medi+

Meeting the Challenge

- **The Most Complete Product Line**

The recent acquisition of the Cintichem® division of Union Carbide gives Medi-Physics the most complete product line in nuclear medicine today.

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Medi-Physics has five production and distribution facilities located near major population centers across the country. Short-lived products such as Sodium Iodide I 123 and MPI Krypton Kr 81m Gas Generators can be made available to most of the country from these production facilities.

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Medi-Physics has ongoing basic research in heart metabolism, heart perfusion and brain perfusion. These projects, among others, represent our investment and commitment to the future of nuclear medicine.

physics™
of Nuclear Medicine

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Medi-Physics has been supplying short-lived products for over 10 years. Our organization is designed for, and dedicated to, daily production and delivery of quality radiopharmaceuticals. Our technical sales representatives can provide information on our products and nuclear medicine in general.

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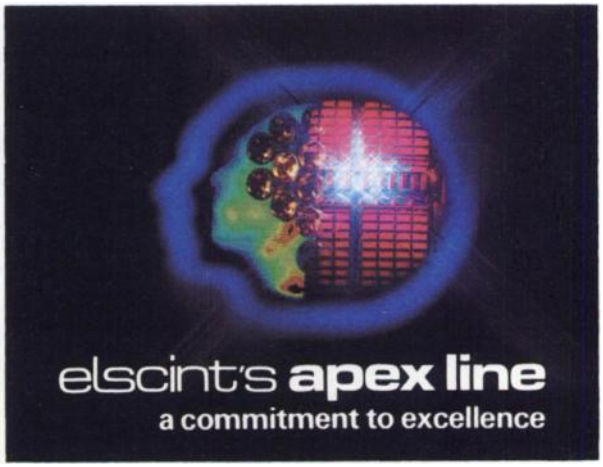
multicrystal count rates with single-crystal image quality

Another unique feature of the Apex Line

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



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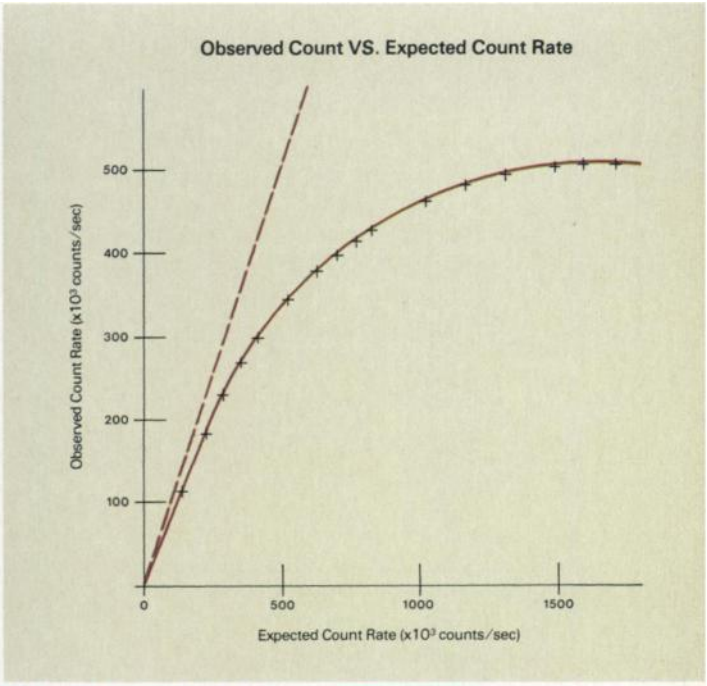
High Count Rates—The Clinical Need

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



Some Impressive Apex Qualities

The remarkable *Count Rate* performance of the Apex Line is supported by a high *Dynamic Frame Rate* of 64 FPS for 64×64 pixels, and a *Multigated Frame Rate* of 64 frames per heart cycle for 64^2 matrix.

Who operates your clinical imaging system?

That's why you want a system that's easy to use and easy to operate in any clinical environment. That's why you want a system based on 10 years of experience in clinical imaging—an A² Clinical Imaging System.

Medtronic Medical Data Systems has combined the features that make your work easier:

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- a proven history of expanding capabilities as technology changes.

This is the system designed for the clinician.
This is the system for you.

Designed for the clinician and easy to use.

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Medical Data Systems' products, hardware and software, are tools for discrete patient evaluation and do not come in contact with and cannot cause direct injury to the patient. Refer to the operation manual and instructions accompanying the acquisition device for further information on its use. To ensure proper clinical results, a Medical Data Systems product must be used under the direction of, and using procedures verified by, a qualified physician.

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Visit our booth, #1229-30, at the 26th Annual Meeting of the American Institute of Ultrasound in Medicine, August 17-21, in San Francisco.

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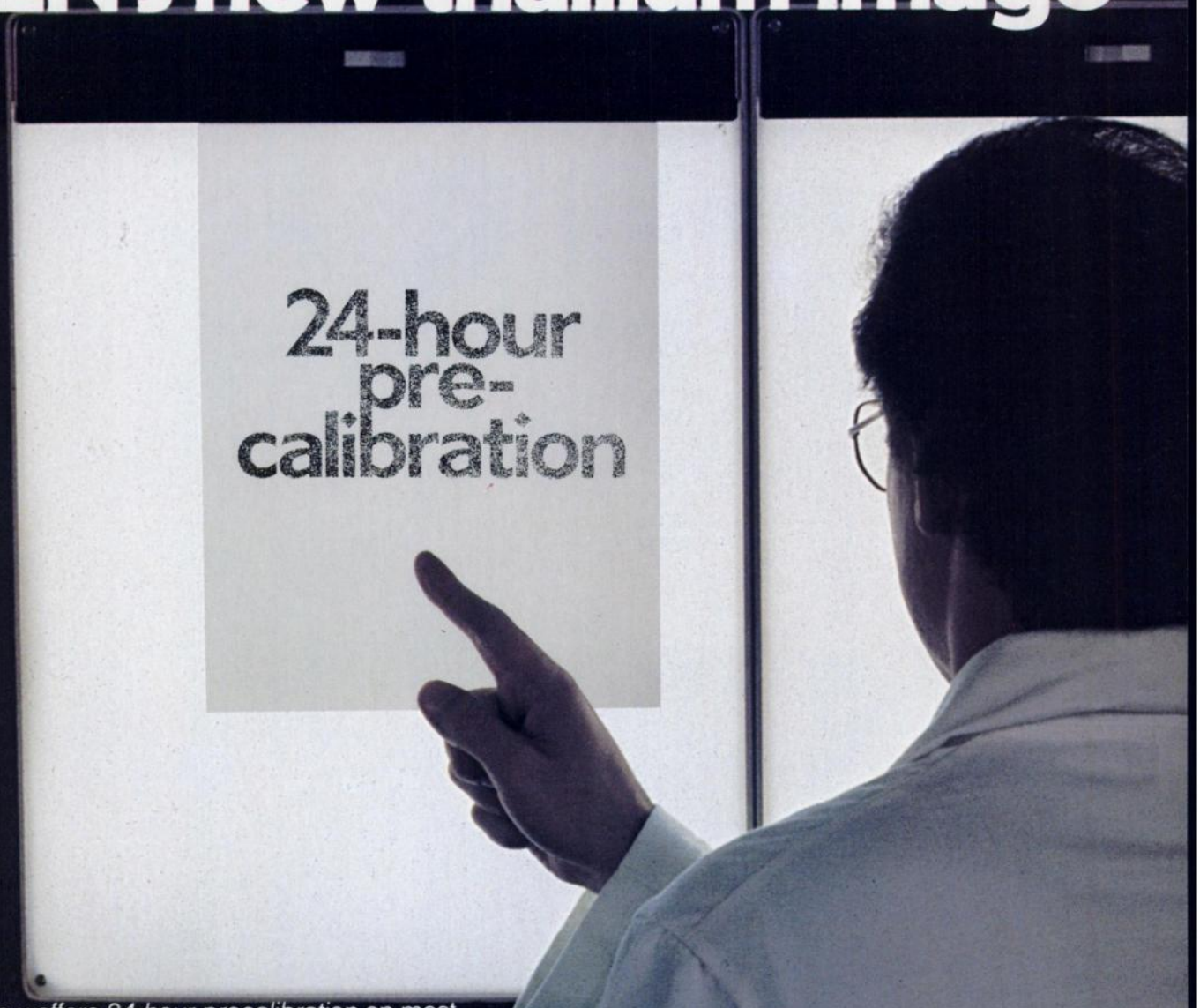
NEN's new thallium image



NEN now offers *24-hour precalibration* on most shipments of thallium-201—with all the advantages of greater activity, lower cost per mCi and scheduling convenience.

You can now have thallium-201 available when you need it—with less risk that a cancelled study will leave you with an unused dose. On the day of receipt, your 2.2 mCi vial has 2.7 mCi of acitivity—that's 25% on top of a 10% overfill. And at *no additional cost.*

With precalibration, you'll be able to "stock" thallium, so that referring physicians can schedule routine studies at the convenience of their patients, the cardiologist and your laboratory personnel. Just as important, thallium will be on hand for unscheduled or emergency use. Precalibrated thallium-201 is available Monday through Friday only from NEN, enabling you to perform studies *every day of the week.*

Ask your NEN representative how you can set up a standing order for precalibrated thallium. Or call us.

We're committed. We're NEN New England Nuclear

Call us toll free at (800) 225-1572; in Massachusetts (617) 482-9595; in Canada (514) 636-4971

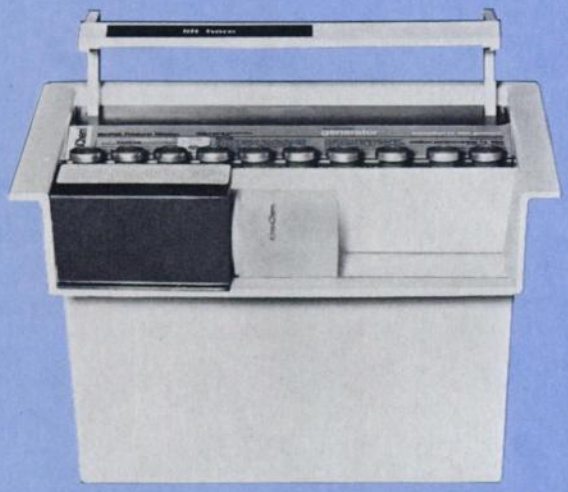
CintiChem®
Technetium Tc 99m Generators

INCORPORATE THE FOLLOWING ADVANTAGES:

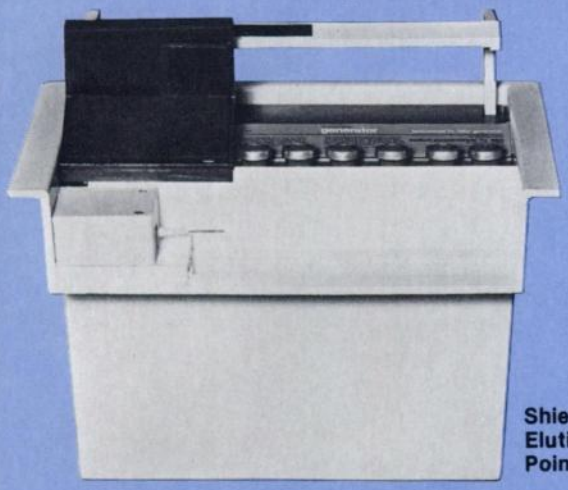
ONLY CINTICHEM®
Technetium 99m Generators are produced *in total* at one domestic production site which:

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

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



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



Shielded Elution Transfer Point

CINTICHEM® TECHNETIUM Tc 99m GENERATORS

DIRECT FROM THE SOURCE

CINTICHEM, INC.
a wholly owned subsidiary of
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P.O. BOX 816, TUXEDO, NEW YORK 10987 • FOR PRODUCT INFORMATION CALL TOLL FREE (800) 431-1146, IN N.Y.S. CALL (800) 942-1986

CintiChem® Technetium Tc 99m Generators are jointly manufactured by Union Carbide Corporation and Cintichem® Inc., a wholly owned subsidiary of Medi-Physics, Inc.

TechneScan® MAA

Technetium Tc 99m Albumin Aggregated Kit

The right size particles

Well tolerated by patients, it provides excellent images

Mallinckrodt's MAA typically has a particle size of 10 to 40 microns. This controlled particle size range, plus the fact that there is no tendency to agglomerate, gives you excellent lung perfusion images. TechneScan® MAA is well-tolerated and excretion is virtually complete in 24 to 48 hours, with no evidence of antigenicity to date. This convenient one step procedure can be prepared in 20 minutes.

For more information about the TechneScan MAA Kit, call your Mallinckrodt representative.

For orders call:
800-325-3688 (In Missouri, 314-344-3880 collect)
For technical assistance, it is **800-325-8181**
(In Missouri, 314-895-2405 collect)
See brief summary on following page.

