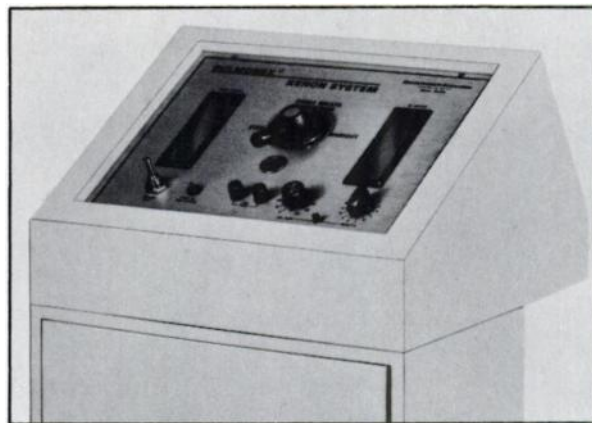
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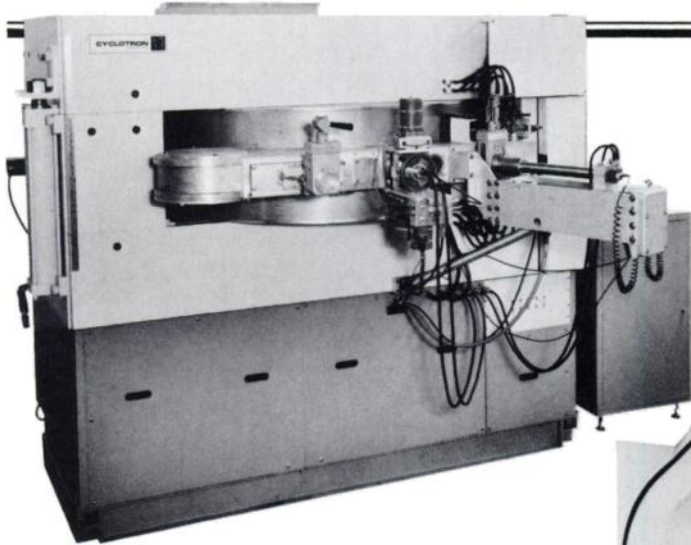
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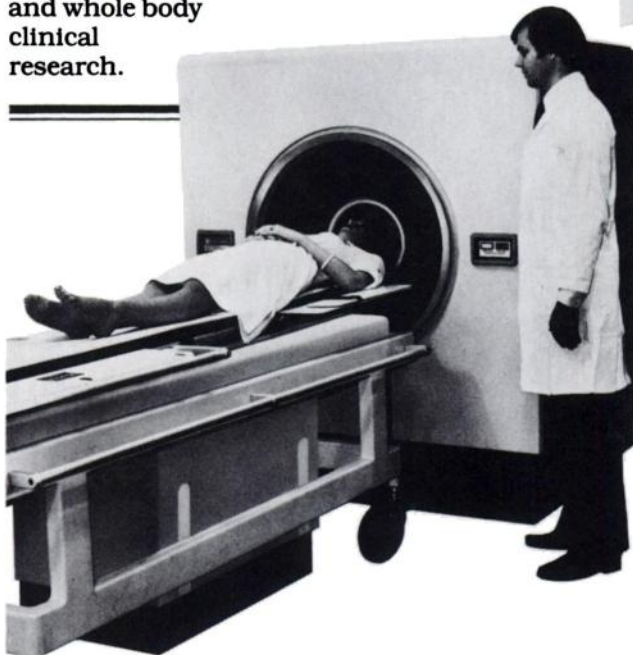


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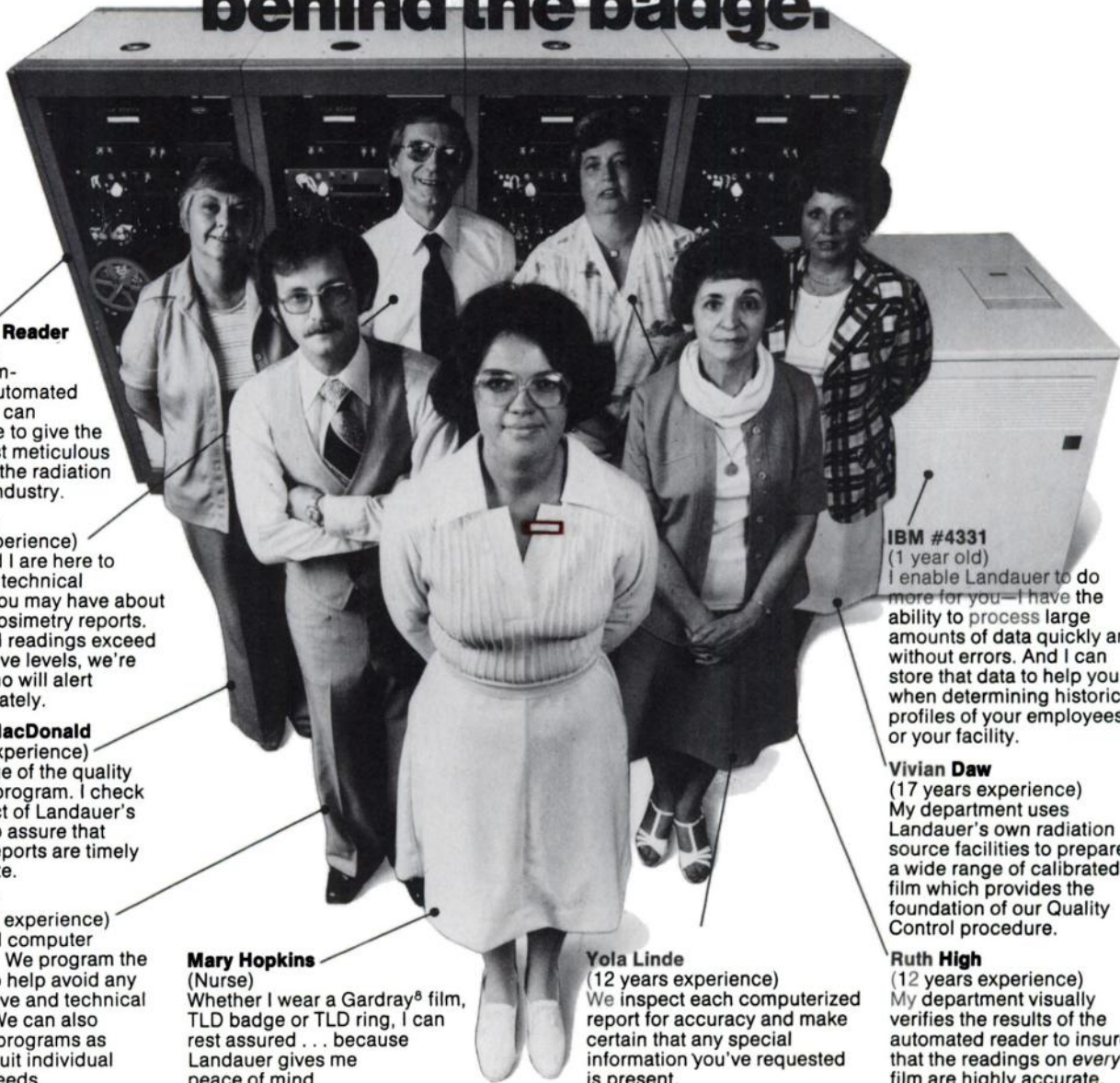
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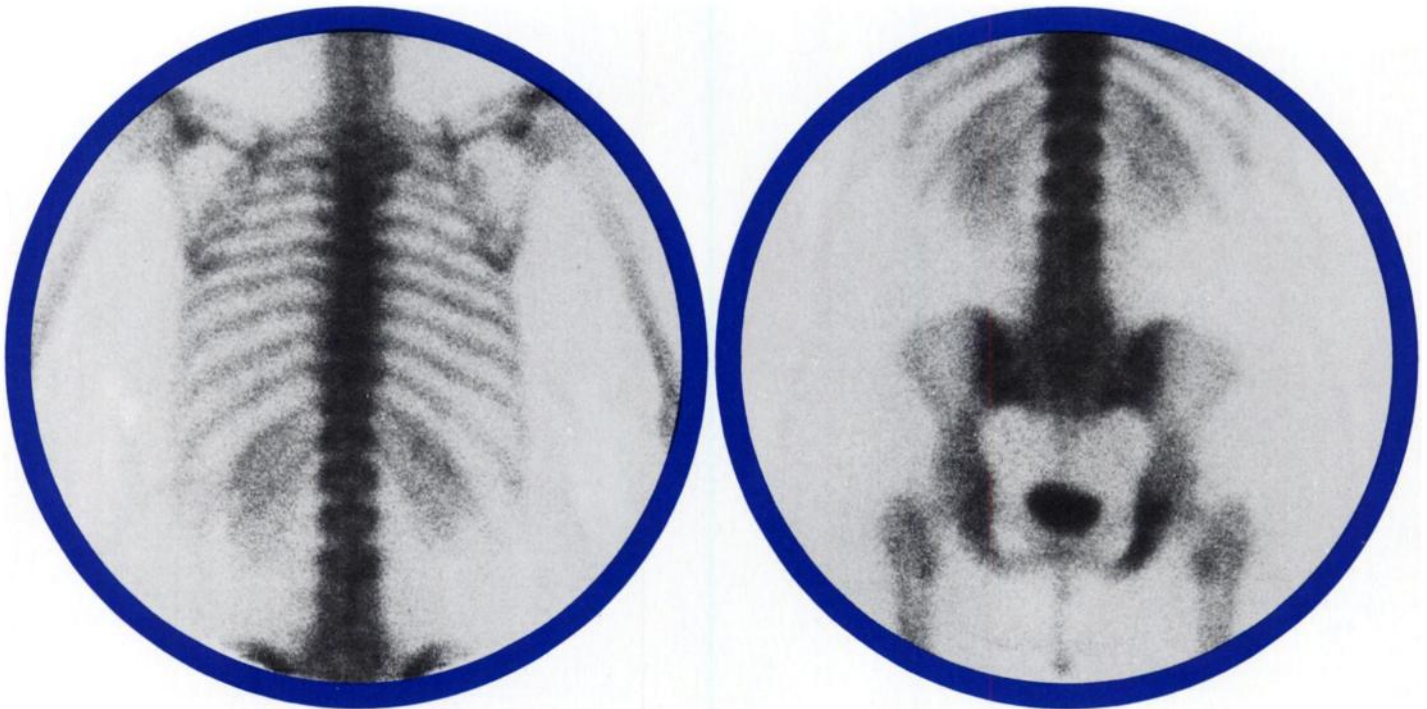
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## Bone uptake superior to MDP

HDP shows unusually high adsorption to bone. In a clinical comparison, Osteoscan-HDP averaged 21% higher bone uptake than the MDP-based agent.<sup>1</sup>

### Scan data:

The two scans above are of a 56-year-old female patient with breast cancer. Scan: abnormal activity in right ischial ramus. Instrument: General Electric MaxiCamera™ 535; total counts: 2000K; dose: 20.8 mCi; 5'5", 175 lb; dose-to-image time: 2.25 hours

Notice excellent bone delineation in this obese patient.

## Rapid blood clearance

No bone agent clears the blood faster. Only 6% of Osteoscan-HDP remains in the blood two hours after injection.<sup>2</sup> Osteoscan-HDP's rapid blood clearance contributes to the overall quality of the image and permits flexibility in scheduling patient scans from 1 to 4 hours post-injection.

### References:

1. Fogelman, I. et al: Presented at the 1980 Annual Meeting, SNM, Southeastern Chapter.
2. Silberstein, E.B.: *Radiology* 136: 747-751, 1980.
3. Littlefield, J.L., and Rudd, T.C.: *Clin. Nucl. Med.* 5:S28, 1980 (abstr.).

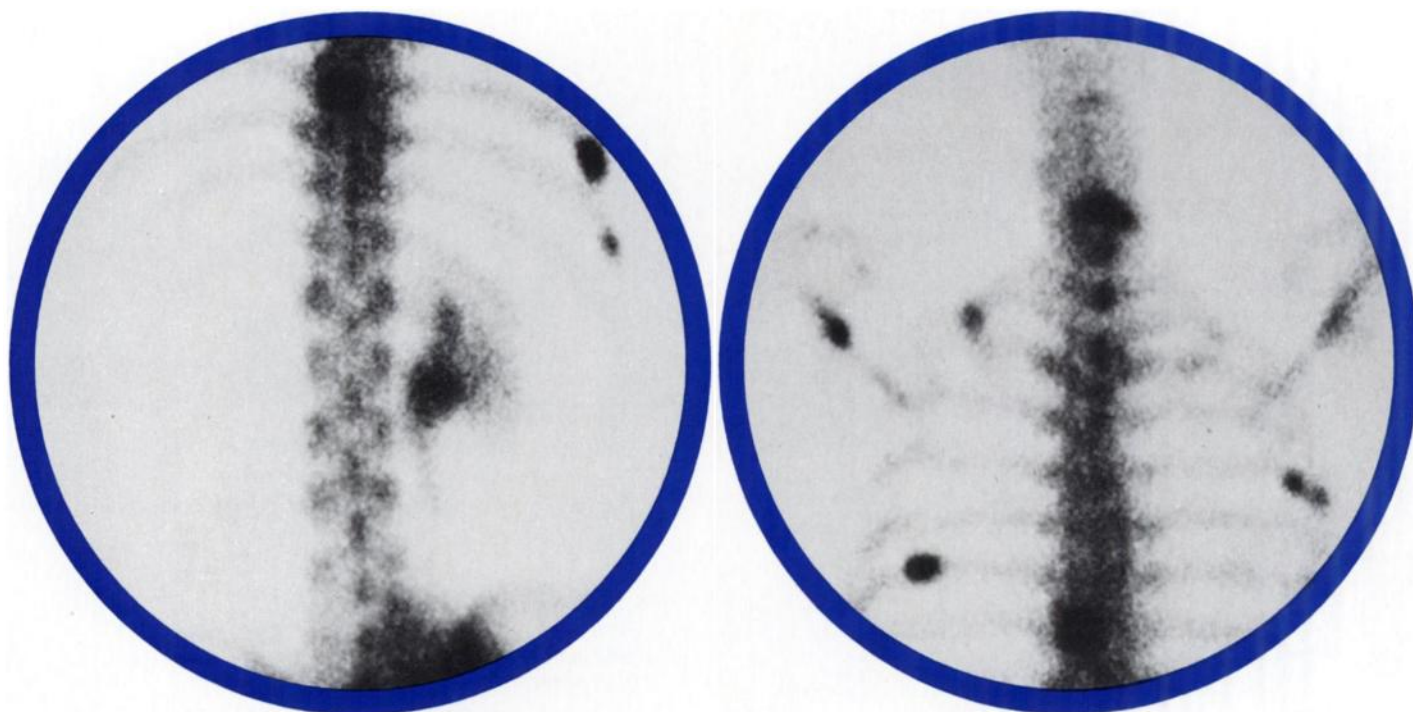
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## Technetium Tc99m Oxidronate Kit



### Unexcelled image quality<sup>3</sup>

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Please see the following page for a brief summary of prescribing information.

### High lesion sensitivity

HDP offers a high tumor-to-normal bone ratio. This results in high resolution scans capable of demonstrating subtle skeletal metastases and fractures with no sacrifice in overall image quality.

#### Scan data:

The two scans above are of a 79-year-old male patient with adenocarcinoma-prostate. Scan: multiple lesions. Instrument: Picker 4/15 Gamma Camera; information density: 3000; dose: 15 mCi; dose-to-image time: 3 hours

IVP revealed mass in right kidney causing retention.



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# OSTEOSCAN-HDP

Technetium Tc99m Oxidronate Kit

## INDICATIONS AND USAGE

**OSTEOSCAN-HDP** (Technetium Tc99m Oxidronate Kit) is a diagnostic skeletal imaging agent used to demonstrate areas of altered osteogenesis.

## CLINICAL PHARMACOLOGY

During the 24 hours following injection, Technetium Tc99m-labeled **OSTEOSCAN-HDP** is rapidly cleared from blood and other non-osseous tissues and accumulates in the skeleton and urine. In humans, blood levels are about 10% of the injected dose at one hour post-injection and continue to fall to about 6%, 4% and 3% at 2, 3 and 4 hours respectively. When measured at 24 hours following its administration, skeletal retention is approximately 50% of the injected dose. **OSTEOSCAN-HDP** exhibits its greatest affinity for areas of altered osteogenesis and actively metabolizing bone.

## 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 hypocalcemia (i.e., alkalosis).

## PRECAUTIONS

### General

Contents of the vial are intended only for use in the preparation of Technetium Tc99m Oxidronate and are **NOT** to be administered directly to the patient.

Technetium Tc99m Oxidronate should be formulated within **eight (8) hours** prior to clinical use. Optimal imaging results are obtained one to four hours after administration.

Technetium Tc99m Oxidronate 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. Radiopharmaceuticals should be used only by physicians who are qualified by specific training 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.

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 four to six hours.

### Carcinogenesis, Mutagenesis, Impairment of Fertility

No long-term animal studies have been performed to evaluate carcinogenic potential or whether Technetium Tc99m Oxidronate affects fertility in males and females.

### Pregnancy — Category C

Animal reproduction studies have not been conducted with Technetium Tc99m Oxidronate. It is also not known whether Technetium Tc99m Oxidronate can cause fetal harm when administered to a pregnant woman or can affect reproduction capacity. Technetium Tc99m Oxidronate 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 Tc99m 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.

## ADVERSE REACTIONS

Although adverse reactions have not been reported that are specifically attributable to the use of Technetium Tc99m Oxidronate, allergic dermatological manifestations (erythema) have been infrequently reported with similar agents.

## DOSAGE AND ADMINISTRATION

### General Instructions

The recommended adult dose of Technetium Tc99m-labeled **OSTEOSCAN-HDP** is 15 mCi with a range of 10 to 20 mCi. The activity of each dose should be measured by a suitable radiation calibration system just prior to administration. The dose should be given intravenously by slow injection. For optimal results imaging should be done 1-4 hours post-injection.

### HOW SUPPLIED

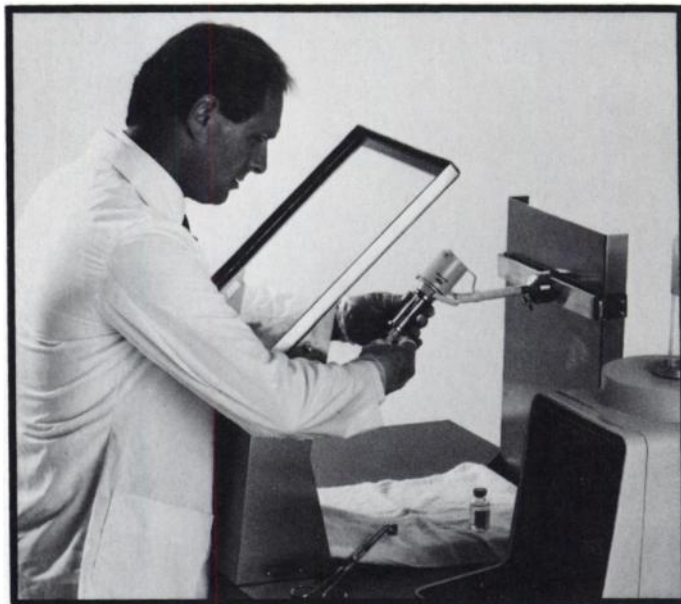
**OSTEOSCAN-HDP** is supplied as a lyophilized powder packaged in vials. Each vial contains 3.0 mg oxidronate sodium and 0.24 mg stannous chloride as active ingredients, and 0.84 mg gentisic acid as a stabilizer. Kits containing 5 or 30 vials are available. The NDC number for this product is NDC 37000-407-01. The drug can be stored at room temperature both prior to and following reconstitution with ADDITIVE-FREE sodium pertechnetate Tc99m.

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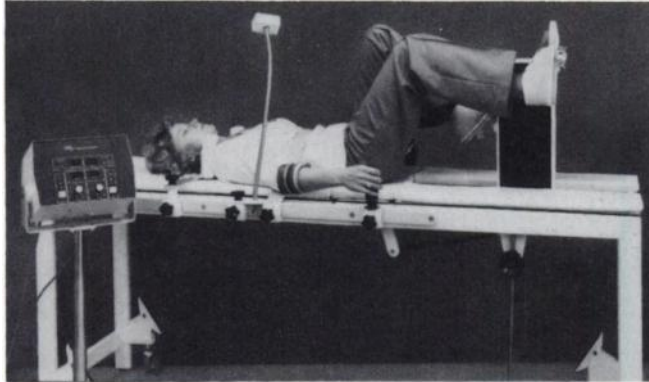
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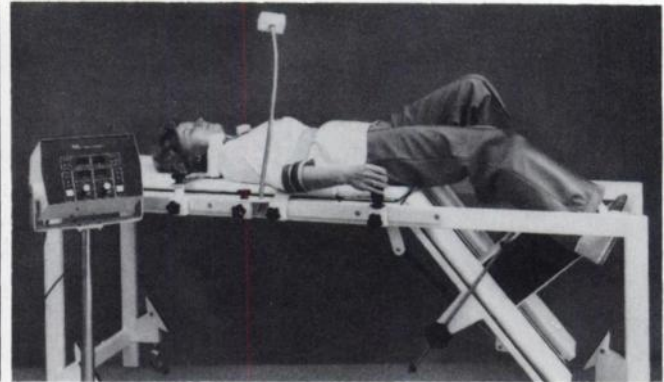
Upright Position with ergometer at partial extension



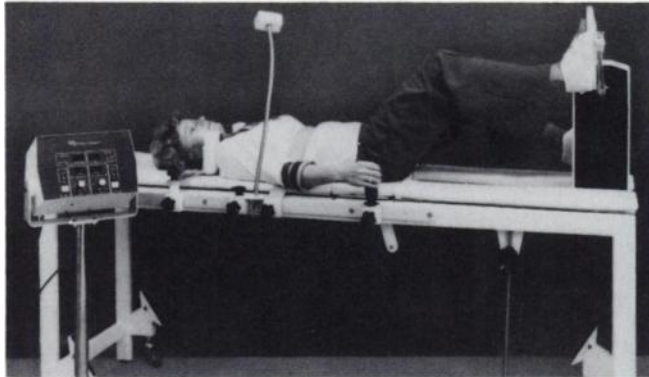
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Supine Position with ergometer depressed and partially extended