THE MALLINCKRODT COMMITMENT

Mallinckrodt® Diagnostics

to Nuclear Medicine

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

TechneScan® MAA

Technetium Tc 99m Albumin Aggregated Kit
(Lyophilized, Multi-Dose Kit)

Diagnostic—For Intravenous Use

DESCRIPTION

The **TechneScan® MAA** 10-milliliter vial contains a sterile, pyrogen-free lyophilized mixture of 2.0 milligrams of aggregated albumin Human, 0.5 milligrams albumin Human, 120 micrograms of stannous chloride (dihydrate), 80 milligrams of lactose, 24 milligrams of succinic acid and 1.4 milligrams of sodium acetate. Hydrochloric acid or sodium hydroxide is added for pH adjustment. **TechneScan MAA** is prepared from albumin that was nonreactive when tested for hepatitis B antigen (HB_SAg) by radioimmunoassay. Each vial contains approximately $8 \pm 4 \times 10^6$ aggregated albumin particles. The particle size distribution of the aggregated albumin is such that not less than 90 percent are 10 to 90 microns in size. Typically, approximately 90 percent are within the 10 to 40 micron range. There are no aggregated albumin particles greater than 150 microns in size. Reconstitution of **TechneScan MAA** with sterile, non-pyrogenic sodium pertechnetate Tc-99m provides an aqueous suspension of technetium Tc-99m albumin aggregated injection, with a labeling efficiency of 90 percent or greater.

Physical Characteristics

Technetium Tc-99m decays by isomeric transition with a physical half-life of 6.02 hours[1]. Photons that are useful for detection and imaging are listed in Table 1.

[1]Martin, M.J., Nuclear Decay Data for Selected Radionuclides, ORNL Report #5114, p. 24, March, 1976.

Table 1. Principal Radiation Emission Data

Radiation	*Mean % Disintegration*	*Mean Energy (keV)*
Gamma-2	88.96	140.5

External Radiation

The specific gamma ray constant for technetium Tc-99m is 0.8 R/mCi-hr at 1 cm. The first half value thickness of lead (Pb) for technetium Tc-99m is 0.2 mm. A range of values for the relative attenuation of the radiation emitted by this radionuclide that results from interposition of various thicknesses of Pb is shown in Table 2. For example, the use of 2.7 mm of Pb will decrease the external radiation exposure by a factor of about 1000.

Table 2. Radiation Attenuation by Lead Shielding

Shield Thickness (Pb) mm	*Coefficient of Attenuation*
0.2	0.5
0.95	10^{-1}
1.8	10^{-2}
2.7	10^{-3}
3.6	10^{-4}
4.5	10^{-5}

To correct for physical decay of this radionuclide, the fractions that remain at selected time intervals after the time of calibration are shown in Table 3.

Table 3. Physical Decay Chart; Technetium Tc-99m Half-Life 6.02 Hours

Hours	*Fraction Remaining*	*Hours*	*Fraction Remaining*
0*	1.000	8	0.398
1	0.891	9	0.355
2	0.794	10	0.316
3	0.708	11	0.282
4	0.631	12	0.251
5	0.562	18	0.126
6	0.501	24	0.063
7	0.447		

**Calibration Time*

CLINICAL PHARMACOLOGY

Within 1-5 minutes of intravenous injection, over 90 percent of the technetium Tc-99m aggregated albumin particles are trapped in the arterioles and capillaries of the lung.

Organ selectivity is a direct result of particle size. Below 1-10 microns, the albumin aggregates are taken up by the reticuloendothelial system. Above 10-15 microns, the aggregates become lodged in the lung capilaries by a purely mechanical process. Distribution of aggregated albumin in the lungs is a function of regional pulmonary blood flow.

In animal tissue distribution studies, measurements of retained activity showed a lung to liver ratio of about 70:1 within the first thirty minutes. Elimination of the technetium Tc-99m albumin aggregated from the lungs occurs with a biological half-life of about 6.2 hours. Cumulative urinary excretion studies show an average of about 75% elimination of the injected Tc-99m dose 24 hours post-administration.

Elimination of the technetium Tc-99m albumin aggregates from the normal and abnormal human lungs occurs with a biological half-life of 10.8 hours. The effective half-life was estimated to be 3.8 hours for the lung.

Toxicology data are available on request.

INDICATIONS AND USAGE

TechneScan MAA Tc 99m is indicated only for scintigraphic imaging of the lungs as an adjunct to other diagnostic procedures whenever information about pulmonary circulation is desired.

CONTRAINDICATIONS

TechneScan MAA Tc 99m should not be administered to patients with severe pulmonary hypertension.

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

WARNINGS

The possibility of allergic reactions should be considered in patients who receive multiple doses of **TechneScan MAA** Tc 99m.

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

This radiopharmaceutical preparation should not be administered to persons under the age of 18, to pregnant women or to nursing mothers unless the expected benefits to be gained outweigh the potential risks.

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

PRECAUTIONS

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

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

The labeling reactions involved in preparing **TechneScan MAA** Tc 99m depend upon maintaining tin in the reduced state. Any oxidants present in the sodium pertechnetate Tc-99m may thus adversely affect the quality of the preparation. Hence, sodium pertechnetate Tc-99m containing oxidizing agents are not suitable for preparation of **TechneScan MAA** Tc 99m.

The contents of the **TechneScan MAA** vial are sterile and pyrogen-free. It is essential that the user follow the directions carefully and adhere to strict aseptic procedures during preparation of the radiopharmaceutical.

TechneScan MAA Tc 99m is a suspension and as such the particles will settle with time. Failure to mix the vial contents adequately before use may result in a non-homogeneous suspension with a resulting non-uniform distribution of radioactivity in the lung.

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

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

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

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

Safety and effectiveness in children have not been established.

As in the use of any radioactive material, care should be taken to minimize radiation exposure to the patient, consistent with proper 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.

ADVERSE REACTIONS

The literature contains reports of deaths occurring after the administration of aggregated albumin to patients with pre-existing severe pulmonary hypertension. Instances of hemodynamic or idiosyncratic reactions to preparation of technetium Tc-99m albumin aggregated injection have been reported.

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

DOSAGE AND ADMINISTRATION

The recommended intravenous dose range for the average patient (70 kg) is 1 to 4 millicuries. The volume of the dose may vary from 0.4 to 1.0 ml.

The recommended number of aggregated albumin particles to be administered per dose is 200,000-1,200,000 with the suggested number being approximately 600,000.

NOTE: When large millicurie size generators are used, the eluate (yield of technetium Tc-99m) may be higher than 20 millicuries per milliliter. Before use, such eluates should be diluted with sterile, pyrogen-free saline to ensure that at least 5.0 milliliter of sodium pertechnetate Tc-99m solution is added to each reaction vial.

While the number of particles available per millicurie dose of **TechneScan MAA** Tc 99m will vary corresponding to the physical decay of technetium Tc-99m which has occurred; the particles available in any specific dose may be estimated from the following table.

PARTICLES/DOSE x 10⁶* (X = 8 x 10⁶ PARTICLES/VIAL)

mCi Tc-99m added to vial	*1 mCi*	*2 mCi*	*3 mCi*	*4 mCi*
20	0.40	0.80	1.20	1.60
30	0.27	0.54	0.81	1.08
40	0.20	0.40	0.60	0.80
50	0.16	0.32	0.48	0.64
60	0.13	0.26	0.39	0.52

*The particles per millicurie dose will increase in relation to the physical decay of Tc-99m such that at six hours (one half-life) after preparation, the values in the table will increase by a factor of two.

In cases of right-to-left cardiac shunt the number of aggregated albumin particles administered per dose should be reduced to the minimum feasible.

The patient dose should be measured by a suitable radioactivity calibration system for total radioactivity immediately prior to administration. It is also recommended that the radiochemical purity be checked prior to administration. Resuspend particles by repeated inversion of the syringe immediately prior to injection. **TechneScan MAA** Tc 99m is injected intravenously, without aspirating, over a 20- to 30-second interval with the patient in the supine position. If blood is drawn into the syringe, any unnecessary delay prior to injection may lead to clot formation in the syringe. Do not back flush the syringe. For optimal results, lung imaging should begin as soon as possible. It is recommended the **TechneScan MAA** Tc 99m not be injected through intravenous tubing because of the occasional observation of "hot spots" in the lung.

Radiation Dosimetry

The estimated absorbed radiation doses[2] from an intravenous injection of 4 millicuries of **TechneScan MAA** Tc 99m are shown in Table 4.

[2] Method of Calculation: A Schema for Absorbed-Dose Calculations for Biologically Distributed Radionuclides, Supplement No. 1, MIRD Pamphlet No. 1, p. 7 (1968).

Table 4. Absorbed Radiation Dose

Tissue	*rads/4 mCi*
Lungs	*1.044*
Liver	*0.116*
Spleen	*0.072*
Kidneys	*0.252*
Thyroid	*0.032*
Bladder	*0.544*
Ovaries	*0.036*
Testes	*0.028*
Total Body	*0.048*

HOW SUPPLIED — TechneScan MAA Kit

Catalog Number 093 — Technetium Tc 99m Albumin Aggregated Kit (Lyophilized)

Kit Contains:
5—Reaction Vials
for the preparation of
Technetium Tc-99m Albumin Aggregated Injection

Reaction Vial Contains (in lyophilized form):
2.0 mg Aggregated Albumin Human
0.5 mg Albumin Human
120 μg Stannous Chloride (Dihydrate)
80 mg Lactose
24 mg Succinic Acid
1.4 mg Sodium Acetate
Hydrochloric Acid or Sodium Hydroxide is added for pH adjustment.
Each Vial contains $8 \pm 4 \times 10^6$ aggregated albumin particles.

TechneScan® MAA contains no preservatives; after reconstitution, the shielded vial should be stored at 2° to 8°C.

Included in each package is one (1) package insert and 5 radioassay information string tags.

DIRECTIONS

Procedural Precautions

SOLUTIONS OF SODIUM PERTECHNETATE Tc-99m WHICH CONTAIN OXIDIZING AGENTS (i.e., sodium hypochlorite or hydrogen peroxide) SHOULD NOT BE USED.

Solutions obtained from the following technetium Tc-99m generators were tested and found to be acceptable for use with **TechneScan MAA:** Mallinckrodt's Ultra-TechneKow* FM Generators, New England Nuclear's Technetium-99m Generator and Squibb's Minitec® Generator. Other sources of technetium Tc-99m can be used if the user has demonstrated that they are compatible with **TechneScan MAA.**

All transfer and vial stopper entries must be done using aseptic techniques.

PROCEDURE

NOTE: The radioactive material should be shielded at all times during preparation.

1. A reaction vial is removed from the refrigerator and approximately 5 minutes are allowed for the contents to come to room temperature.
2. Affix "Caution—Radioactive Material" label string tag to reaction vial.
3. Place reaction vial in a lead shield fitted with a lid and having a wall thickness of at least ⅛ inch. Do not remove reaction vial from shield except to inspect contents prior to administration. Use adequate shielding to perform the inspection.
4. Sodium pertechnetate Tc-99m solution (5-10 ml) is added to the **TechneScan MAA.** In choosing the amount of technetium Tc-99m radioactivity to be used in the preparation of **TechneScan MAA** Tc 99m, the labeling efficiency, number of patients, administered radioactive dose, and radioactive decay must be taken into account. The recommended maximum amount of technetium Tc-99m to be added to the **TechneScan MAA** is 60 millicuries.
5. The reaction vial is gently agitated for a few seconds and allowed to stand for 15 minutes at room temperature.
6. Calculate the radioactivity concentration of the **TechneScan MAA** Tc 99m and fill in the appropriate information on the string tag.
7. Prior to withdrawing a dose, the contents of the reaction vial should be gently agitated sufficiently to effect homogeneous suspension of the aggregated albumin. Store shielded reaction vial at 2° to 8°C when not in use and discard after 8 hours from the time of reconstitution.

This reagent kit is approved for use by persons licensed by the U.S. Nuclear Regulatory Commission pursuant to Section 35.14 and 35.100 Group III of 10 CFR 35 or under licenses of Agreement States.

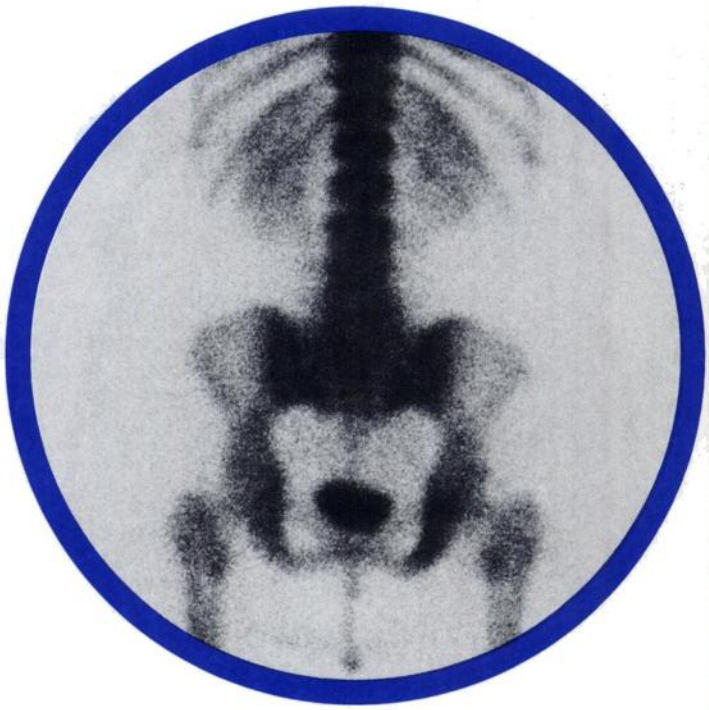
Mallinckrodt® Diagnostics
Mallinckrodt, Inc.
St. Louis, MO 63134

2/81

Printed in U.S.A.