Supine Position with ergometer elevated and fully extended



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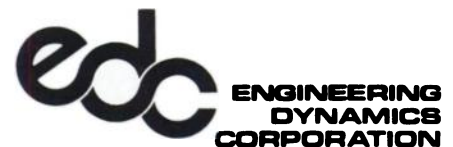
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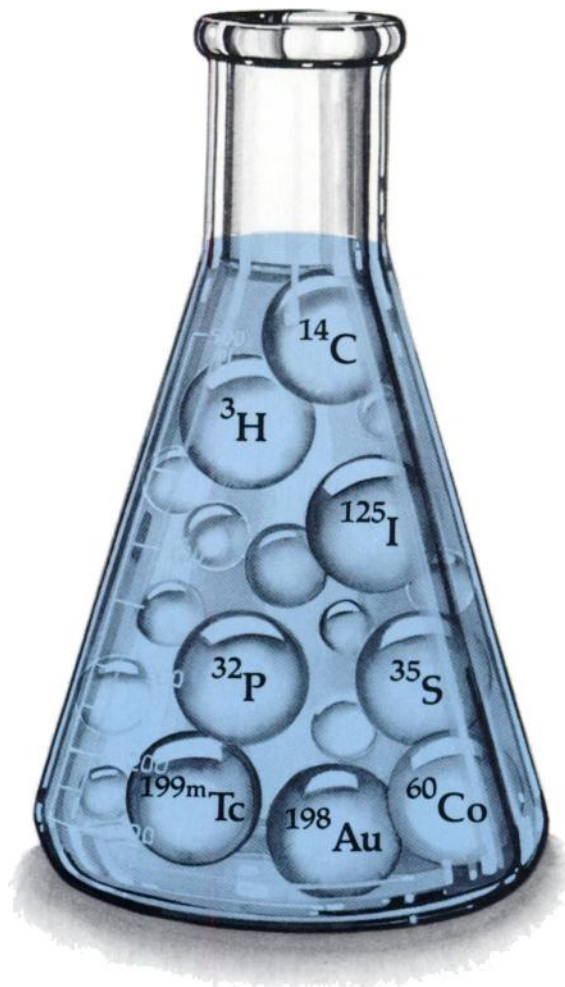
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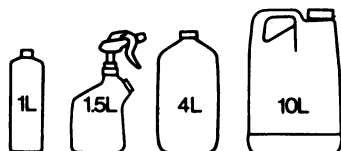
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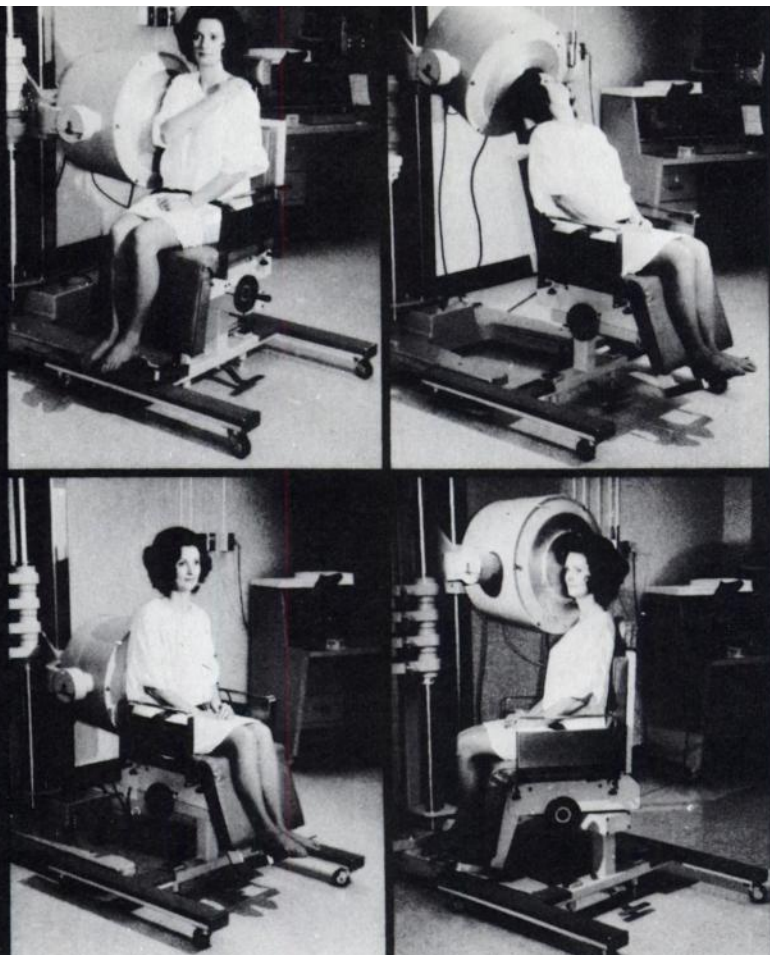
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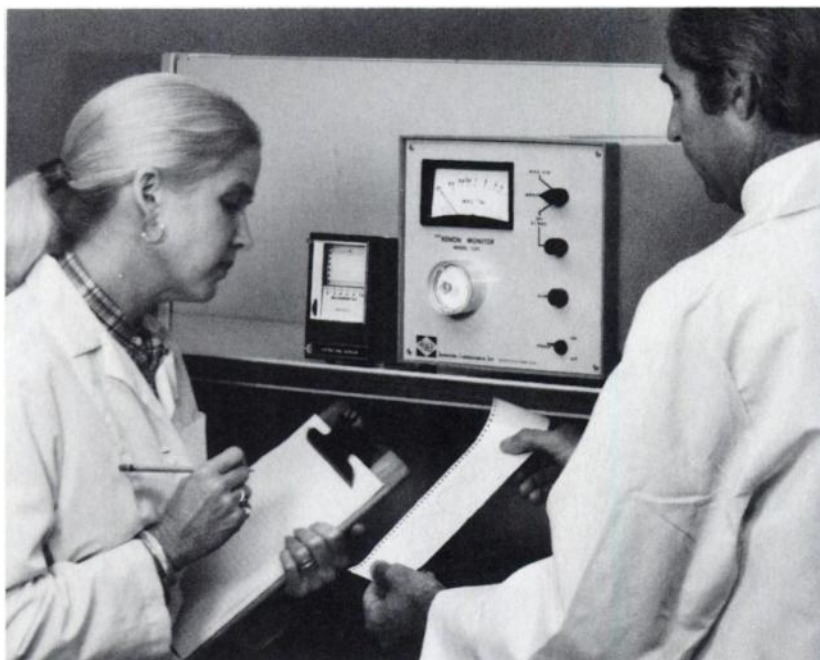
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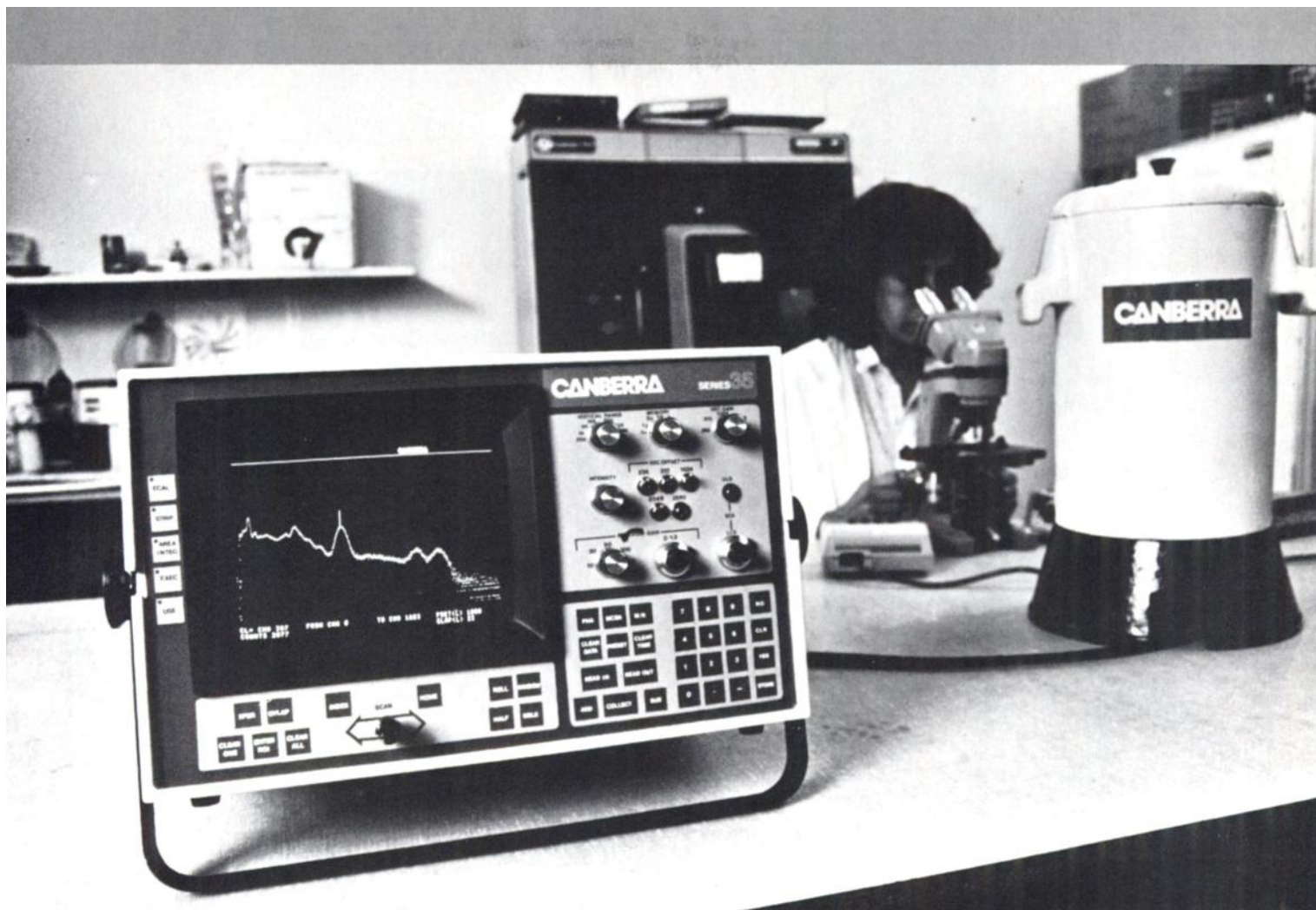
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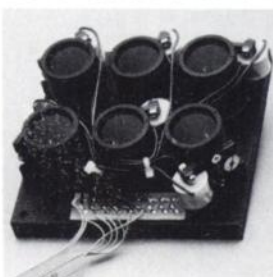


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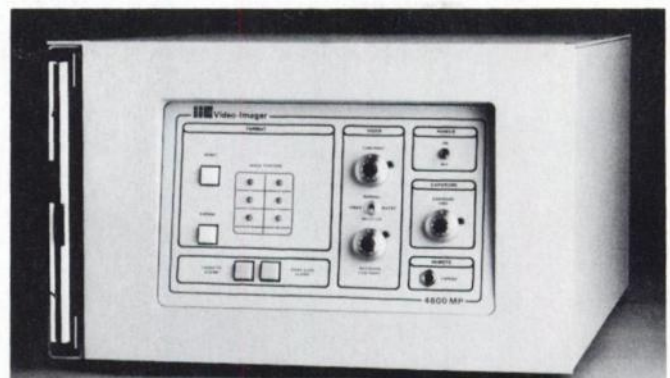
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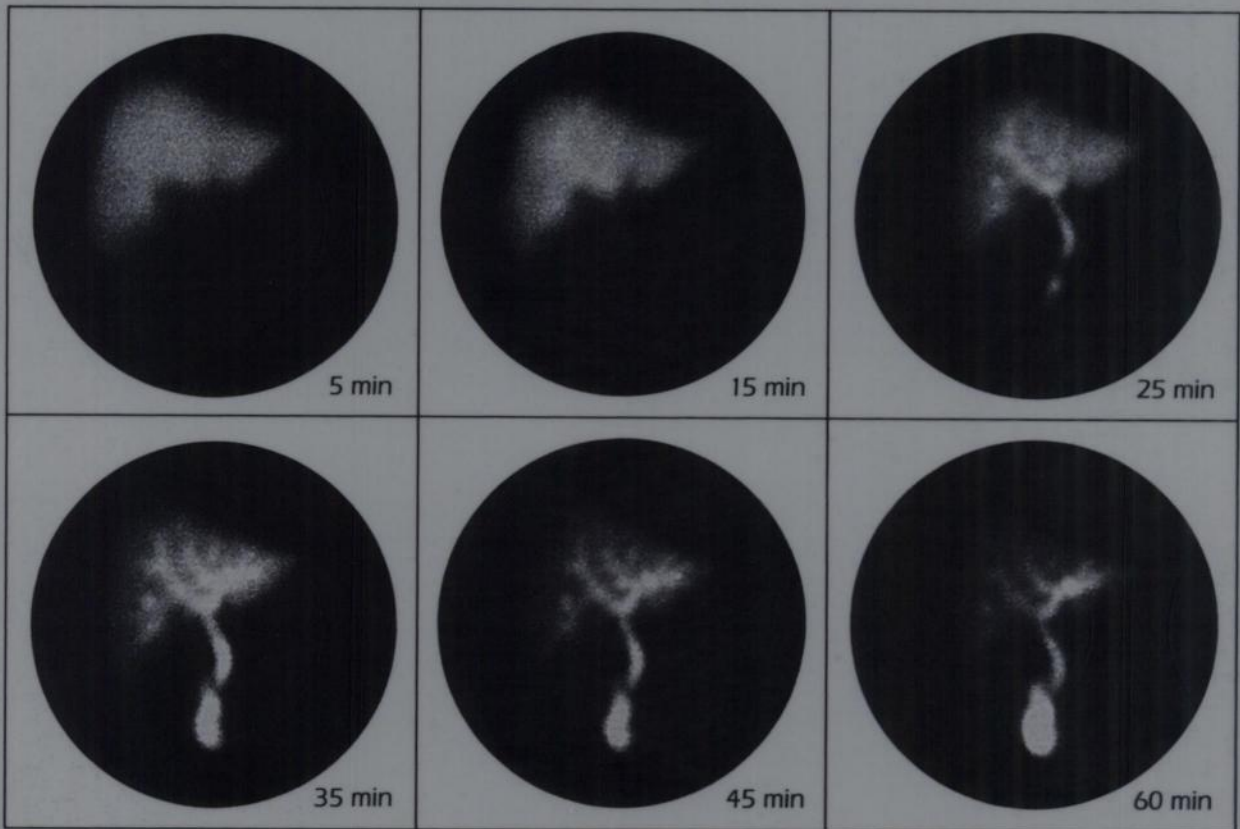
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Technetium Tc 99m Disofenin Kit