A superior new bone scanning agent

Osteoscan-HDP represents a significant technological advance in bone scanning agents. Its unique new active ingredient, hydroxymethylene diphosphonate (HDP), provides higher bone uptake than MDP-based agents for clear, definitive scans and excellent lesion detection.



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.[1]

Rapid blood clearance

No bone agent clears the blood faster. Only 6% of Osteoscan-HDP remains in the blood two hours after injection.[2] 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.

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.

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.).

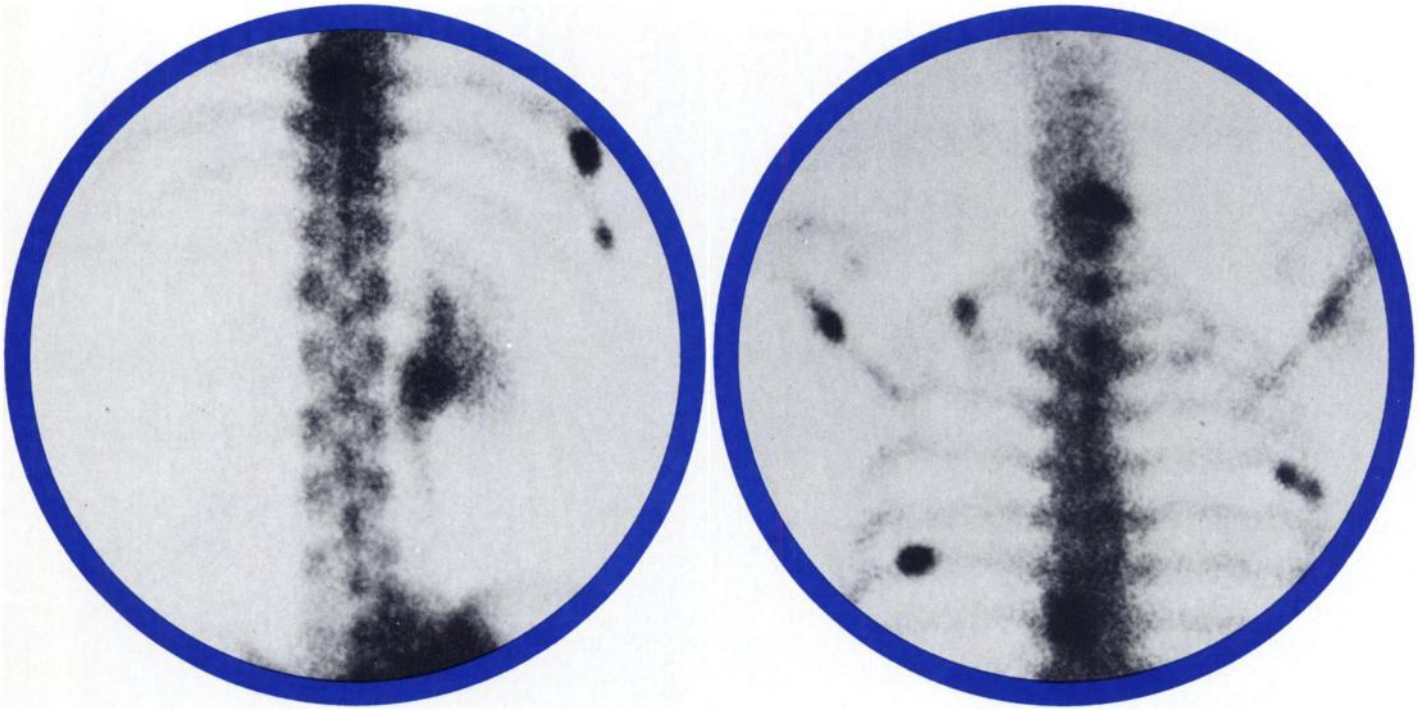
New

offering higher bone uptake

PROCTER & GAMBLE

OSTEOSCAN®-HDP

Technetium Tc99m Oxidronate Kit



Unexcelled image quality[3]

Osteoscan-HDP's high bone uptake and rapid blood clearance permit clear visualization of skeletal detail even in difficult-to-scan elderly patients.

See for yourself

To order Osteoscan-HDP, or for further information, call or write Procter & Gamble, Professional Services, P.O. Box 85507, Cincinnati, Ohio 45201, (513) 977-5547.

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.

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

SIEMENS

PHO-GAMMA cameras and SCINTIVIEW for consistent clinical imaging

Developed in conjunction with clinical cardiologists, Siemens comprehensive selection of cardiac performance programs provide the user with unprecedented reproducibility and clinical confidence in a wide variety of imaging procedures and quantitative analysis.

The unique combination of high quality imaging and advanced clinically relevant software provides pertinent and useful information for volumetric analysis and physiologic information in myocardial perfusion and patency.

Furthermore, since nuclear cardiology techniques are non-invasive, you can offer this important diagnostic modality in situations and environments previcusly unattainable.

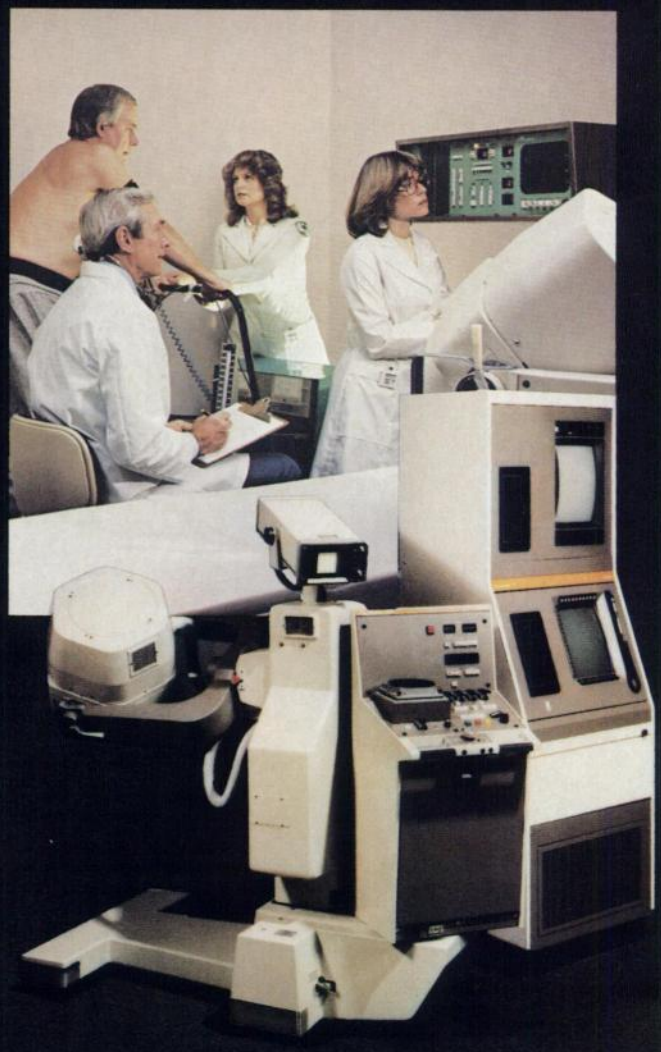
Current clinical cardiac procedures which you can offer include:

- **Phase and amplitude analysis of ventricular function**
- **Extended cardiac acquisition for wall motion and left ventricular ejection fraction**
- **Automatic wall detection to define left ventricle and calculating the ejection fraction**
- **Cardiac shunt detection and quantitation of QP:QS ratio**
- **First transit cardiac studies**

All programs offer computerized nuclear imaging with a high degree of flexibility to satisfy your individual data acquisition, processing and presentation requirements.

Additional clinical programs already in development will offer an even greater range of diagnostic possibilities.

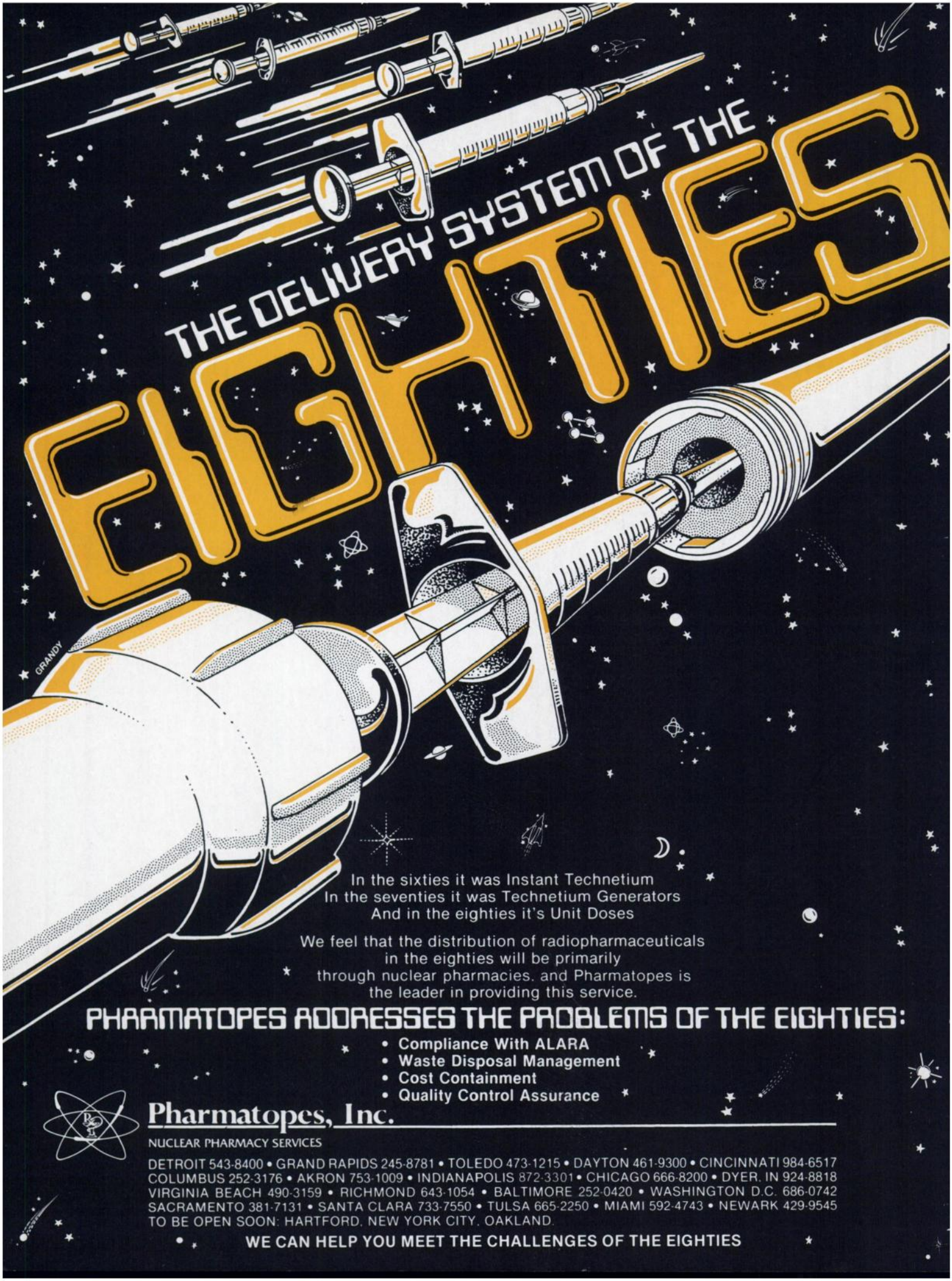
Contact your Siemens representative to see how easy it is to provide these important nuclear cardiology procedures to your referral physicians.



Siemens Corporation
Medical Systems Group
186 Wood Avenue South
Iselin, New Jersey 08830
(201) 494-1000

Siemens... an investment in proven nuclear cardiology

MG/5310-003-121



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

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

PHARMATOPES ADDRESSES THE PROBLEMS OF THE EIGHTIES:

- **Compliance With ALARA**
- **Waste Disposal Management**
- **Cost Containment**
- **Quality Control Assurance**

Pharmatopes, Inc.

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WE CAN HELP YOU MEET THE CHALLENGES OF THE EIGHTIES

SIEMENS

SCINTIVIEW... pushbutton convenience in advanced nuclear medicine

Fast, accurate and reproducible results with built-in flexibility to satisfy all your clinical requirements.

An integral part of the modern nuclear medicine department—SCINTIVIEW provides consistently accurate performance with push button convenience for your routine clinical imaging requirements—plus the flexibility to add advanced procedures and protocols as required.

From acquisition through processing of information, SCINTIVIEW's uniquely dedicated console computer approach to nuclear medicine combines unprecedented ease of operation. . .with proven clinical performance.

A wide variety of relevant clinical programs cover a complete range of nuclear medicine applications. Seven programs are specifically developed for nuclear cardiology and provide the user with immediate entry into this most dramatic advance in diagnostic imaging. Simple, easy to read English language touch panel lets you concentrate on the procedures, not the computer.

And, SCINTIVIEW is compatible with virtually any Anger camera, to permit instantaneous upgrade-ability. Add on a MICRO DOT IMAGER for efficient documentation and you're assured the flexibility, accuracy, and speed you expect in an advanced system that's part of a total approach to nuclear imaging.

Contact your Siemens representative for details and references.

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Siemens... an investment in diagnostic confidence

MG/5310-006-121

Picker's new ECT stand

THE NEW DYNA™ CAMERA SERIES 5 PUTS EVERYTHING AT YOUR FINGERTIPS. INCLUDING TOMORROW.

Meet the new Dyna Camera from Picker . . . our new series of nuclear cameras that remain up-to-date because of their upgradable, digital and modular design . . . allowing future expansion into tomorrow's technology.

Just as you can add a total ECT package to the Dyna Camera Series 5, you can add future innovations as they come on stream. Because upgradability is a programmed design concept, your Dyna Camera never becomes obsolete . . . always remains cost-effective . . . provides total clinical capability . . . both today and tomorrow.

All this and a host of other pluses:

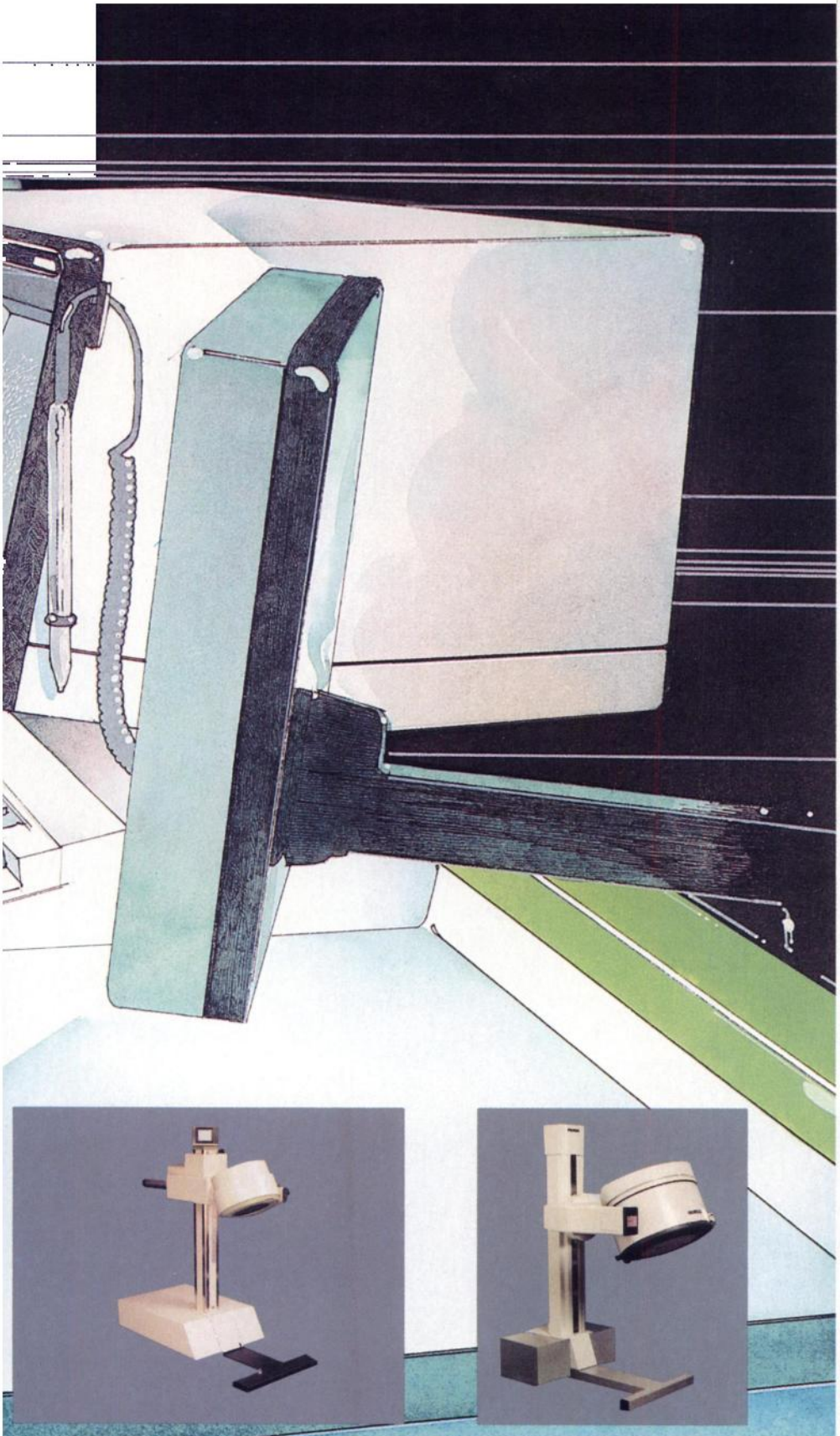
- The highest resolution scintillation camera on the market
- Wide choice of special-purpose detectors and stands
- Choice of programmable computer systems
- Advanced microprocessor-controlled digital electronics for increased accuracy and reliability
- Choice of model configurations to meet your particular laboratory space requirements

And because its from Picker, you have a single source of supply for camera, computer and other components . . . as well as single-source service.

Dyna Camera Series 5 . . . upgradable . . . cost-effective . . . modular . . . modern. Expanding today's diagnostic capabilities while providing total futurability.

For more details, ask your Picker representative, or write: Picker International, 12 Clintonville Road, Northford, Connecticut 06472

PICKER INTERNATIONAL®
We're Instrumental



DC 5/10C - new, special purpose detector/stand

Basic detector/stand

Several of the detector/stand combinations made possible with the Dyna Camera Series 5

Superior bone images in 1 hour

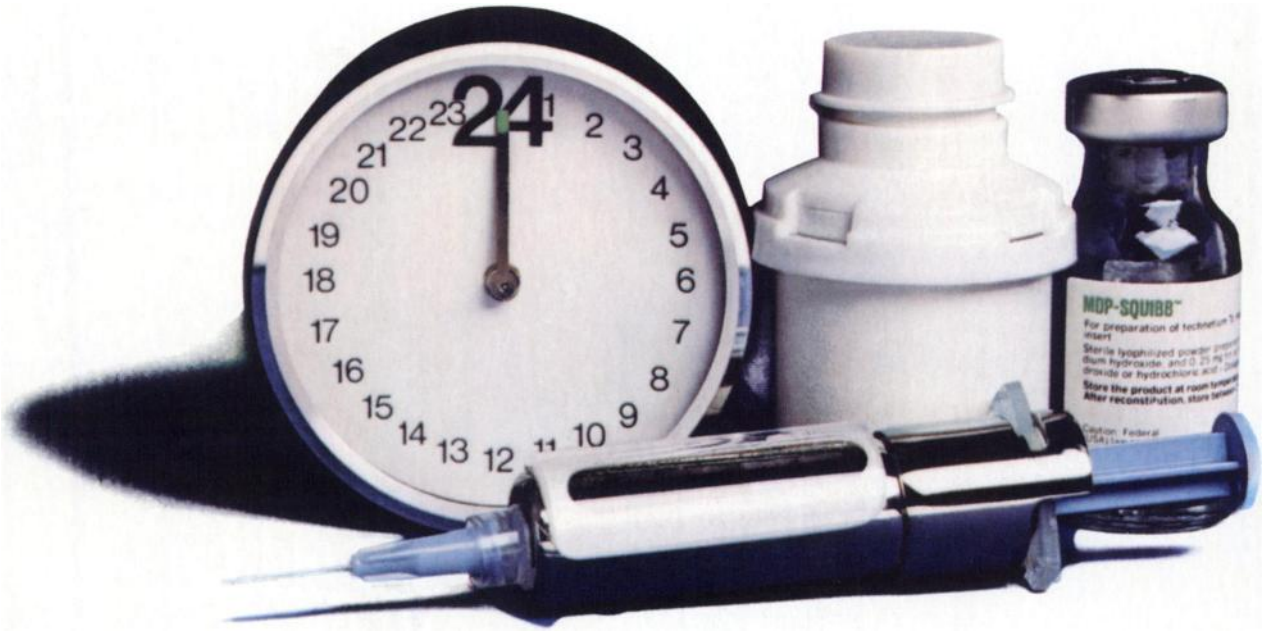
NEW

MDP–SQUIBB™

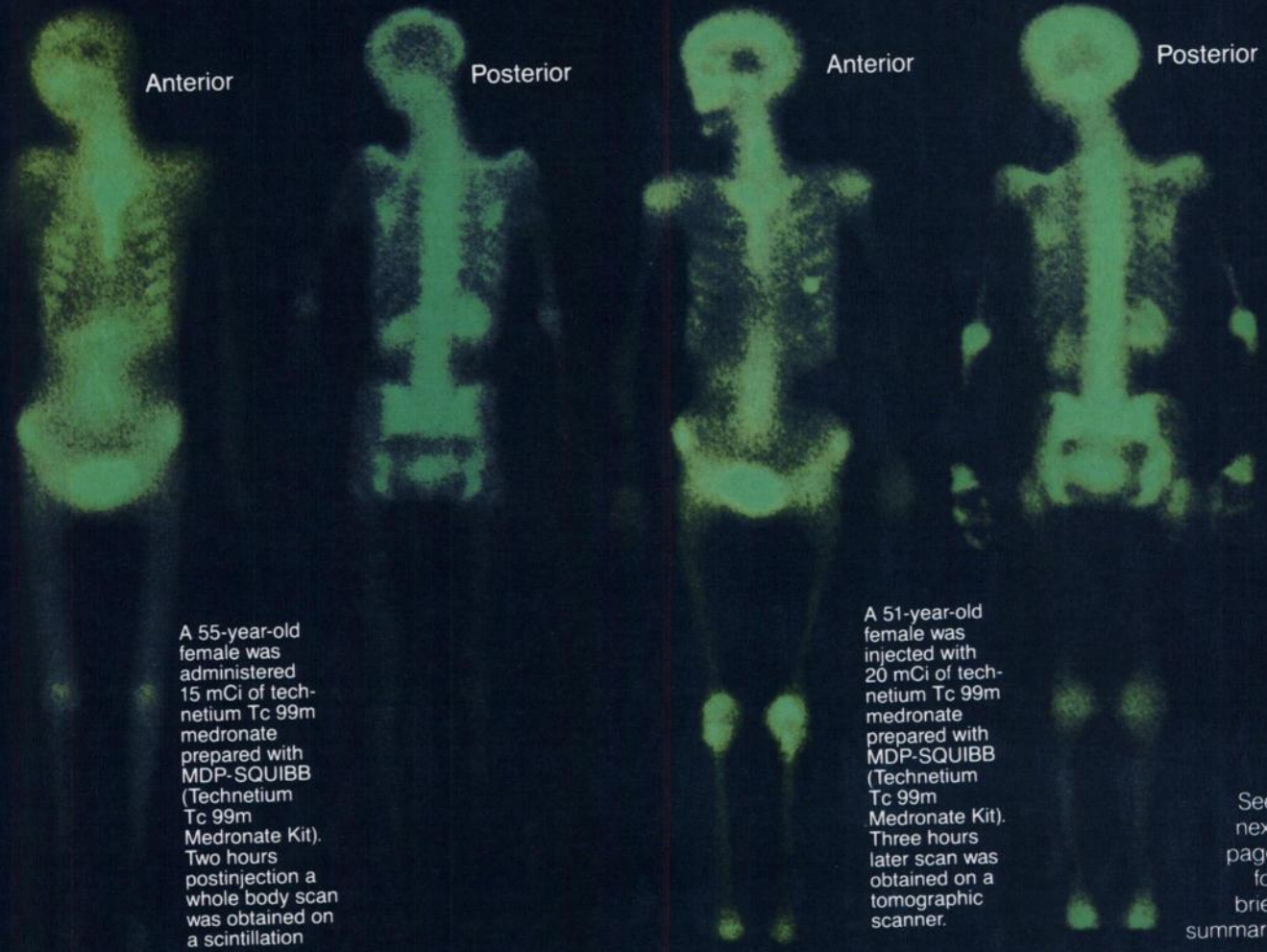
TECHNETIUM Tc 99m MEDRONATE KIT

STABLE FOR 24 HOURS

—May be used up to 24 hours after reconstitution
—20 mg of active ingredient . . . each vial contains 20 mg medronic acid
—Formula developed in the pharmaceutical laboratories of the Squibb Institute for Medical Research
—Images of unusual clarity