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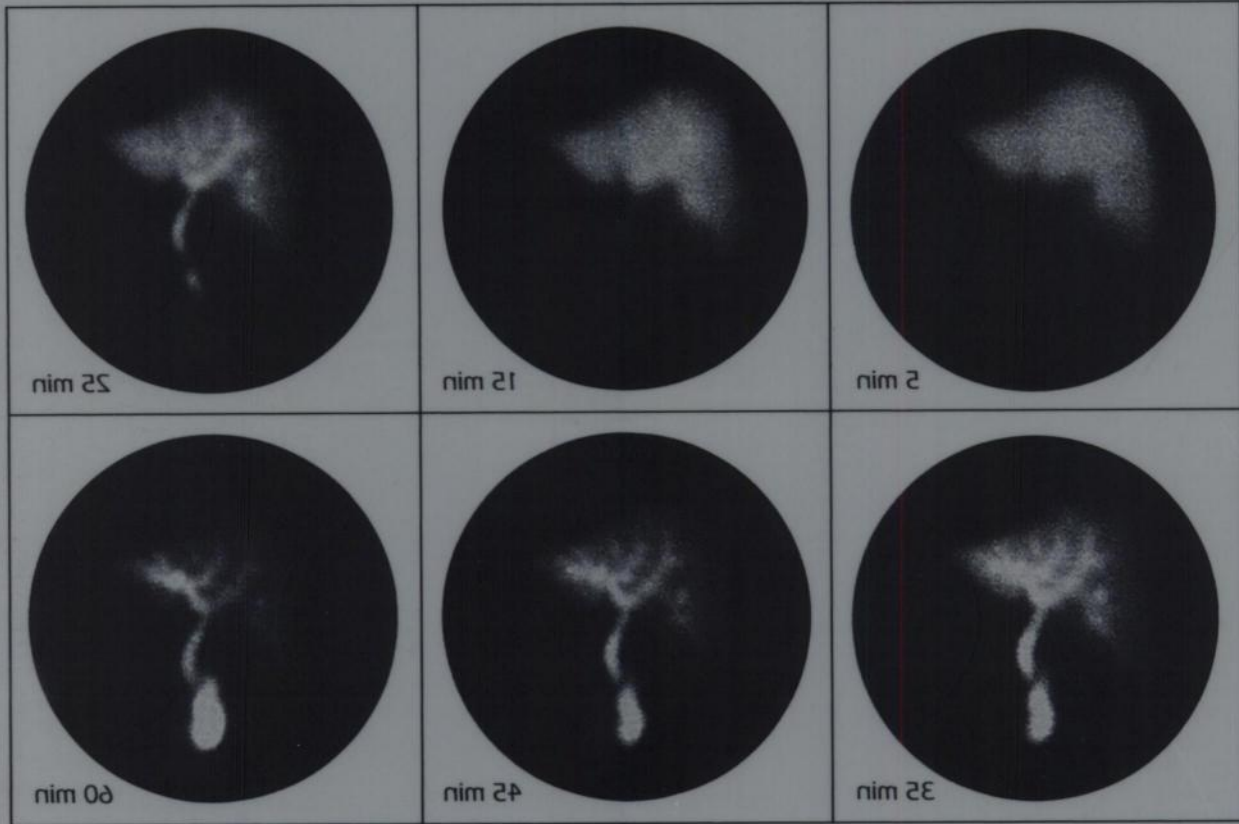
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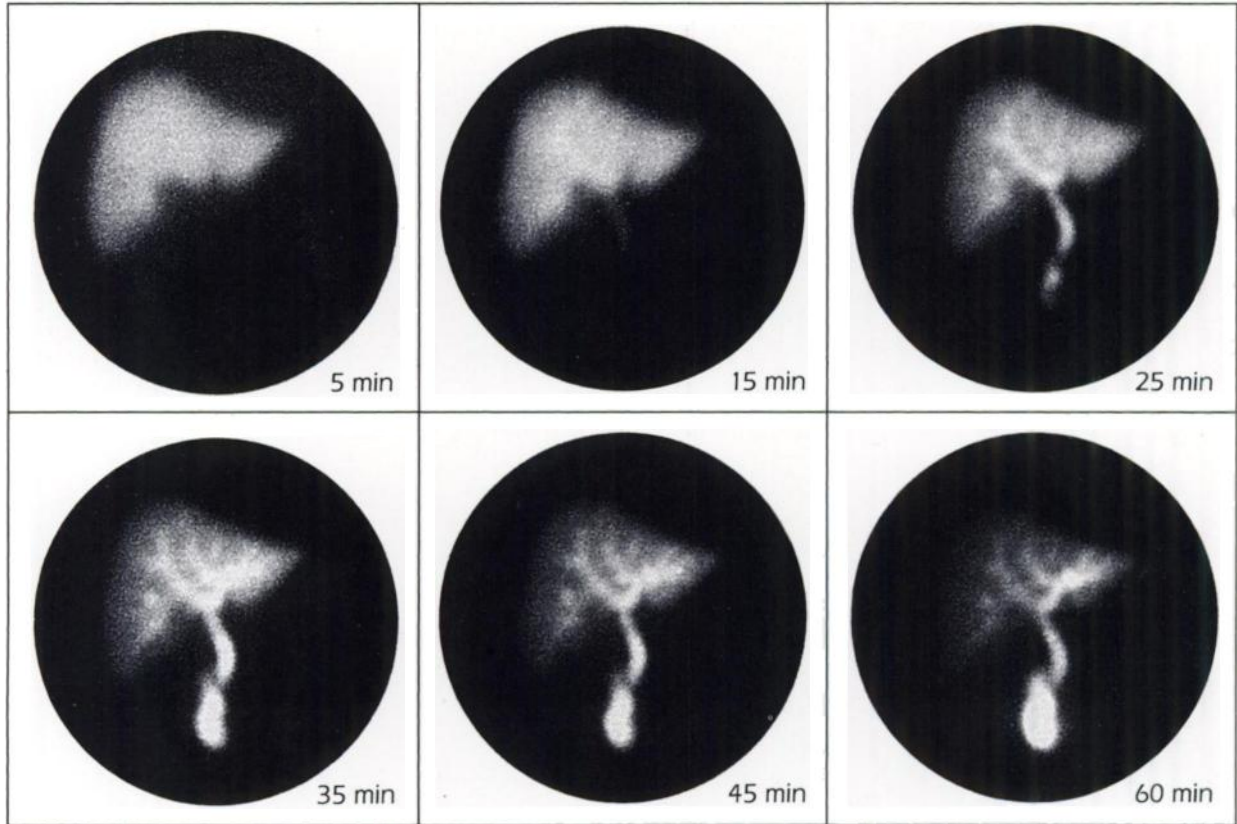
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### Superior liver uptake and washout

"Visually and computationally, DISIDA [Hepatolite] was superior [to other IDA agents] in terms of relative uptake in the liver and liver washout." Hernandez and Rosenthal<sup>2</sup>

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"During the first hour after injection (the critical time for imaging), diisopropyl-IDA [Hepatolite] had the highest rate of biliary excretion (76.2%), which should result in the best visualization of the biliary system..." Wistow et al<sup>3</sup>

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"We were able to clearly identify the intrahepatic ducts in 46 of the 54 patients imaged with PRIDA [Hepatolite] whereas we were not able to identify them clearly in any of the 21 patients imaged with BIDA." Read et al<sup>4</sup>

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"Tc-99m DISIDA [Hepatolite] appears to incorporate the best properties of all the currently available IDA analogs... it is the only IDA derivative that a "hot lab" would need to stock." Weissmann et al<sup>5</sup>

#### References

1. Weissmann HS, Badia JD, Hall T, abstracted: *J Nucl Med* 21:18, 1980.
2. Hernandez M, Rosenthal L: *Clin Nucl Med* 5:159, 1980.
3. Wistow BW, Subramanian G, Gagne GM, et al: *Radiology* 128:793, 1978.
4. Read ME, Teates CD, Croft BY, et al: In press.
5. Weissmann HS, Sugarman LA, Freeman LM, in Freeman LM, Weissmann HS (eds): *Nuclear Medicine Annual 1981*. New York, Raven Press, 1981, pp 35-89.

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# HEPATOLITE Technetium Tc 99m Disofenin Kit

**INDICATIONS AND USAGE:** Technetium Tc 99m Disofenin is indicated as a hepatobiliary imaging agent.

**CONTRAINDICATIONS:** None known.

**WARNINGS:** The theoretical possibility of allergic reactions should be considered in patients who receive multiple doses.

**PRECAUTIONS:** Contents of the vial are intended only for use in the preparation of Technetium Tc 99m Disofenin and are NOT to be administered directly to the patient.

Technetium Tc 99m Disofenin 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.

Technetium Tc 99m Disofenin should be formulated within six (6) hours prior to clinical use.

Carcinogenesis, Mutagenesis, Impairment of Fertility

No long term animal studies have been performed to evaluate carcinogenic potential or whether Technetium Tc 99m Disofenin affects fertility in males or females.

Pregnancy Category C

Animal reproductive studies have not been conducted with Technetium Tc 99m Disofenin. It is also not known whether Technetium Tc 99m Disofenin 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.

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 is excreted in human milk during lactation. Therefore, formula feedings should be substituted for breast feeding.

Pediatric Use

Safety and effectiveness in children below the age of 18 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 Disofenin have been reported.

**DOSE 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 (70kg) is:

Non-Jaundiced patient:	1-5mCi
Patients with serum bilirubin level greater than 5mg/dl:	3-8mCi

The patient dose should be measured by a suitable radioactivity calibration system immediately prior to patient administration. (If blood is drawn into the syringe, any unnecessary delay prior to injection may lead to clot formation in situ.) Do not backflush the syringe, slow injection is recommended. Radiochemical purity should be checked prior to patient administration.

The patient should be in a fasting state; 4 hours is preferable. False positives (non-visualization) may result if the gall bladder has been emptied by ingestion of food.

Parenteral drug products should be inspected visually for particulate matter and discoloration prior to administration whenever solution and container permit.

**HOW SUPPLIED:** NEN's HEPATOLITE™, Technetium Tc 99m Disofenin Kit is supplied in kits of five (5) and thirty (30) vials, sterile and pyrogen-free, each vial containing in lyophilized form:

Disofenin	20mg
Stannous Chloride (SnCl <sub>2</sub> · 2H <sub>2</sub> O) (Minimum)	0.24 mg
Total Tin, Maximum (as stannous chloride, SnCl <sub>2</sub> · 2H <sub>2</sub> O)	0.6mg

The pH is adjusted to between 5.5-6.5 with hydrochloric acid and/or sodium hydroxide solution prior to lyophilization. The contents of the vial were lyophilized under nitrogen. Store at room temperature (15°-30°C) before and after reconstitution. Protect from light. The lyophilized drug product is light sensitive. Technetium Tc 99m Disofenin contains no preservatives. 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 components of the Technetium Tc 99m Disofenin Kit are supplied sterile and non-pyrogenic. Aseptic procedures normally employed in making additions and withdrawals from sterile, non-pyrogenic containers should be used during addition of pertechnetate solution and the withdrawal of doses for patient administration.

Technetium Tc 99m Disofenin is prepared by adding no more than 100 millicuries of additive-free sterile, non-pyrogenic sodium pertechnetate Tc 99m solution in 2-5ml (≥20mCi/ml) to the vial and swirling for about one minute. Shielding should be utilized when preparing the Technetium Tc 99m Disofenin.

Catalog Number NRP-475 (5 vial kit)

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February 1982

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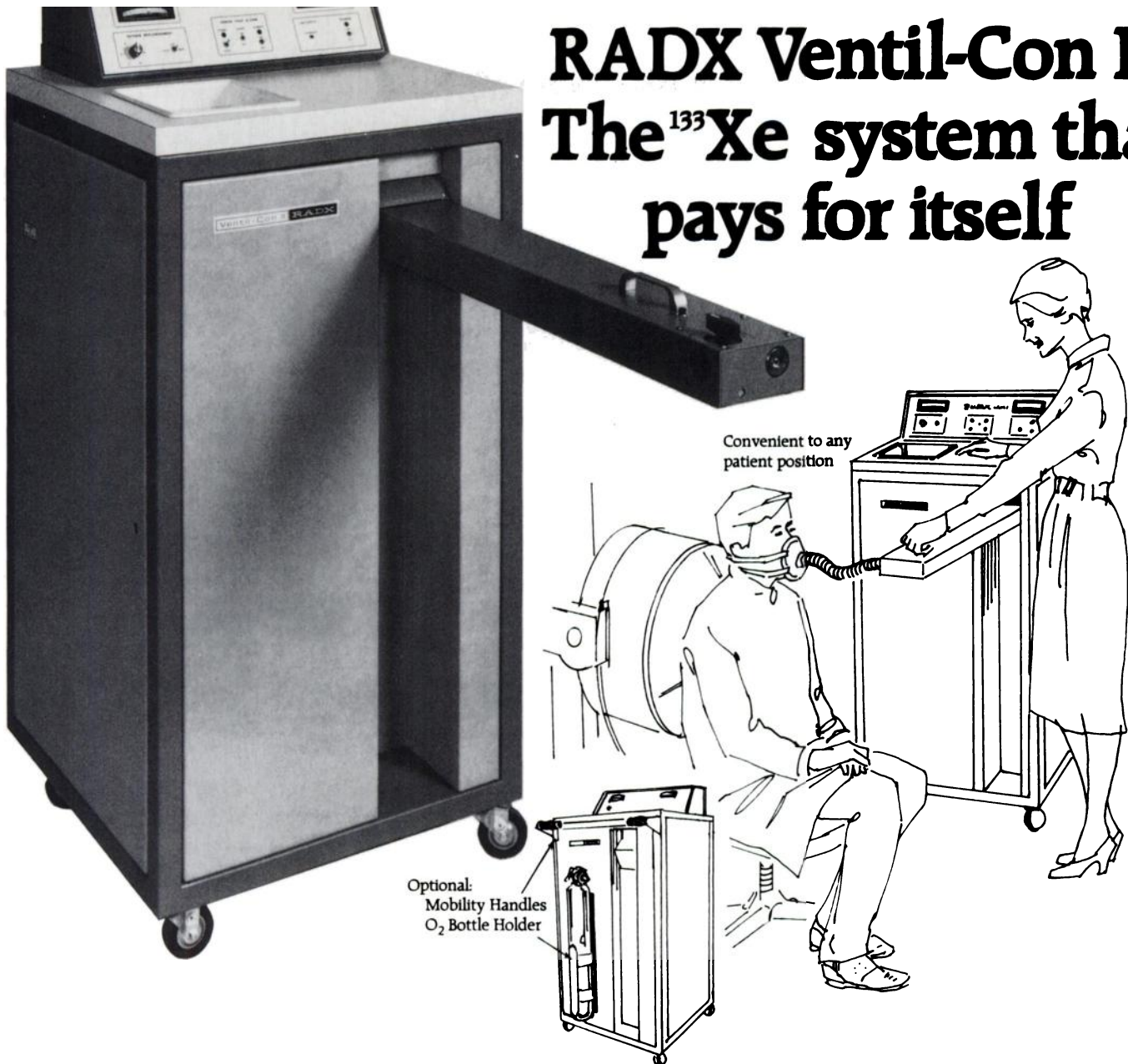
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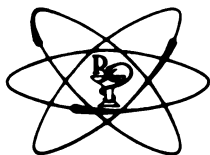
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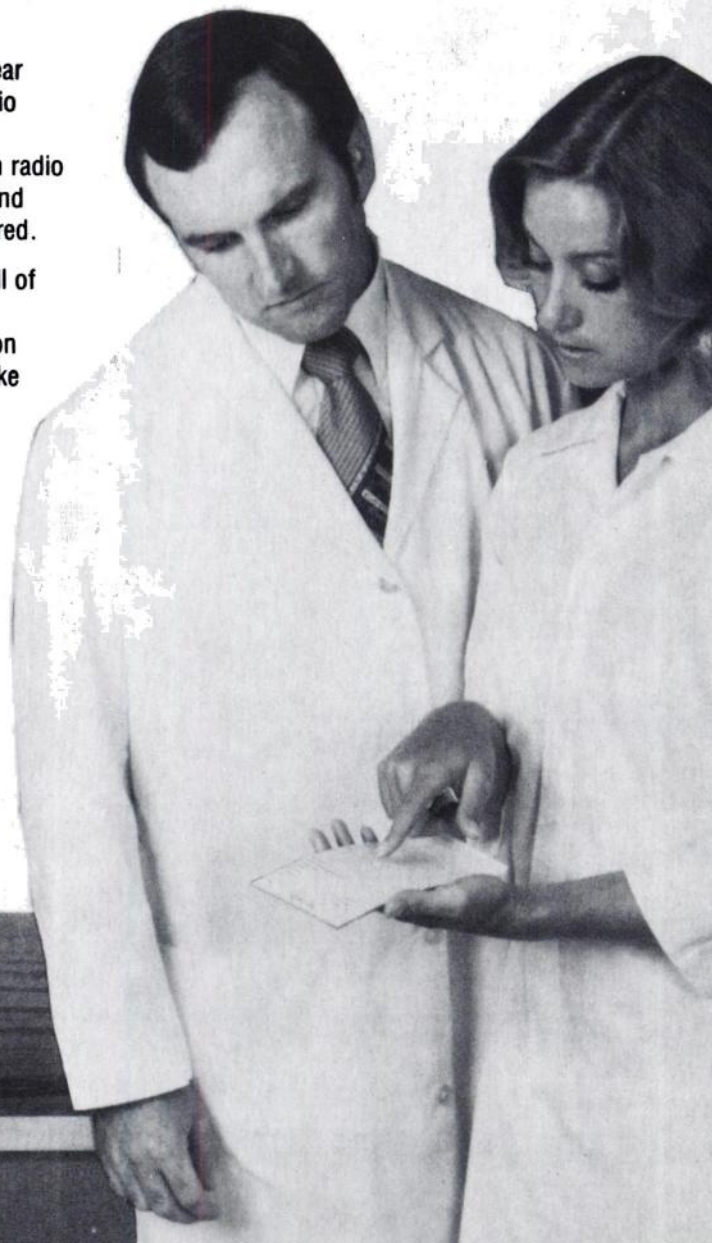
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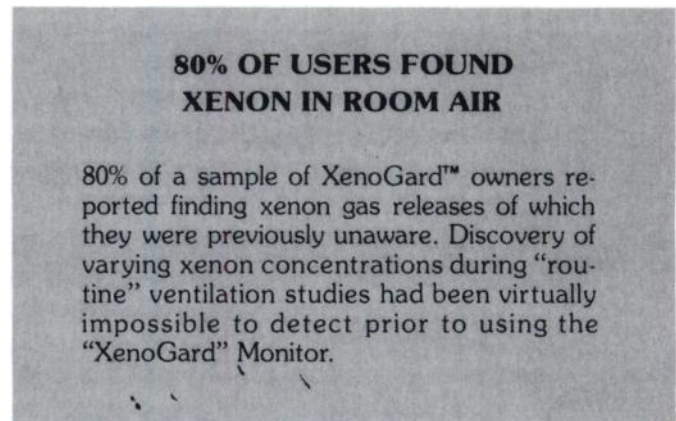
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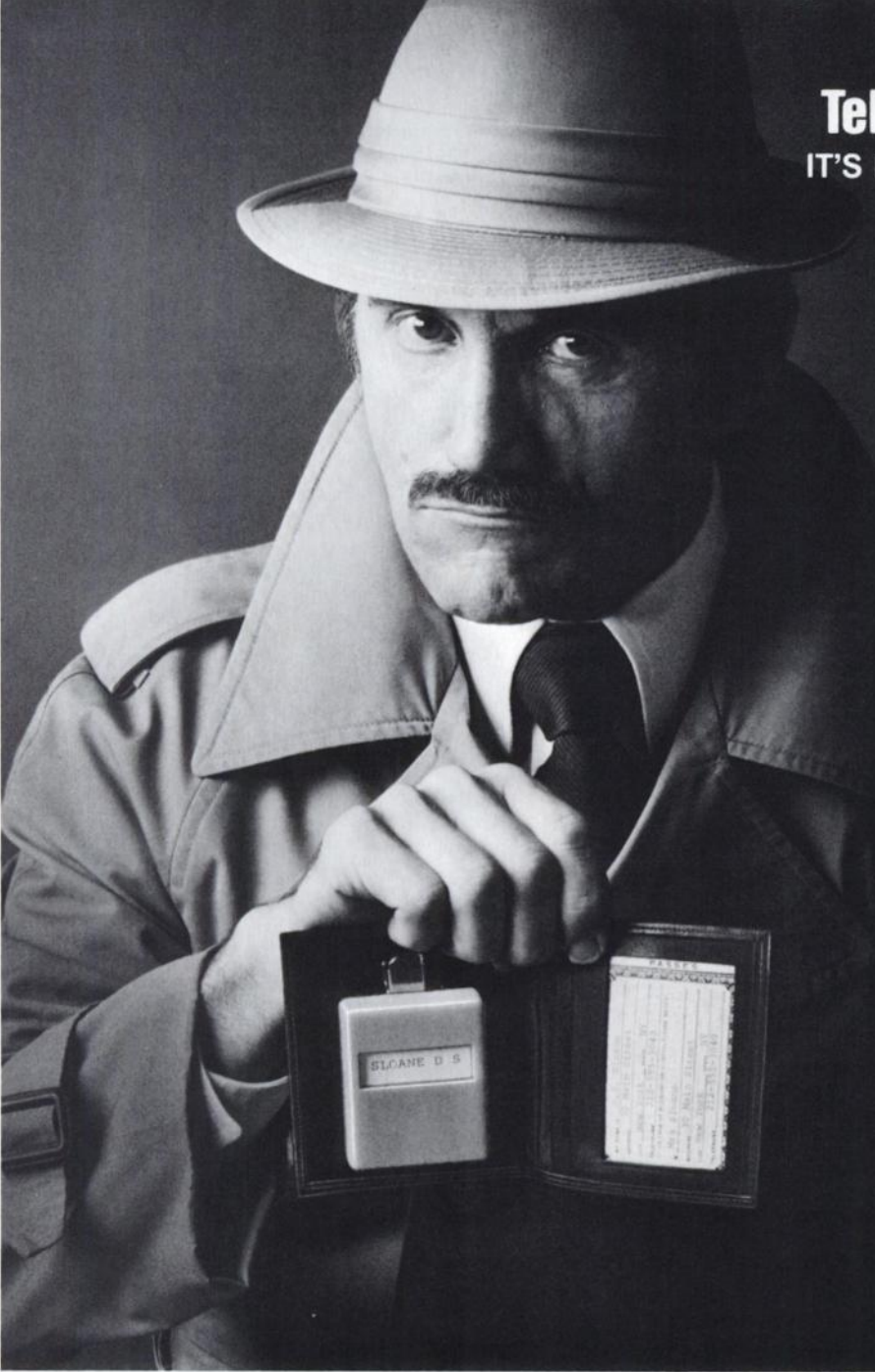