—Rapid soft tissue and blood clearance... optimal results can be obtained 1 to 4 hours after administration
—Excellent labeling efficiency
—Simple 2-step procedure
—Kit contains 10 reaction vials

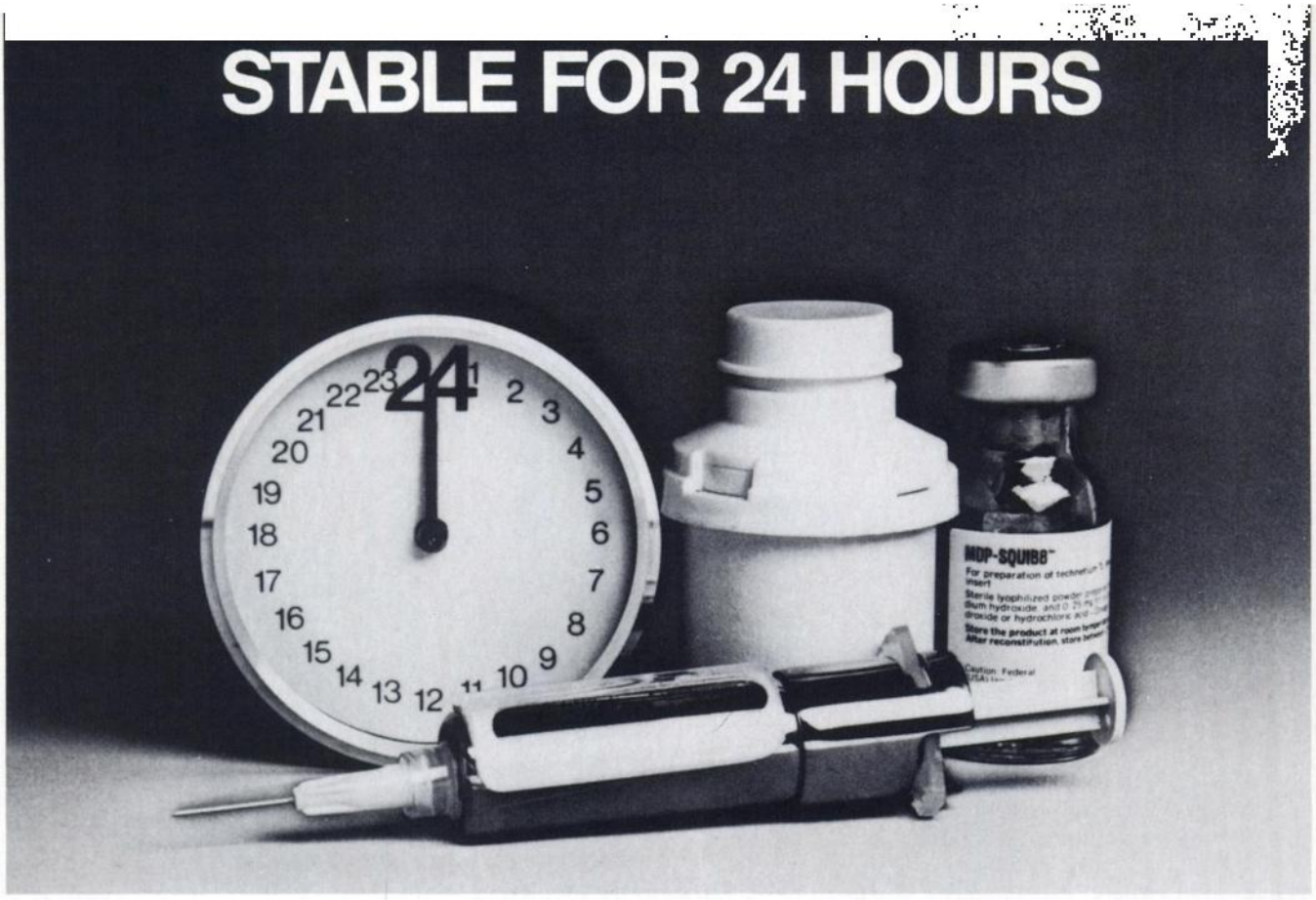


A 55-year-old female was administered 15 mCi of technetium Tc 99m medronate prepared with MDP-SQUIBB (Technetium Tc 99m Medronate Kit). Two hours postinjection a whole body scan was obtained on a scintillation camera.

A 51-year-old female was injected with 20 mCi of technetium Tc 99m medronate prepared with MDP-SQUIBB (Technetium Tc 99m Medronate Kit). Three hours later scan was obtained on a tomographic scanner.

See next page for brief summary.

STABLE FOR 24 HOURS



NEW MDP-SQUIBB™

TECHNETIUM Tc 99m MEDRONATE KIT

MDP-SQUIBB™
Technetium Tc 99m Medronate Kit
For Diagnostic Use

DESCRIPTION: Each 10 ml capacity reaction vial contains a sterile, nonpyrogenic lyophilized powder prepared from 20 mg medronic acid, 11 mg sodium hydroxide, and 0.25 mg tin as fluoride; the product does not contain a preservative. When sterile, nonpyrogenic sodium pertechnetate Tc 99m is added to the vial, technetium Tc 99m medronate is formed.

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).

Preliminary reports indicate impairment of brain scans using sodium pertechnetate Tc 99m injection which have been preceded by a bone scan using an agent containing stannous ions. The impairment may result in false-positive or false-negative brain scans. It is recommended, where feasible, that brain scans precede bone imaging procedures. Alternatively, a brain-imaging agent such as technetium Tc 99m pentetate may be employed.

PRECAUTIONS: General—Contents of the reaction vial are not radioactive and are intended only for use in the preparation of technetium Tc 99m medronate and are **NOT** to be administered directly to the patient.

Technetium Tc 99m medronate as well as other radioactive drugs must be handled with care, and appropriate safety measures should be used to minimize radiation exposure to the patient and occupational workers consistent with proper patient management.

To minimize radiation exposure to the bladder, the patient 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.

Technetium Tc 99m medronate should be administered within 24 hours of its preparation; for optimal results, the dose should be administered as soon as possible following preparation of technetium Tc 99m medronate. Optimal imaging results are obtained one to four hours after administration.

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.

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 reproduction 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 medronate should be given to a pregnant woman only if clearly needed.

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

Nursing Mothers—Technetium Tc 99m 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.

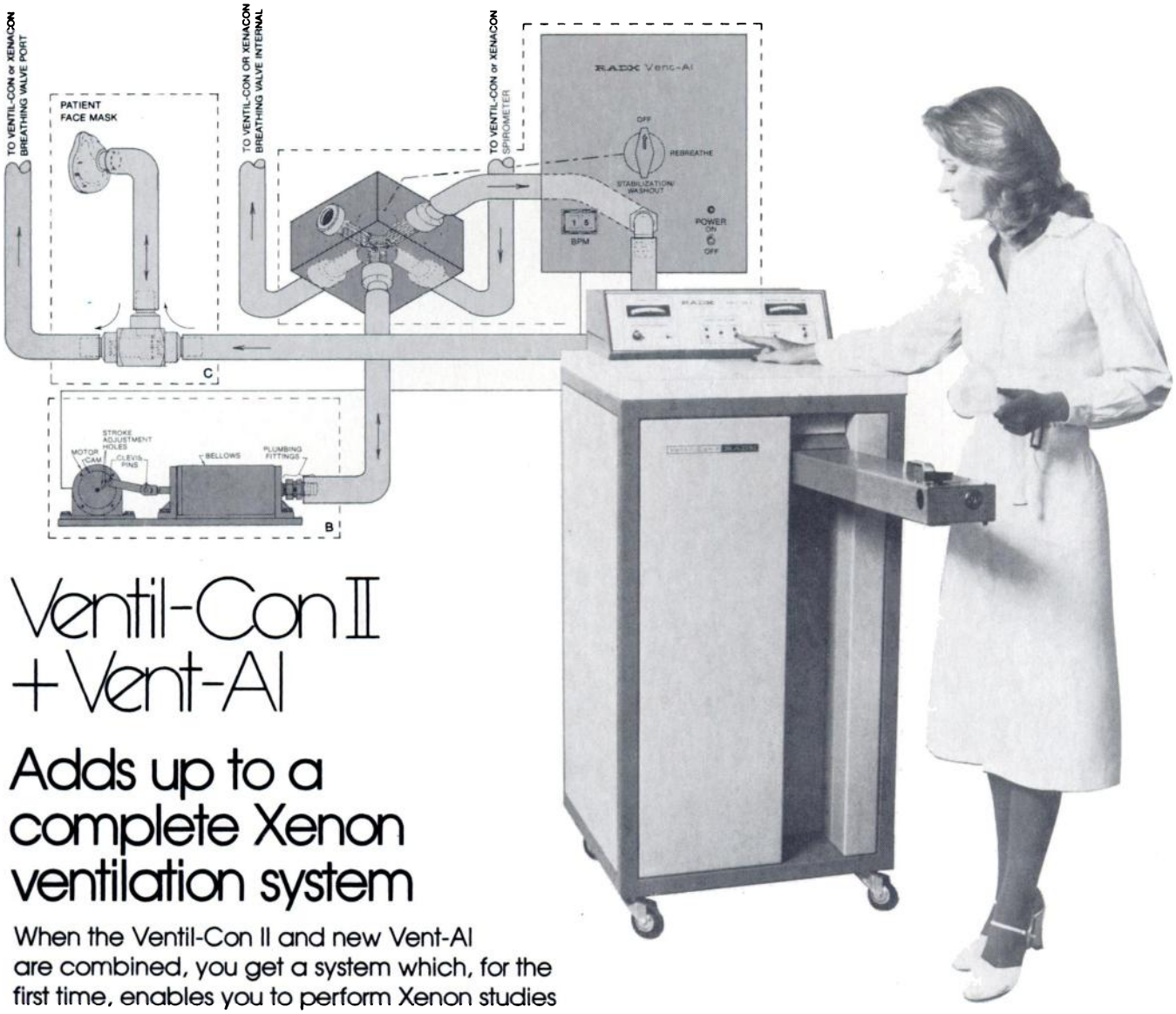
ADVERSE REACTIONS: No adverse reactions specifically attributable to the use of technetium Tc 99m medronate have been reported.

For full prescribing information, consult package insert.

HOW SUPPLIED: In packages of 10 reaction vials.

Medatopes®

The Ventilation Connection



Ventil-Con II + Vent-Al

Adds up to a complete Xenon ventilation system

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

The RADX Ventil-Con II, recognized worldwide as the leading Xenon rebreathing system, was the first to offer:

- Automatic O_2 replenishment
- In-line autoclavable bacteriological filter
- Dry-rolling spirometer
- Xenon concentration meter
- Shielding equivalent to 1/8" lead
- Reuse of stored Xenon

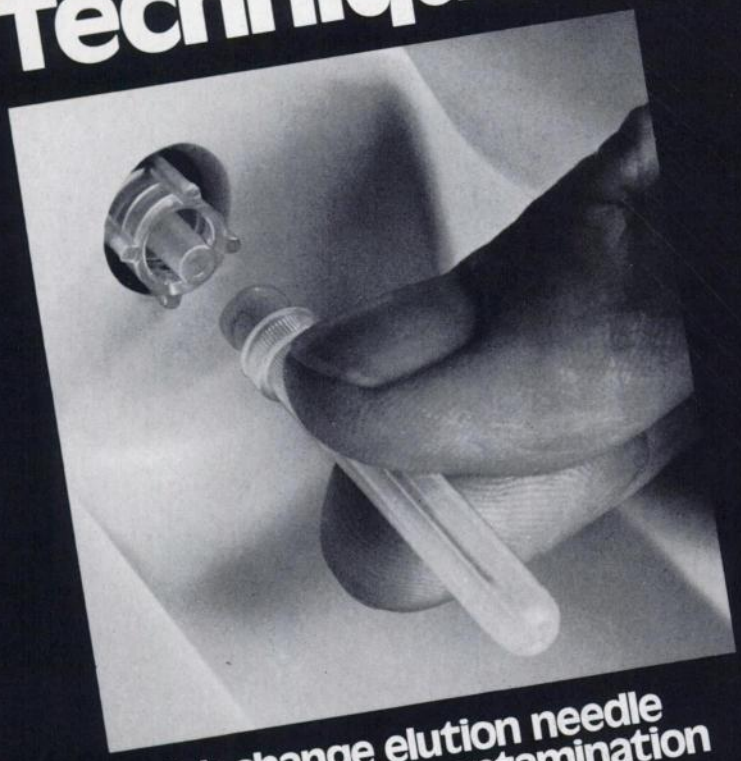
The Ventil-Con design limits dead space to less than 25 ml, and has less than 0.2 in/H_2O resistance to normal breathing. Xenon trap with exhaust port detector/alarm is built in.

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

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

RADX
P.O. Box 19164 Houston, TX 77024

Sterile Technique



Quick-change elution needle reduces risk of contamination for greater patient safety.

A fresh needle every time you elute helps insure sterility. Mallinckrodt generators have a unique, quick-change system that makes it easy.

Each generator comes with 6 sterile-packed, pyrogen-free needles. After eluting, just remove the old needle and insert the new, leaving the protective cap in place. That way, your generator is always ready to supply sterile eluate. And if a needle is damaged, you can change it in seconds... no waiting for a whole new needle assembly to be delivered and installed, no disruption of your schedule.

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

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

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

THE MALLINCKRODT COMMITMENT

Mallinckrodt® Diagnostics

to Nuclear Medicine

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

SIEMENS

ZLC eliminates spatial distortion for superior clinical images

Spatial distortions, normally inherent to detectors, are now removed "on-line" to provide the highest quality diagnostic information and images. No longer is addition or subtraction of counts, or any form of cosmetic manipulation necessary. ZLC has achieved this significant technological milestone in nuclear imaging.

ZLC features advanced electronic correction circuits for the three fundamental camera signals: "X" and "Y", which represent the position of the scintillation event, and "Z" which represents the energy of the scintillation event. These circuits adjust the three signals for systematic errors in real time. Valid signals are never eliminated, nor are invalid signals inserted. ZLC preserves the integrity of the clinical information.

The ZLC circuits are permanently calibrated and optimized to function over the full range of count rate and energy levels. . . over the entire field-of-view. And most important, to assure you the highest degree of detector accuracy attainable.

Seeing is believing, call your Siemens representative for proof of ZLC's performance.

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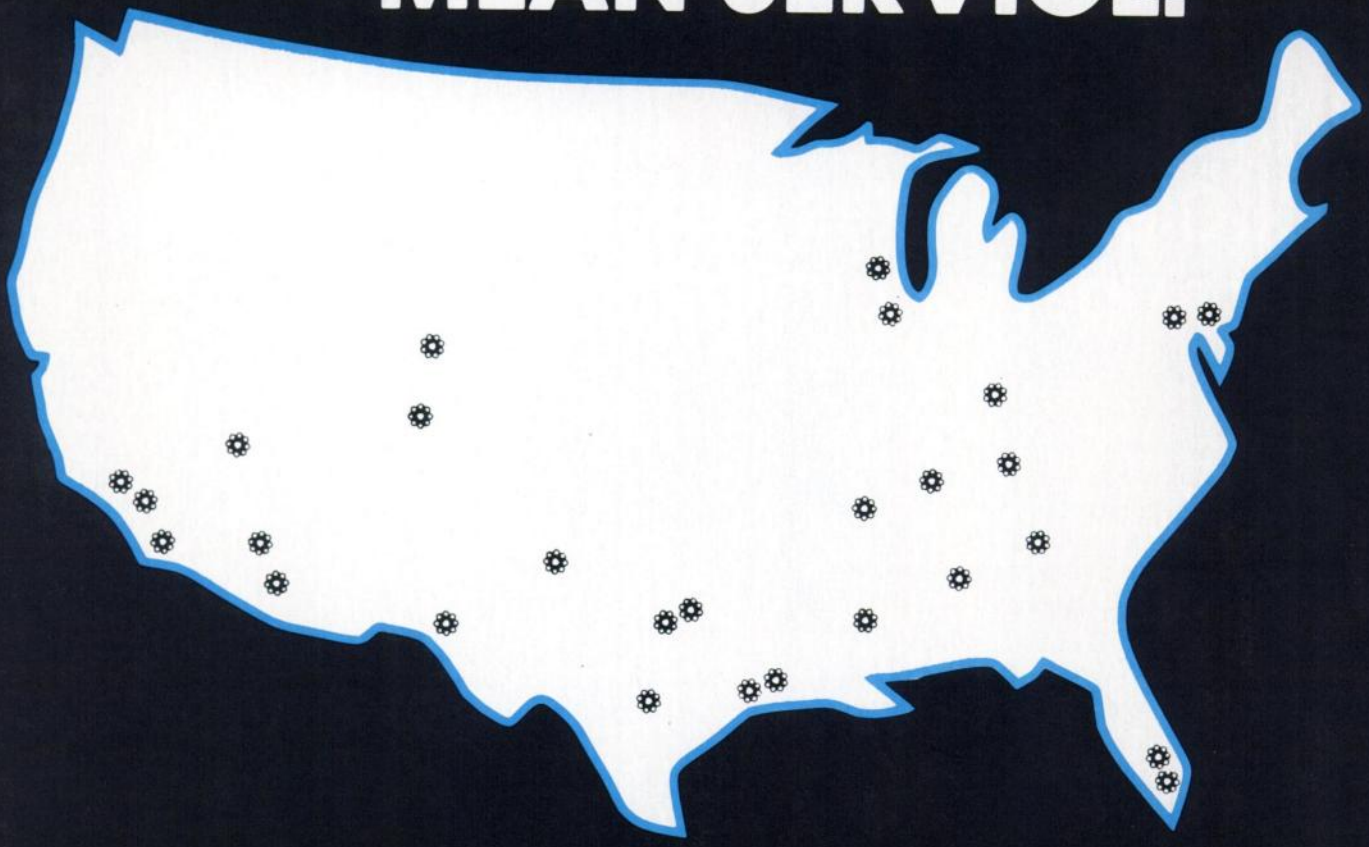
an investment in diagnostic confidence

MG/5310-005-121

With Nuclear Pharmacy...

25 NATIONWIDE CENTERS MEAN SERVICE!



WE BLANKET THE NATION...

...and because we do, you get the immediate service you need. Only Nuclear Pharmacy can guarantee this kind of service because only Nuclear Pharmacy blankets the nation. And we're adding more distribution centers all the time.

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Gepco introduces Disposable, Radiation-Precaution Sheets

Developed especially for use as disposable bottom sheets for nuclear-diagnostic and nuclear-therapy patients. These color- coded sheets surpass recommendations of the Nuclear Regulatory Agency for the segregation of hot linens, which must be isolated for 10 half-lives.

for safer, more efficient handling of "hot-patient" excretions.

- Effective leak-proof containment of radioactive excretions.
- Non-allergic. Lint-free. Fire-retardent.
- Safer, more convenient . . . but with no sacrifice in the patient's comfort.

Comfortable, highly absorbent sheets for nuclear-diagnostic patients. No heat build-up. Each white sheet is **bonded** to a blue, leak-proof barrier —to assure effective containment of *all* radioactive excretions:

urine, feces,
perspiration, blood,
vomit, mucous and
other fluids from
seeping bandages or drains.

Available as disposable flat sheets. Highly absorbent and comfortable. With excellent barrier characteristics. Or with fitted top corners for faster linen changes—regardless of bed length—and with no sacrifice in patient comfort or leak-proof containment of radioactive excretions.

Also can be used as a top sheet, with the warmth of a blanket . . . or as a convenient radiation-precaution sheet for scanning tables, litters and stretchers.

The same bonded material is sturdy enough for floor and wall covering. It can be made to order for various room dimensions.

For maximum convenience and safety, Gepco also provides complete, disposable radiation-precaution care packs. Each consists of top and bottom sheets, pillow case, bath towel and wash cloth. Patient gowns and robes are also available.

HOSPITAL-TESTED AND APPROVED

Gepco's unique radiation-precaution sheet was developed in conjunction with the nuclear medicine section of a major medical-education institution.

At that East Coast medical center, technetium (TC^{99m})—with a radioactive half-life of six hours—is the most common radionuclide used for diagnostic studies. As a diagnostic tool, TC^{99m} is added to "site-specific" nonradioactive compounds and administered intervenously for approximately 700 imaging studies per month.

Before the medical center switched over to the new Gepco disposable, radiation-precaution sheets, special handling and 72-hour segregation of bed linens from *hot patients* created serious logistic problems.

Blue poly bags, also available from Gepco, are used to contain the disposable radiation-precaution sheets and supplies. These poly bags, which can be used as convenient color-coded, trash-can liners, effectively segregate radioactive body wastes; and following a 72-hour *hold period* —to allow all residual radiation to deteriorate to normal ambient-environment levels—the disposable sheets can be safely and routinely handled by the hospital's regular trash-disposal service.

Gepco

GENERAL ECONOPAK, INC.
1725 N. 6th St., Philadelphia, PA 19122
(215) 763-8200

THE SMALL CAMERA WITH THE HIGH I.Q.

It's called the Intelligent Video-Imager, because it has digital selection and memory storage of brightness, contrast and exposure settings for up to four film types or video signals. And a microprocessor that controls raster line elimination, remote operation and the photometer system.

It's small in size but big on benefits. Like raster line elimination, which yields increased vertical information density and image dynamic range. Cosine⁴ light fall off correction, providing exceptionally uniform light transmission, is a special feature of an optical system specifically designed for video photography.

It can automatically self-diagnose, self-calibrate before every exposure, and record single frame images without freeze frame. A series of interlocks and operator feedback functions prevent common errors like leaving the dark slide in the cassette. Rugged enough for prolonged mobile use. You don't even have to warm it up.

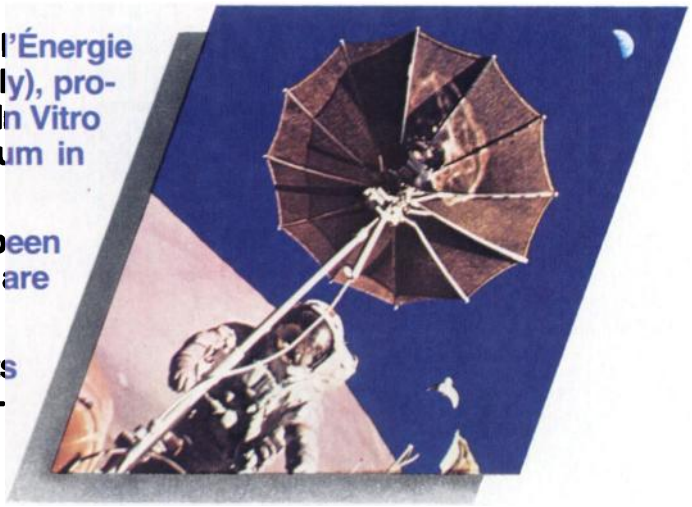
Space limitations? The Intelligent Video-Imager can mount in a standard rack—it's just 10½″ high x 16½″ wide x 22″ deep. Available in 1, 4, 6, or 9 image formats, all with our new proprietary ultra-high-resolution, flat-faced monitor to insure excellent image quality.

Worldwide sales and service. For more information, call us at (201) 767-1750, or toll-free, (800) 526-0274, or write Matrix Instruments, 230 Pegasus Avenue, Northvale, New Jersey 07647. Telex: 135131

MATRIX INSTRUMENTS INC.

MAXIMUM IN PERFORMANCE AND SECURITY

CIS



CIS, a subsidiary of the Commissariat à l'Énergie Atomique (France) and Sorin Biomedica (Italy), provides the worldwide market with In Vivo and In Vitro diagnostic products which give the maximum in *performance and security.*

We are not a fly-by-night supplier. We have been in this business for over 20 years and we are here to stay.

The *performance and security* of our products is assured by a stringent quality control program which never loses sight of the purpose of a product: an aid in *diagnosis.*

CIS has one of the widest range of products available and it is constantly being increased due to our significant research and development efforts. Our program also includes a continual updating of our existing products, taking advantage of the latest technology.

So when you need a product giving the maximum in *performance and security,* think of CIS. You'll be glad you did.

For more information contact us or your local CIS distributor.

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The difference between ordinary dynamic studies and those made with TOSHIBA's Gammacamera GCA-40A is the difference between guessing and diagnosing with complete assurance. This new model's high count-rate (200 kcp's), excellent resolution, and large field of view (with a window width of 40%) provide the finest quality nuclear image available today.

The GCA-40A also has three special functions which make a positive difference in operation. The Dual Peak function means that the measurement times of multi-peak nuclides are shortened, and confirmed uniformity at each peak promotes the production of high quality images. The Marking function allows any region of interest to be marked on the film and its dimensions may be measured with the scale mark. And the Zooming function allows magnified display of limited regions such as the heart, small sections of internal organs, or the viscera of children.

Simplicity in use also makes a difference, so TOSHIBA's made the GCA-40A easy to position. Changing the lightweight collimators is also easy and quick, and adjusting photomultipliers is no problem at all.

All gammacameras may look alike, but Toshiba's image makes the difference.

So if you think that there is no difference between gammacameras, check out TOSHIBA's GCA-40A and discover the critical difference, the superb image quality and resolution you expect from TOSHIBA, the pioneer in the field of nuclear medicine.

For more information on the GCA-40A or for information on any of TOSHIBA's FAMILY OF IMAGING PRODUCTS, call TOLL FREE (800) 421-1968; in California, (213) 638-5153.