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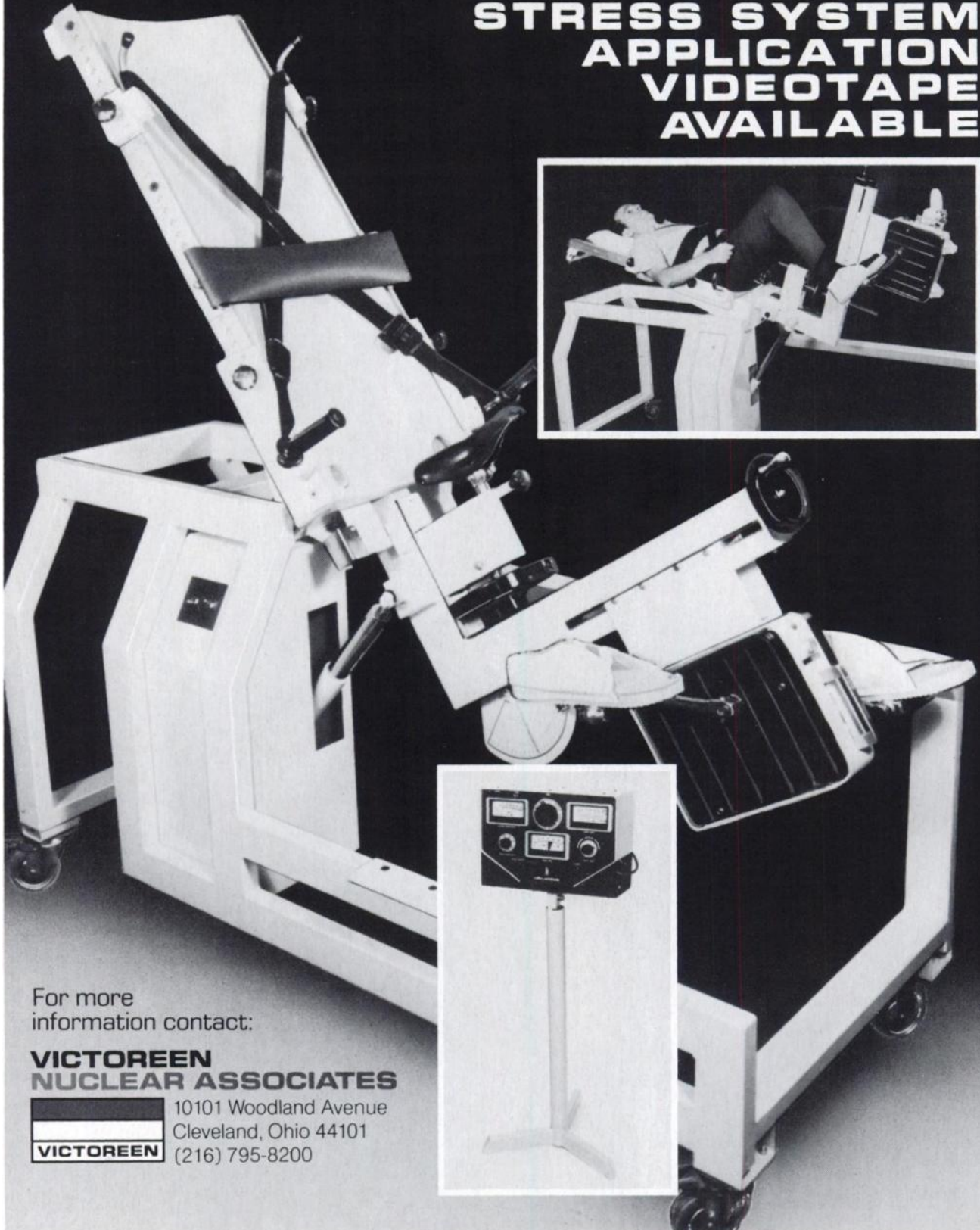
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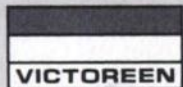
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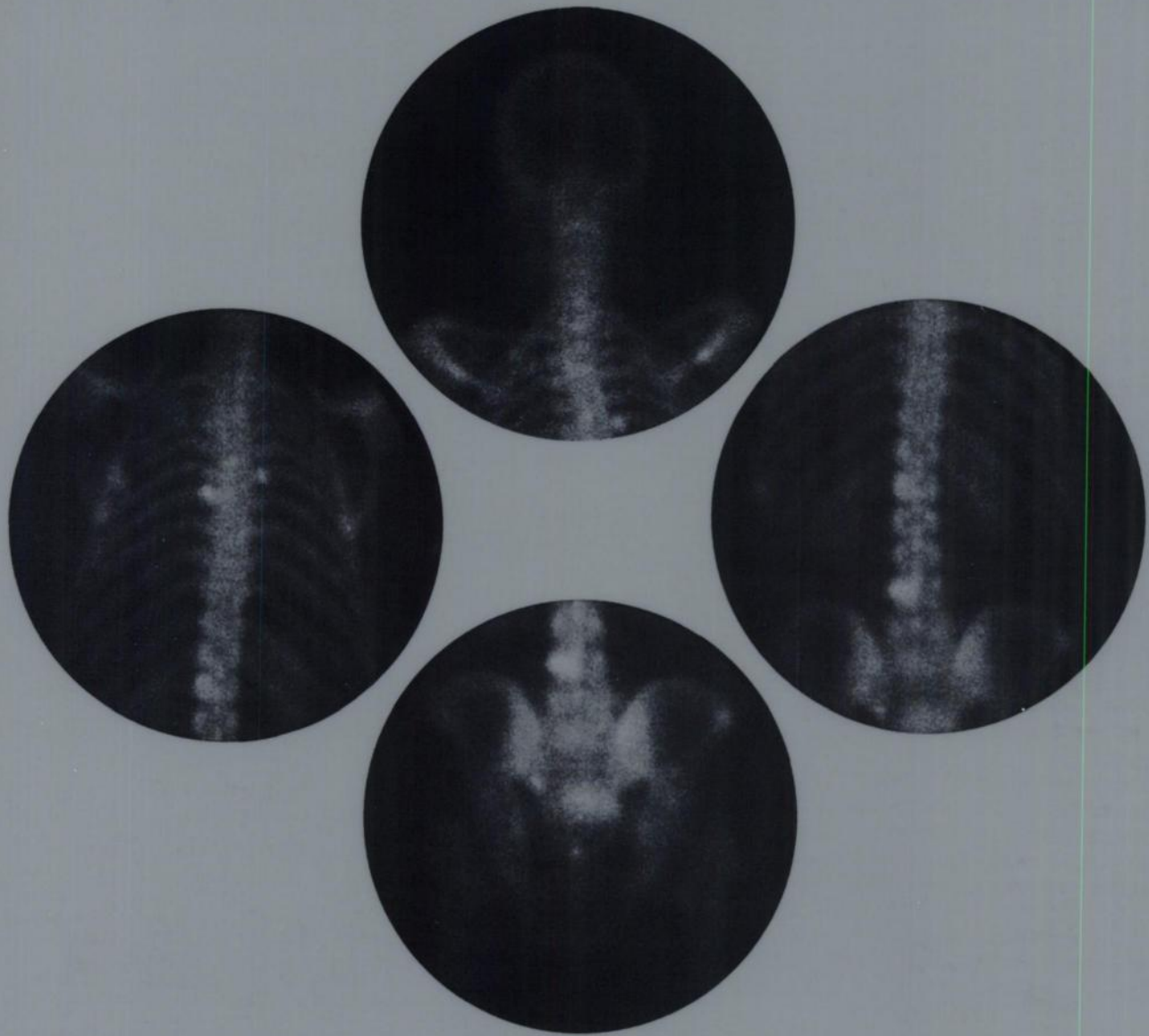
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Posterior study, 2 hours postinjection, in 65-year-old male shows multiple areas of abnormal uptake. From Cedars-Sinai Medical Center.

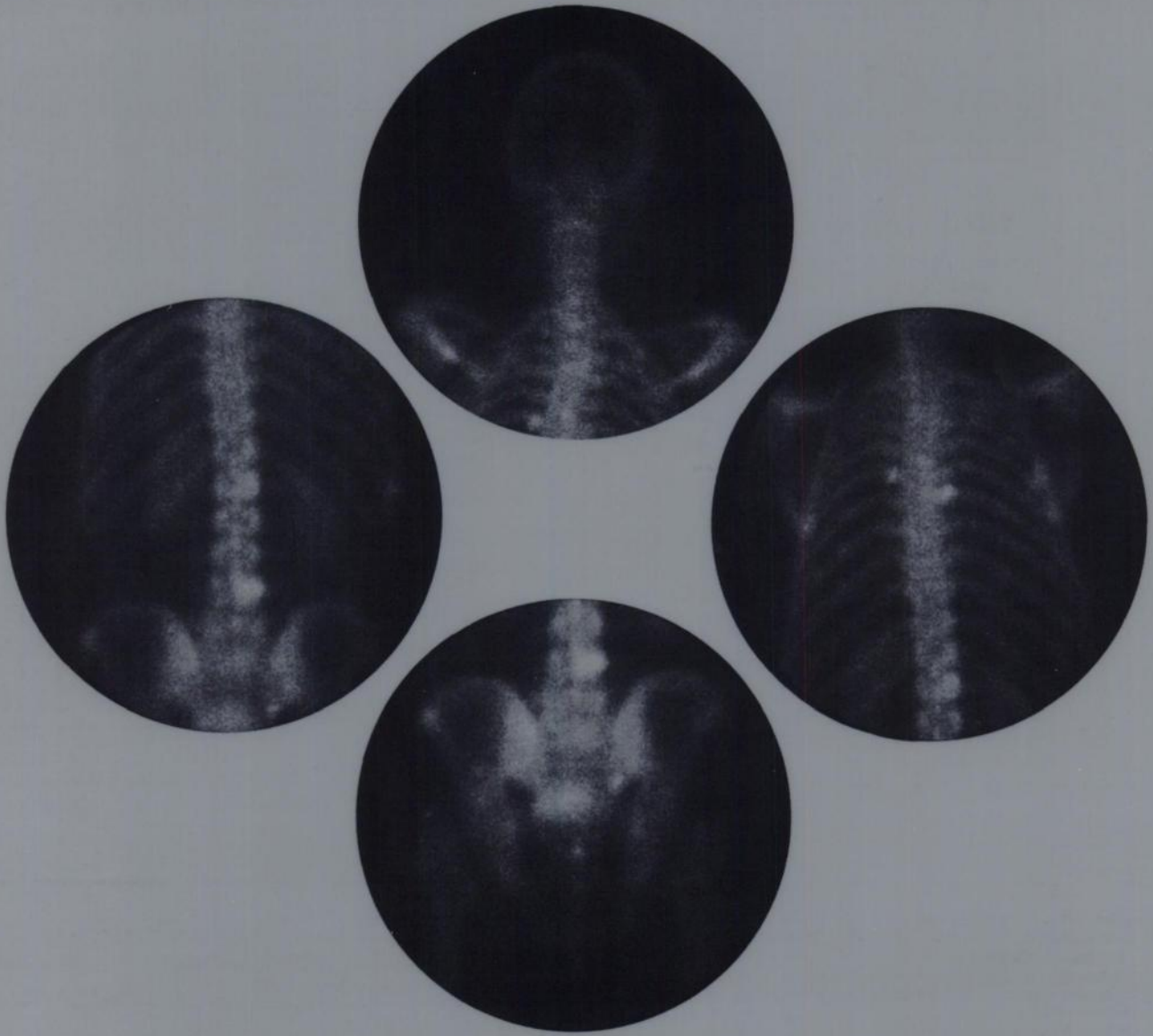
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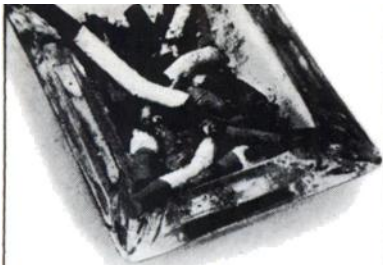
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## OSTEOLITE™

Technetium Tc 99m Medronate Sodium Kit (MDP)

**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 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 any 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 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.

**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.

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 is excreted in human milk during lactation, therefore, formula feedings should be substituted for breast feeding.

**Pediatric Use.** Safety and effectiveness in children below the age of 18 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:** Although adverse reactions have not been reported that are specifically attributable to the use of Technetium Tc 99m Medronate, allergic dermatological manifestations (erythema) have been infrequently reported with other similar agents.

**DOSAGE 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 (70kg) is:

Bone imaging: 10-20mCi Technetium Tc 99m Medronate  
Scanning post-injection is optimal at about 1-4 hours

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

**HOW SUPPLIED:** NEN's OSTEOLITE™, Technetium Tc 99m Medronate 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  
Total Stannous and Stannic Chloride—1mg  
Stannous Chloride (SnCl<sub>2</sub>·2H<sub>2</sub>O) (minimum)—0.5mg

Prior to lyophilization, the pH is adjusted to between 7.0-7.5 with hydrochloric acid and/or sodium hydroxide solution. The contents of the vial are lyophilized and stored under nitrogen. Store at room temperature (15°-30°C) before and after reconstitution. 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 components of the Technetium Tc 99m Medronate Kit are supplied sterile and non-pyrogenic. Aseptic procedures normally employed in making additions and withdrawals from sterile, non-pyrogenic containers should be used during addition of pertechnetate solution and the withdrawal of doses for patient administration.

Technetium Tc 99m Medronate is prepared by adding 2-8ml of oxidant-free sodium pertechnetate Tc 99m solution to the vial and swirling for about one minute. Shielding should be utilized when preparing the Technetium Tc 99m Medronate.

Catalog Number NRP-420 (5-Vial Kit)  
Catalog Number NRP-420C (30-Vial Kit)

December 1981

**NEN** New England Nuclear

601 Treble Cove Rd., North Billerica, MA 01862

Call Toll-Free: 800-225-1572/Telex: 94-0996  
(In Mass. and International: 617-482-9595)

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# PLACEMENT

## POSITIONS OPEN

**NUCLEAR MEDICINE TECHNOLOGIST.** Full-time position for registered Nuclear Medicine Technologist in university medical center two-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: \$16,411 per year. Good benefits. Contact Sara Jane Davis, CNMT, Supervisor, Division of Nuclear Medicine, University of Kansas Medical Center, 39th & Rainbow, Kansas City, KS 66103. Tel: (913)588-6843.

**NUCLEAR CARDIOLOGY RESEARCH Technologist.** A challenging research position complete with comprehensive benefits is available at Baylor College of Medicine, Section of Cardiology, in Houston, Texas. The successful candidate must have experience in cardiovascular nuclear medicine and computer applications. For immediate consideration, qualified personnel please send resume or call: Ann Donnell, Personnel Services, Baylor College of Medicine, Texas Medical Center, Houston, TX 77030. (713)790-4815. An Equal Opportunity Employer.

**NUCLEAR MEDICINE PHYSICIAN.** Experienced nuclear medicine physician in expanding progressive private in vivo and in vitro NM outpatient laboratory. Applicant should be board certified by ABNM or board eligible in nuclear medicine with preferably two years internal medicine residency training. Medical school association or affiliation possible if desired. Please send resume to: Box 502, Society of Nuclear Medicine, 475 Park Ave. So., New York, NY 10016.

**NUCLEAR MEDICINE TECHNOLOGIST.** Position now available for an experienced nuclear medicine technologist certified by SNM or registered technologist in a private progressive outpatient nuclear medicine laboratory in a large city in a large medical center in the Sun Belt. Knowledge of radioimmunoassay, imaging, computer, and nuclear cardiology in addition to supervisory, administrative, and teaching experience required. Please send resume to: Box 503, Society of Nuclear Medicine, 475 Park Ave. So., New York, NY 10016.

**NUCLEAR MEDICINE TECHNOLOGIST.** Saint John's Hospital and Health Center, a 551-bed, acute-care hospital is currently seeking an experienced tech to work in Nuclear Medicine Department. Successful candidate must be a graduate of an AMA-approved program in Nuclear Medicine with an A.R.R.T.I. and or NMTCB minimum one year hospital experience preferred. Excellent salary and benefits. Saint John's located in Santa Monica, a beach community in metropolitan Los Angeles. Contact: Dr. John B. Richards, 1328 22nd Street, Santa Monica, CA 90404 or (213)829-8229.

**NUCLEAR MEDICINE TECHNOLOGIST.** Position open for mobile technologist. Excellent salary and benefits. Progressive and prestigious community in which to live. Contact: J.R. Damron, M.D., 310 South Limestone Street, Lexington, KY 40508; (606)254-2778.

**NUCLEAR MEDICINE SPECIALIST** needed for academic position. Junior or Senior faculty position in Nuclear Medicine is available July 1, 1982 at the University of Arkansas for Medical Science. The responsibilities will include participation in an approved nuclear medicine residency program, direction of a clinical nuclear medicine unit, and research. Ultrasound experience desirable (integrated Imaging Division). Qualifications include ABNM certification, and strong teaching clinical orientation. Apply to Charles M. Boyd, M.D., Imaging Division, Slot 581, Dept. of Radiology, UAMS, 4301 W. Markham, Little Rock, AR 72205.

**NUCLEAR PHARMACY FACULTY** Position. The University of Kansas, an affirmative action/equal opportunity employer, has a tenure-track faculty position available in the School of Pharmacy at the Medical Center. Applicants must possess an advanced degree in the pharmaceutical sciences with experience in handling radioactive drugs. Responsibilities include undergraduate and graduate teaching, research program, and serving as the Director of Nuclear Pharmacy Services. Interested individuals should forward a letter and resume to: H. Godwin, Asst. Dean of Pharmacy, University of Kansas Medical Center, 39th and Rainbow, Kansas City, KS 66103.

**NUCLEAR MEDICINE RESIDENCY.** The Nuclear Medicine Division, Department of Radiology of the University of Texas Medical Branch, Galveston, Texas (1,200 hospital beds) invites applications for its two-year residency training program. The program is approved by the Accreditation Council on Graduate Medical Education and satisfies the residency requirements of the American Board of Nuclear Medicine. Comprehensive training is provided by a large staff that offers both a broad clinical experience and strong basic science instruction. Areas of experience include full range of patient care services (diagnostic and therapeutic), imaging procedures, image data processing and computer technology, nuclear cardiology, laboratory studies (in vitro and in vivo), and opportunities for research. Excellent salary and benefits package. Contact: Director, Nuclear Medicine Division, Department of Radiology, University of Texas Medical Branch, Galveston, TX 77550. Tel: (713) 765-2926. UTMB is an Equal Opportunity Affirmative Action Employer.

**NUCLEAR MEDICINE TECHNOLOGISTS,** Ft. Lauderdale, Florida. Florida Medical Center, a 400-bed, acute-care facility, has positions available for registered or registry-eligible technologists in its expanding and progressive Nuclear Medicine Department. The department contains six scintillation cameras, an MDS computer, RIA department, and radiopharmacy. Excellent starting salary and benefits. Inquire to Chief Technologist, Dept. of Nuclear Medicine, Florida Medical Center, 5000 West Oakland Park Blvd., Fort Lauderdale, FL 33313. (305)735-6000.

**NUCLEAR MEDICINE, BRITISH COLUMBIA.** A fee for service clinical director is required for a 625-bed hospital (456 acute, 169 extended care) in North Vancouver. The successful applicant will be well qualified in nuclear medicine (preferably Fellowship of the Royal College of Physicians and Surgeons of Canada), eligible for license in British Columbia, and be eligible for licensure by the Atomic Energy Control Board. Please apply before June 30, 1982 to: Dr. W.J. Corbett, Medical Coordinator and Secretary to the Credentials Committee, Lions Gate Hospital, North Vancouver, B.C. V7L 2L7.

**NUCLEAR MEDICINE TECHNOLOGIST** (registered). Immediate opening for bright, aggressive Technologist. Position involves nuclear cardiology procedures, and experience in the area is desirable. Technologist will perform first-pass studies with Baird multicrystal camera, Thallium studies and gated studies on both inpatients and outpatients. Excellent opportunity to be associated with progressive Nuclear Cardiology Clinic. Benefits package includes Medical/Dental insurance, pension, and profit sharing. Reply in confidence to: Box 402, Society of Nuclear Medicine, 475 Park Ave. So., New York, NY 10016.

**NUCLEAR MEDICINE TECHNOLOGISTS** needed NATIONWIDE! Attractive locations, excellent salaries, career opportunities. No cost to you. Contact Ruth Knight, NATIONWIDE RECRUITERS, 3710 Landmark Dr., Suite 111, Columbia, SC 29204. (800)845-0992 or (803)738-1790.

**NUCLEAR MEDICINE PHYSICIAN** TO join an active nuclear medicine program at a midwestern University and VA Hospital. Includes both in vitro and all varieties of in vivo procedures. Can participate in funded on-going research. Certification by ABNM or equivalent required. Academic rank and salary commensurate with experience. Please reply with C.V. to: Richard A. Holmes, MD, Chief, Nuclear Medicine, University of Missouri Medical Center, N217 Medical Science, Columbia, MO 65201. AN EQUAL OPPORTUNITY EMPLOYER.

**NUCLEAR MEDICINE TECHNOLOGISTS.** Staff and supervisory positions available in hospitals nationwide. Tell us your geographic preferences, career objectives, and personal needs. Our health care consultants will work with you to find your next position. All positions fee paid. Contact: Cathy Waas, Dunhill of Orlando, Inc., 2699 Lee Road, Suite 270, Winter Park, FL 32789; (305)628-4227.

**GENERAL HOSPITAL, NUCLEAR MEDICAL Technologist II.** Applications are invited for the position of Nuclear Medicine Technologist II. The duties of this position involve a full complement of scanning and radioimmunoassay procedures; also nuclear medicine procedures, both in vitro and in vivo, quality control, and other related duties. The General Hospital is located on the Memorial University campus and is the major teaching hospital for the province. Applicants must be registered in nuclear medicine and preferably have two years experience. Salary on the scale of \$19,136-23,245 per annum. Applications in writing should be forwarded to: Personnel Officer, General Hospital, Prince Philip Drive, St. John's, NFLD AIB 3V6.

**FELLOWSHIP AND RESIDENCY.** Emory University, Nuclear Medicine. A one or two year approved fellowship or residency training program offering broad clinical experience, including all aspects of cardiac nuclear medicine, acute, and pediatric cases. A complete basic science program teaching radiation safety, radiopharmacology, and involvement in a special RIA laboratory and clinical experimental research facilities is included. Contact: Dr. Y. Tarcan, (404)329-7181 or (404) 588-4602. Emory University is committed to the achievement of equality in opportunity.

**NUCLEAR MEDICINE TECHNOLOGIST.** Immediate opening. ARRT or NMTCB registered. Experience with cardiac procedures and computers. Rectilinear and in vitro experience helpful. Hospital and office practice. Starting salary \$1,570 to \$2,282/month DOE. Excellent benefits. Write: Nuclear Medicine, 1420 Crestmont Drive, Bakersfield, CA 93306, or call Bettie (805)872-2802.

**NUCLEAR MEDICINE TECHNOLOGIST.** Registered or registry eligible. An immediate opening in a 320-bed, progressive, community hospital, located 65 miles east of the greater Pittsburgh area. Excellent fringe benefits and a competitive salary. Contact: Lee Hospital, Personnel Dept., 320 Main St., Johnstown, PA 15901. (814)535-7541 X117. An Equal Opportunity Employer.

**REGISTERED NUCLEAR MEDICINE Technologist.** Challenging position for registered or registry eligible technologist in a progressive department of a 569-bed, acute-care, general, teaching hospital. Full range of imaging and nuclear cardiology procedures performed. Equipment includes two Siemens and one G.E. Data Cameras and Informatek Computer System. Excellent working hours and benefits. Spartanburg General Hospital is located in the rolling Piedmont section of SC among the foothills of the Blue Ridge Mountains, approximately three hours from Atlanta, and four hours from Myrtle and Charleston beaches. Send resumes to: Linda Wilson, Spartanburg General Hospital, 101 E. Wood Street, Spartanburg, SC 29303. EOE.

## POSITIONS WANTED

**NUCLEAR MEDICINE PHYSICIAN.** Board certified Ph.D. M.D., over 60 publications, strong hematology background clinical, teaching, and research experience presently dept. head, seeks challenging position with some research opportunities. Reply: Box 504, Society of Nuclear Medicine, 475 Park Ave. So., New York, NY 10016.

**INTERNIST COMPLETING NUCLEAR** Medicine Residency 6/82 (emphasis on Nuclear Cardiology) desires association with imaging group. Training has included five months Ultrasound. Contact: Jon Kotler, University Hospital RC-70, Seattle, Washington 98195.

**Ph.D. TECHNICAL DIRECTOR** Nuclear Medicine. Presently in charge of imaging, RIA, and research laboratories. Over 10 yr experience. Experienced in experimental animal surgery, clinical and research hematology, glycosaminoglycan purification techniques. Seeks challenging position—clinical and/or research. Please reply: Box 505, Society of Nuclear Medicine, 475 Park Ave. So., New York, NY 10016.

**NUCLEAR PHYSICIAN, INTERNIST, ABNM.** Assistant Professor. Seeks hospital, teaching, or private practice. Part-time internal medicine or emergency medicine acceptable. Available 7/82. Reply: Box 404, Society of Nuclear Medicine, 475 Park Ave. So., New York, NY 10016.

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**OHIO NUCLEAR ULTIMAT II** FOR imaging Nuclear Medicine procedures. 5 x 7 and 8 x 10 capability with dual intensity and multi-format capability including whole body. Good operating condition. \$3,000.00 plus shipping. Ohio Nuclear Series 75 data storage-retrieval system. 75-01 Histogram capability-75-02 persistence scope. Excellent working condition. \$4,500.00 plus shipping. Brattle physiological gating-system-split-screen option. Strip chart recorder. Good functioning order. \$2,500.00 plus shipping. Matrix-1 multi-imager for Ultrasound or Nuclear Medicine imaging. 8 x 10 capability. Good operating condition. \$2,500.00 plus shipping. Contact: Stephen Bruny, MD, at area code (209)222-3357, Fresno, California.

### Nuclear Radiology Physician

Large private practice radiology group in Southwest seeks full Associate with Board certification in Diagnostic and Nuclear Radiology to be Nuclear Medicine Section Chief in 1,000-bed, university affiliated, well-equipped hospital with both adult and pediatric practice. Must be willing to do general diagnostic radiology. Excellent practice and benefits.

Please provide curriculum vitae. Reply Box 500, Society of Nuclear Medicine, 475 Park Ave. So., New York, NY 10016.

### Nuclear Medicine Technologist

Immediate day shift opening for a Nuclear Medicine Technologist to work with professional staff of 500-bed teaching hospital. Will be actively involved with progressive investigative tests in our computerized nuclear medicine department. Must be registered under ARRT nuclear medicine or NMTCB. Experienced candidates preferred.

We offer excellent salary commensurate with experience and comprehensive paid benefits. For further information call: Chuck DiStaulo, Personnel Representative, The Mt. Sinai Medical Center, University Circle, Cleveland, OH 44106; (216)421-4559.

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#### NUCLEAR MEDICINE TECHNICIAN

Immediate opportunity for Nuclear Medicine Technician to serve as a laboratory assistant in a 570-bed teaching hospital. Working for a registered nuclear medicine technologist, the duties include performing equipment evaluation on all detection and measuring equipment, preparing radiopharmaceuticals for specific organ concentration or in vitro binding as directed, and performing quality control testing for radionuclide purity using spectral analysis by multichannel analyzer, microscopic particle size determination, or thin-layer chromatography.

This is a federal civil service position, GS-7, \$15,922 annually. Comprehensive benefits package.

For further information contact: Jack Andrews, Technical Director Nuclear Medicine Service, Brooke Army Medical Center, Box 442, Fort Sam Houston, TX 78234.

\*\*\*\*\*

## NUCLEAR MEDICINE TECHNOLOGIST

South County Hospital has an immediate opening for a Nuclear Medicine Technologist, registered or registry-eligible, in our modern and progressive 100-bed community hospital.

Duties include radiopharmaceutical preparation and general imaging, with participation in nuclear cardiography. The Nuclear Medicine Laboratory is equipped with a new Siemens ZLC gamma camera with Scintiview system.

Department geared toward continuing education.

South County Hospital overlooks sandy beaches and large marinas on southern shores of Rhode Island across the bay from Newport.

Salary is negotiable with excellent fringe benefits. Please submit resume to:

South County Hospital  
Personnel Director  
95 Kenyon Avenue  
Wakefield, RI 02879  
(401)783-3361

## UNIVERSITY OF CALIFORNIA SAN FRANCISCO SCHOOL OF MEDICINE

A Nuclear Medicine resident position is available beginning July 1, 1982 for a two-year program at San Francisco General Hospital Medical Center.

The program, approved by the ACGME and satisfying the requirements of the American Board of Nuclear Medicine, includes didactic instruction in radiological physics and mathematics, electronics, radiation safety, dosimetry, and nuclear medicine instrumentation.

Practical experience is provided in performance and interpretation of static and dynamic imaging, computer techniques, radioimmunoassay and other in vitro tests, radiopharmacy, and therapy with radionuclides. Residents participate fully in the integration of these modalities into patient care.