Quality imaging from

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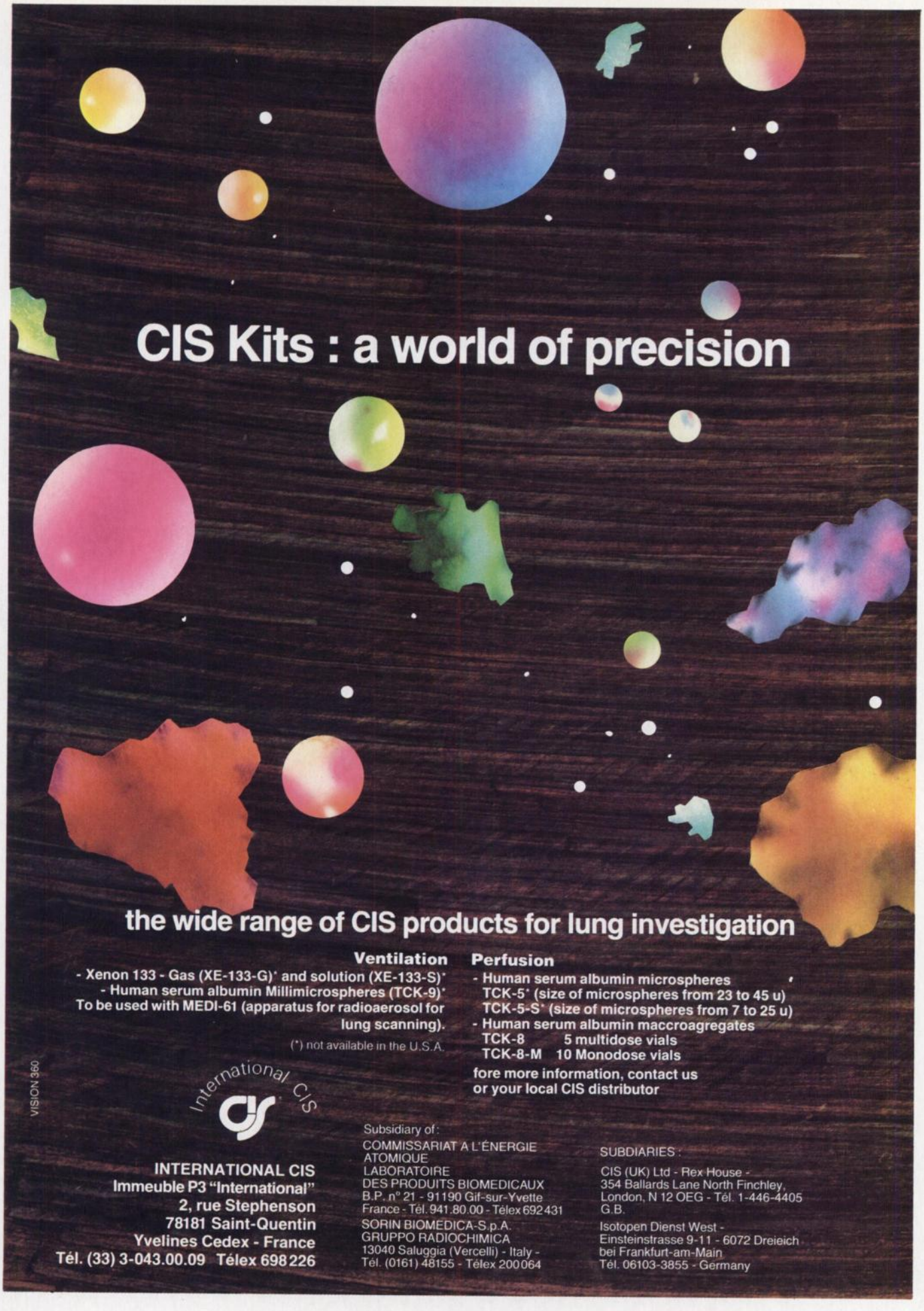
CIS Kits : a world of precision
the wide range of CIS products for lung investigation
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To be used with MEDI-61 (apparatus for radioaerosol for lung scanning).
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TCK-5-S* (size of microspheres from 7 to 25 u)
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SIEMENS

New ROTA CAMERA with dual ZLC detectors for high performance Single Photon ECT

Introducing an imaging system designed to the rigid performance criteria of SPECT and engineered to set the standard of excellence.

Linearity and Uniformity
ZLC detectors dramatically improve linearity and uniformity by correcting intrinsic energy variations and spatial non-linearities, over the entire field of view. The source of circular artifacts is eliminated and optimum spatial resolution is achieved.

Mechanical Stability
The stable gantry precisely controls and tracks the detectors position during rotation to ensure high resolution images, free of artifacts and blurring.

Patient Comfort
The gantry's cantilever construction and 4-way powered tabletop facilitates patient set up. Clearances are easily maintained and the new narrow detector flange improves patient-detector positioning while maximizing usable crystal area.

Sensitivity
Dual detectors double the system sensitivity and the additional counts achieved assure more accurate data and image quality for evaluation.

Siemens Corporation,
Nuclear Medical Division,
186 Wood Avenue South,
Iselin, N.J. 08830
Telephone: (201) 494-1000

Siemens... an investment in diagnostic confidence

MG/5310-006

Freight Savings

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

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

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

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

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

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

Mallinckrodt® Diagnostics

to Nuclear Medicine

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

Is your lab safe?

If you work with radioactive Xenon, monitor your room air continuously.

Use the dependable TRITON Model 133 Xenon Gas Monitor to be sure that radioactive Xenon is not leaking into your room air.

The Model 133 detects ^{133}Xe levels in room air or Xenon trap output. Sensitivity to better than 1/5 the maximum 40 hour airborne concentration (1 MPC = 10 $\mu Ci/M^3$) specified by the U.S. Nuclear Regulatory Commission (10 CFR 20.103).

Reads 0.1 to 100 MPC of ^{133}Xe. Features a large, easy-to-read panel meter, visual and audible alarm, and a recorder. A recorder chart will document the exposure record of your personnel: firm documentation for NRC or State inspections.

For complete specifications, write or call:

Johnston Laboratories

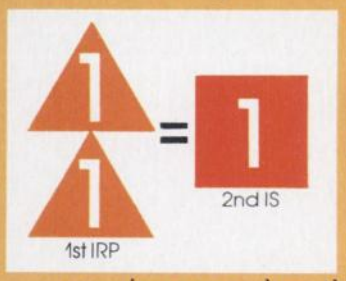
Cockeysville, Maryland 21030 USA
Phone: (301) 666-9500 / Cable: JOHNLAB

The case of the double standard.

There is a double standard in HCG RIA. The World Health Organization established the 1st International Reference Preparation (1st IRP) 75/537 specifically for use in immunoassay. It is the purest HCG standard available. However, most radioimmunoassay kits are calibrated against the earlier WHO standard for bioassay, the 2nd International Standard (2nd IS). Hence, the double standard. Eventually, all HCG RIA Kits will be calibrated against the 1st IRP.

We use the purest standard. Clinical Assays' GammaDab® β-HCG RIA Kit is calibrated against the 1st IRP. Consequently, the kit reports about twice as many milli-International Units as will kits calibrated against the earlier standard. For instance, if our kit reports that a sample contains 200 mIU/ml, a kit calibrated against the 2nd IS will report only half that amount of HCG, or about 100 mIU/ml.

Don't be misled by the numbers. Kits calibrated against the old standard are really less sensitive than they appear. For example, a claim of 5 mIU/ml sensitivity translates into about 10 mIU/ml sensitivity, according to the 1st IRP. And a pregnancy screening procedure that supposedly picks up positives at 30 mIU/ml actually only detects positives above 60 mIU/ml.



We're twice as sensitive as we look. The sensitivity of the GammaDab β-HCG RIA Kit is 2 mIU/ml in terms of the 1st IRP (1 mIU/ml in terms of the 2nd IS). The cut-off for our screening procedure is 25 mIU/ml, or 12.5 mIU/ml according to the old standard. This lower cut-off level can be significant when early pregnancy detection is vital, as in cases of suspected ectopic pregnancy or threatened abortion.

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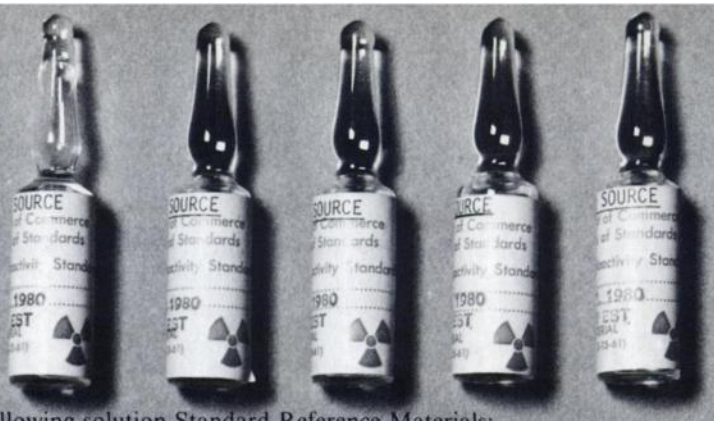

Between July and December, 1981, NBS will have available the following solution Standard Reference Materials:

SRM No.	Radionuclide	Approximate Availability Date	Approximate Total Activity at time of Dispatch
4400L-D	Chromium-51	July, 1981	150 μCi
4409L-D	Selenium-75	August, 1981	100 μCi
*4410H-G	Technetium-99m	September, 1981	200 mCi
4406L-E	Phosphorus-32	October, 1981	100 μCi
4407L-G	Iodine-125	December, 1981	100 μCi

These SRM's will consist of the radionuclide and carrier in approximately 5 grams of solution in a flame-sealed borosilicate-glass ampoule.

All orders must be placed before the first day of the month in which the SRM will be available. Shipments are made air freight, shipping charges collect.

*There will be no overseas shipments of technetium-99m.

For further information, and current prices, call or write to:

Miss P.A. Gelfeld
Radioactivity Group
Room C114, Building 245
National Bureau of Standards
Washington, D.C. 20234
(301) 921-2665

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National Bureau of Standards

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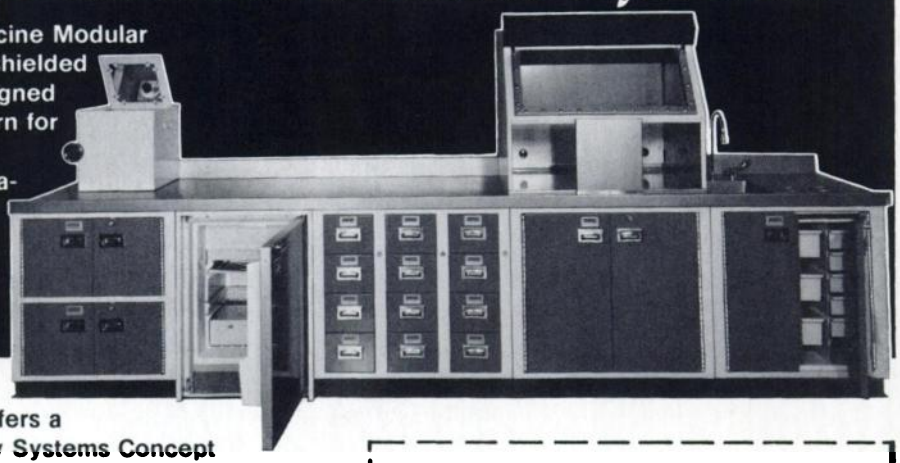

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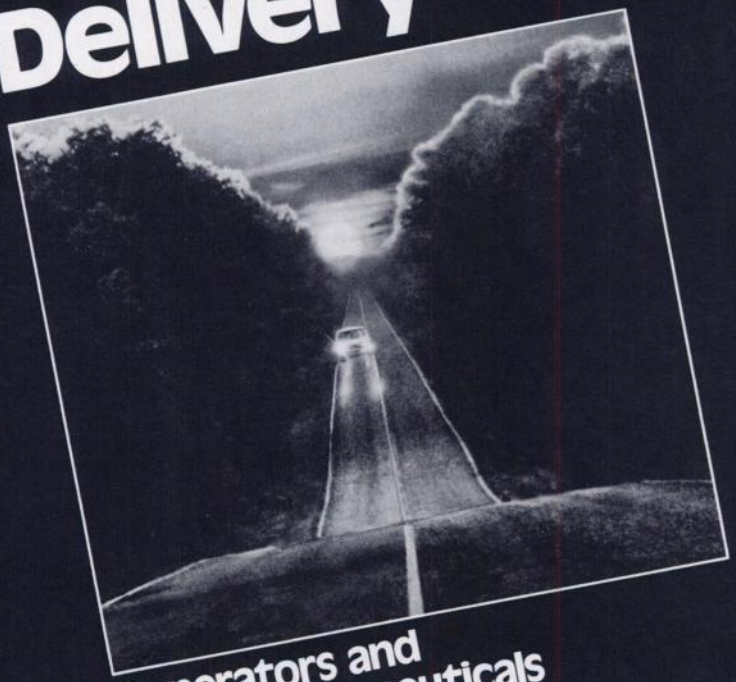