Prerequisite: Prior training in an ACGME-approved program in pathology, radiology, internal medicine, or pediatrics.

The University of California is an equal opportunity, affirmative action employer.

Requests for further information (include CV) should be directed to:

Myron Pollycove, M.D.  
Chief, Nuclear Medicine  
San Francisco General Hospital  
Medical Center  
San Francisco, CA 94110

## MEDICAL PHYSICIST

The University of Minnesota Radiology Department has a faculty opening for a Medical Physicist. Responsibilities include teaching, research, and clinical duties in Nuclear Medicine. Primary clinical duties and research opportunities involve emission computed tomography. Participation in diagnostic radiology research is encouraged.

A Master's degree in medical physics and one year experience is necessary. Promotion rank is contingent upon successful completion of the Doctoral degree. Computer experience is mandatory.

Salary and academic rank will be commensurate with qualifications.

Send curriculum vitae and three letters of reference from persons familiar with your work.

The University of Minnesota is an Equal Opportunity/Affirmative Action employer.

Contact: Richard L. Morin, Ph.D.  
Department of Radiology  
University of Minnesota  
Box 292 Mayo  
Minneapolis, MN 55455

## NUCLEAR MEDICAL TECHNOLOGISTS

Don't Choose One...  
Choose Three.

Located on Florida's Gold Coast, our hospitals are expanding their Nuclear Medicine Departments.

Day positions for registry or registry eligible technologists, experience in nuclear imaging and R.I.A. preferred. Nuclear cardiology experience a plus.

Excellent salary and benefits including new flexible personal leave program, 100% tuition reimbursement, etc. Send resume to:

District Personnel  
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HOSPITAL DISTRICT**  
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# NUCLEAR MEDICINE TECHNOLOGIST

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Tuscaloosans are the proudest of proud Southerners and rightfully so. Here, you'll find a rich historical culture as well as energetic new industries, numerous entertainment and sporting options, and a low cost of living. Tuscaloosa is also the home of the nationally renowned University of Alabama.

But for a real look at community pride, just ask a Tuscaloosan about Druid City Hospital. Our ultra-modern, 612-bed hospital and Educational Tower are brimming with enthusiastic commitment to implementing the latest health care technologies available. We are focusing on nuclear medicine as a prime area and are seeking an ARRT (NM) certified Nuclear Medicine Technologist to contribute to our growing program and to assist in the selection of new equipment. You must have at least 1 year of current cardiac and renal computer experience and a background as a radiologic technologist.

We offer competitive salaries and an excellent benefits program. For immediate consideration, send your resume to:

Personnel Department

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## NUCLEAR MEDICINE REVIEW SYLLABUS

Peter T. Kirchner, MD, Editor

### *Now Into Its Second Printing!*

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 1970s.*

The 619-page NUCLEAR MEDICINE REVIEW SYLLABUS offers a *detailed overview of 12 major topic areas* in nuclear medicine: Radiopharmacology; Instrumentation; Radiation Effects and Radiation Protection; Cardiovascular; Central Nervous System; Endocrinology; Gastroenterology; Genito-Urinary System; Hematology-Oncology; Pulmonary; Radioassay; Skeletal System.

With 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. This highly readable guide to current practice was prepared by more than 50 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.

**NOTE:** Since we have included some revisions in the second printing, an erratum page is available to purchasers of the first edition. To obtain a copy, please send a *self-addressed, stamped envelope* to the Society of Nuclear Medicine at the address listed below.

**Mail to:** Book Order Dept., Society of Nuclear Medicine, 475 Park Avenue South, New York, NY 10016. **Make all checks payable to:** Society of Nuclear Medicine, Inc. *All orders must be prepaid, in U.S. dollars only, or accompanied by a purchase order.*

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# The Society of Nuclear Medicine

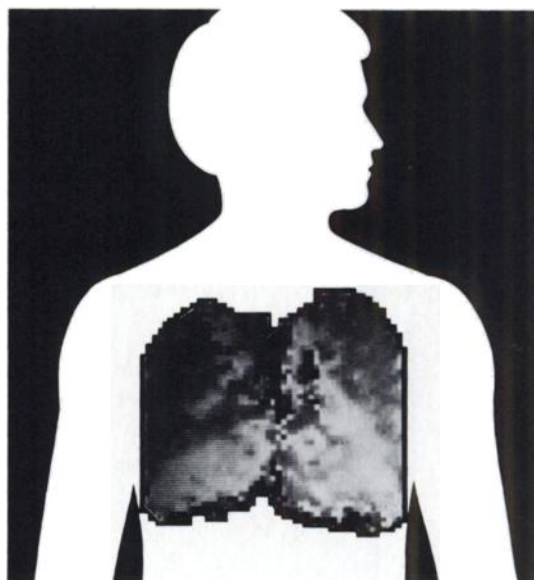
— Announces —

## A NEW PUBLICATION

This volume, sponsored by the Computer and Instrumentation Councils, contains 25 papers and is divided into five sections covering important areas of computer software development in nuclear medicine, such as functional mapping and imaging of organ systems and the cardiac system.

Other important aspects of computer development and use—background subtraction, computed tomography, and image display techniques—are also included, making this attractive and comprehensive book indispensable to a wide audience of physicians, medical research scientists, and computer specialists.

### Functional Mapping of Organ Systems and other computer topics



Edited by Peter D. Esser, Ph.D.

**Also of related interest** are two other titles sponsored by the Computer Council: *Nuclear Cardiology: Selected Computer Aspects* (\$12.50) and *Single Photon Emission Computed Tomography and Other Selected Computer Topics* (\$18.00 member; \$27.00 non-member).

#### ORDER FUNCTIONAL MAPPING NOW!

\$19.00 for SNM members; \$28.00 for non-members; plus \$2.50 postage and handling for each book ordered. Prepayment required. *Order from:* Book Order Department, Society of Nuclear Medicine, 475 Park Avenue South, New York, New York 10016.

# Who was the second man to break the 4-minute mile?

Until Roger Bannister broke the 4-minute mile, very few runners seriously considered the possibility. Yet, less than 2 months after Bannister proved it could be done, the record was broken again.

Who was the *second* man to break that mark?

Or the *second* company to provide thallium-201 for routine use?

There's an important difference between being second to break a track record and being second to bring a new product to the medical profession: The second sub-4-minute miler ran just as hard, and as far and as fast as Bannister. The second company to introduce a radiopharmaceutical has a lot easier course to run than the first.

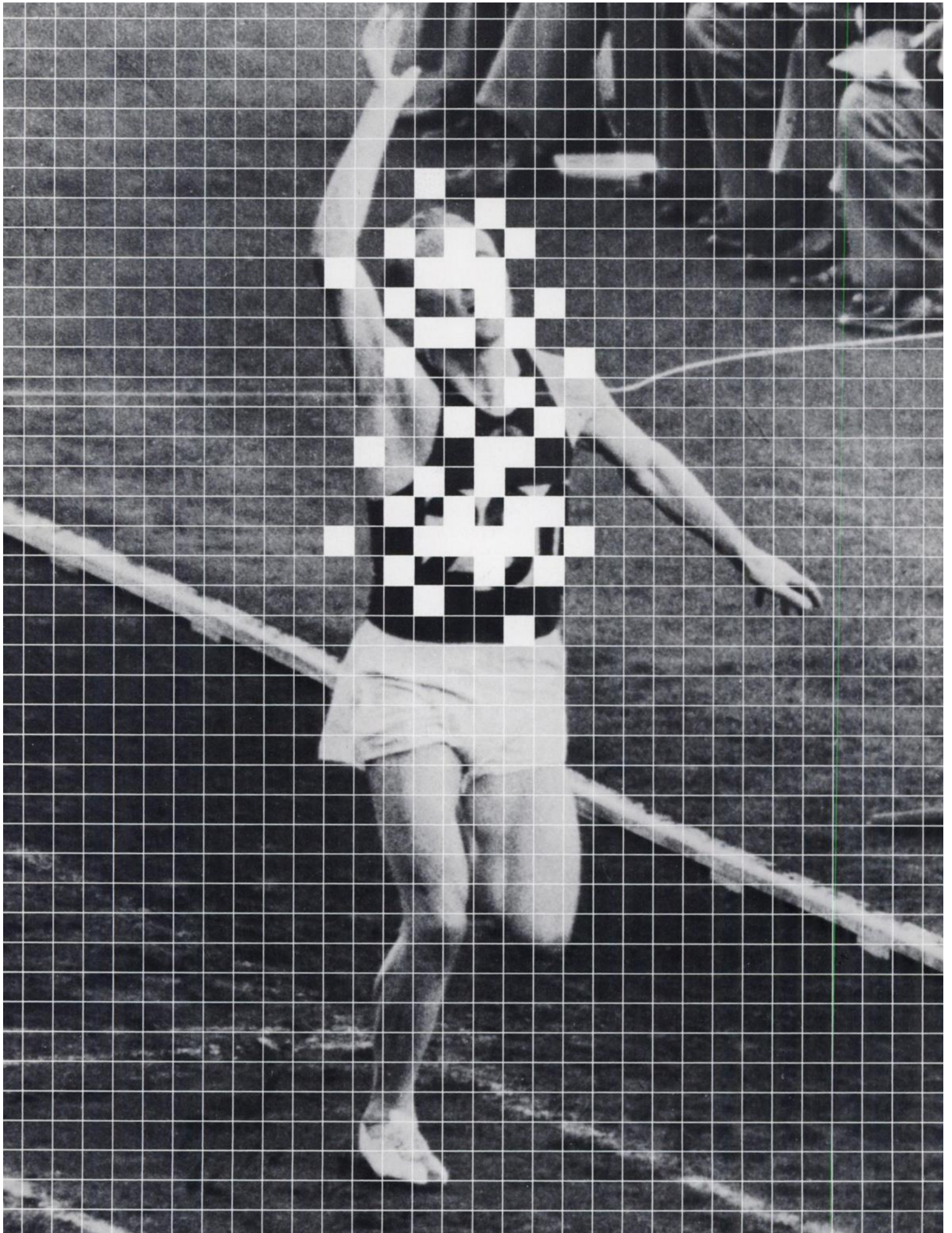
Being first with a new isotope costs a great deal more than being second. Being first means putting money up front for clinical research, facilities and staff—with no guarantee of any return on investment. And, as any princess can testify, one must kiss a lot of frogs to find a single prince!

Thallium-201, gallium-67, xenon-133, medronate sodium (MDP): all NEN princes. Rubidium, fluorine, phytate: in retrospect, all frogs.

One can only wonder which—if any—of the companies who are traditionally second, third or fourth with products that NEN pioneered would have been first to commit its resources without a guarantee of success. After the leader does it first, the followers make it look easy.



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 Xe 133 Gas Breakseal Ampule Xenon Xe 133; Xenon Xe 133 Gas  
 Crushable Ampule Xenon Xe 133; Xenon Xe 133-V.S.S. Shield; Xenon  
 Xe 133-V.S.S. Valve Assembly; Auto Mate Xenon Dispenser; Sodium Per-  
 technetate Tc 99m Solution; Tc 99m Lungaggregate™ Technetium Tc 99m  
 Albumin Aggregated; Technetium Tc 99m Sulfur Colloid; MPI Indium  
 Chloride In 111 Radiochemical Indium Chloride In 111; Indium Oxine In  
 111 Radiochemical Indium Oxine In 111; Technetium 99m HSA Technetium  
 99m Albumin Aggregated Kit; Technetium 99m MDP Kit; Technetium 99m  
 Injection; Lungaggregate Reagent Technetium Tc 99m Albumin Aggre-  
 gated Kit; Technetium 99m Pentetate Kit; Technetium 99m DTPA Technetium  
 Tc 99m Pentetate Kit Unit Dose; MPI DTPA Kit Technetium Tc 99m  
 Pentetate Kit; MPI MDP Kit Technetium Tc 99m Medronate Kit; Technetium  
 99m MAA Technetium Tc 99m Albumin Aggregated Kit; Technetium 99m  
 MAA Technetium Tc 99m Albumin Aggregated Kit Unit Dose; Lead  
 Shielded Generators: 830 mCi; 1660 mCi; 2480 mCi; 3310 mCi; 4140  
 mCi; Depleted Uranium Shielded Generators: 4970 mCi; 5790 mCi;  
 6620 mCi; 7450 mCi; 8280 mCi; 9100 mCi; 9930 mCi; 10800 mCi;  
 11600 mCi; 12400 mCi; 13200 mCi; 14100 mCi; 14900 mCi;  
 15700 mCi; 16600 mCi; Technetium Generator Accesso-  
 ries: Evacuated elution vial 5cc; 10cc; 20cc; Generator  
 Elution vial shield; Generator Secondary shield;  
 Generator Transfer shield w/lead glass;  
 Unit Dose vial shield; Multidose,  
 vial shield; Neoscan<sup>®</sup>  
 Gallium

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