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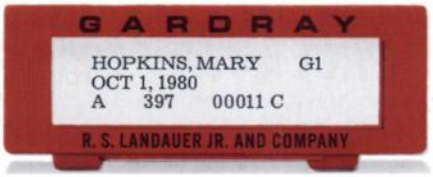

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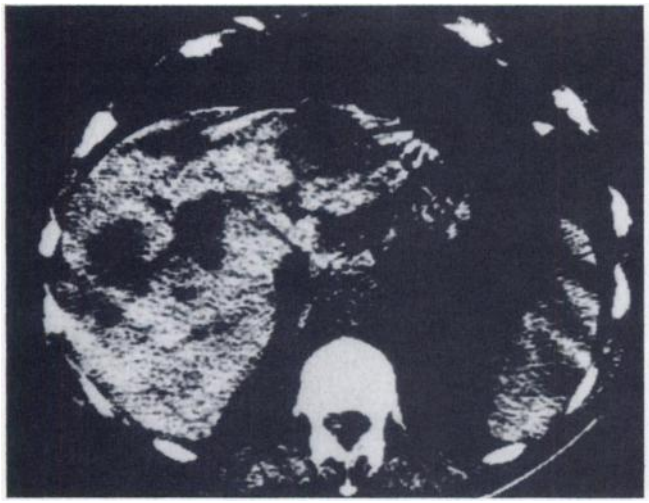
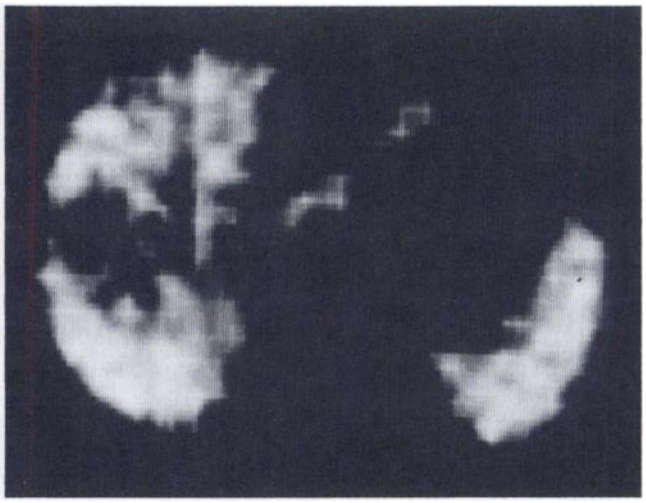


* Conventional Xray CT scan of liver showing numerous metastatic tumours.
Note several artifacts in the spleen



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

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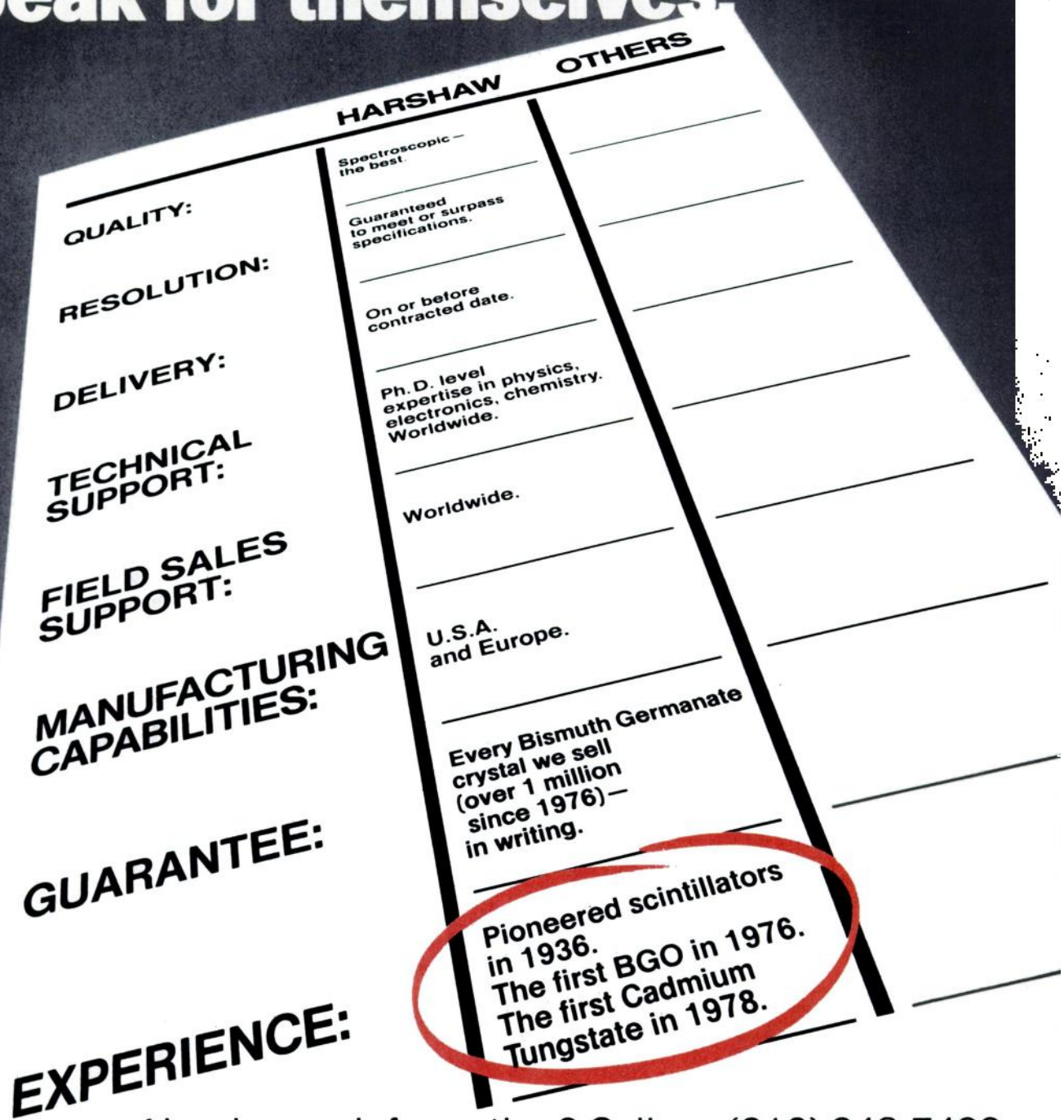

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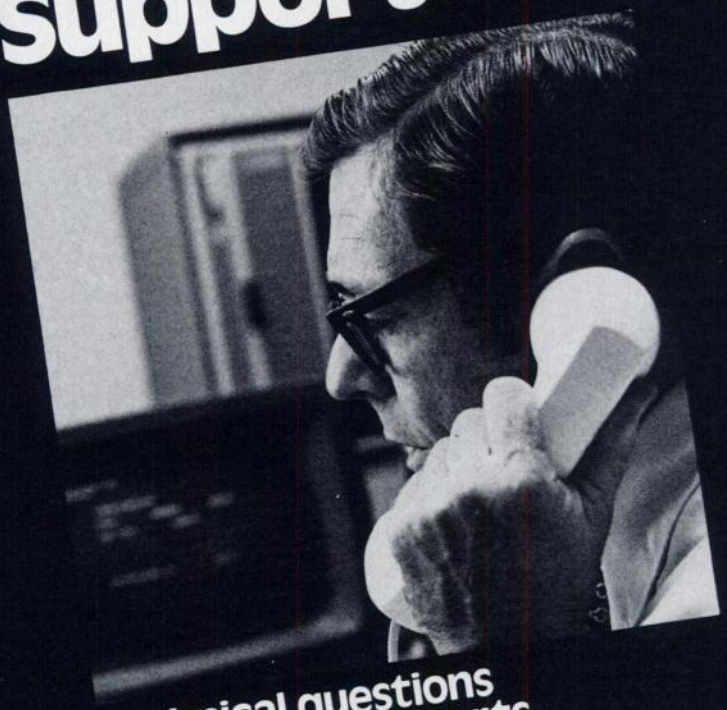

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NUCLEAR MEDICINE TECHNOLOGIST. The University of Utah Medical Center is accepting applications for a registered or registry-eligible imaging technologist. Our division provides a full range of imaging procedures with multiple cameras and computers. Competitive salary and benefits. Salt Lake is a pleasant city located near mountains, ski resorts, and other recreational areas. Contact Paul E. Christian, Nuclear Medicine, University of Utah Medical Center, Salt Lake City, UT 84132; (801)581-2716. Equal Opportunity Employer.

NUCLEAR CARDIOLOGY TECHNOLOgists. Staff positions available in the nuclear cardiology department of an 1,100-bed teaching hospital. Candidates must be registered and have experience in cardiovascular nuclear medicine. For additional information write: Leslie Anne Reduto, Nuclear Cardiology Department, The Methodist Hospital, 6565 Fannin, MS F903, Houston, TX 77030 or call (713)790-3341.

RIA TECHNOLOGIST, FULL-TIME day shift position open for ASCP, CNMT, or eligible. Experience in RIA procedures preferred. Department has Beckman Gamma 300, Micro Medic Concept 4, Wang 600-14 computer, Hewlett Packard 9815S. Excellent salary and fringe benefits. For more information contact Employment Manager, Mercy Hospital, 2200 Jefferson Ave., Toledo, OH 43624. Tel. (419)259-1274.

ASSISTANT SUPERVISOR, NUCLEAR Medicine Technologist. Full-time position for registered nuclear medicine technologist in

754-bed, general community hospital. Will be actively involved with dedicated diagnostic testing in our computerized nuclear medicine facility. Liberal salary and benefits. Reply: Miss Betty Hix, Nuclear Medicine Supervisor, Erlanger Medical Center, Chattanooga, TN 37403.

CHIEF TECH, NUCLEAR MEDICINE, Tampa. Immediate opportunity for experienced technologist. Minimum requirement A.R.R.T. &/or N.M.T.C.B., registered, with 2 yr management-supervisory experience. Recommend knowledge of radioimmunoassay, imaging, computers, and nuclear cardiology. Department has full-time nuclear physician. Candidate will assume administrative and clinical responsibilities. Send inquiry or resume to: Director, Employee Relations, University Community Hospital, 3100 East Fletcher Ave., Tampa, FL 33612. EOE.

NUCLEAR MEDICINE/NUCLEAR Radiology Residencies. Available July 1, 1981. Approved 2-yr program in nuclear medicine, approved 1-yr program in nuclear radiology. Affiliated university/VA hospitals, 300 beds each. Active clinical program with ample opportunities for research and career development. Delightful high desert community. An equal opportunity, affirmative action, Title IX, Section 504 employer. Contact: Dennis D. Patton, M.D., Director, Div. of Nuclear Medicine, University of Arizona Health Sciences Center, Tucson, AZ 85724.

FACULTY POSITION IN NUCLEAR Pharmacy, University of Nebraska Medical Center, College of Pharmacy. Applications are invited for a position in nuclear pharmacy at the Assistant Professor level. This is a full-time, tenure track position in the Department of Pharmaceutics of the College of Pharmacy. Principal responsibilities include undergraduate and graduate instruction, pharmacy service in the Regional Nuclear Pharmacy, and research. Applicants should have a Ph.D. in the area of Nuclear Pharmacy, Bionucleonics, or related area and must be eligible for licensure to practice pharmacy in the State of Nebraska. Interested persons should send a curriculum vitae and the names of three references to: Dr. Samuel C. Augustine, Regional Nuclear Pharmacy, University of Nebraska Medical Center, 42nd and Dewey Ave., Omaha, NE 68105. The University of Nebraska is an Equal Opportunity/Affirmative Action Employer.

ASSISTANT CHIEF, NUCLEAR MEDICINE Service. The Minneapolis Veterans Administration Medical Center seeks candidate for the position of Assistant Chief, Nuclear Medicine Service. Requirements include certification by the ABNM, a strong patient orientation, and expertise in all phases of clinical nuclear medicine, including imaging, radioassay, and internal radionuclide therapy. In addition, the Assistant Chief, Nuclear Medicine Service will have specific responsibilities in research and education. Applications from all qualified candidates are welcome. Inquiries, including a curriculum vitae and an autobiographical letter, should be sent to: Rex B. Shafer, M.D., Chief, Nuclear Medicine Service (115), Veterans Administration Medical Center, 54th St. & 48th Ave. South, Minneapolis, MN 55417. An Equal Opportunity Employer.

NUCLEAR MEDICINE PHYSICIST AT the Associate Professor level. Previous experience in instrumentation related to positron emission tomography is desirable. Duties will include: supervision of the positron emission tomography equipment, research in reconstruction tomography and teaching. Send curriculum vitae to A. Alavi, M.D., Chief, Div. of Nuclear Medicine, Dept. of Radiology, Hospital of the University of Pennsylvania, 3400 Spruce St., Philadelphia, PA 19104. The University of Pennsylvania is an equal opportunity/affirmative action employer.

PATHOLOGY—NUCLEAR MEDICINE. Physician being sought to join with group in active 450-bed community hospital. Applicant must be certified or eligible in Anatomic and Clinical Pathology. In addition, have a strong background in all phases of nuclear medicine and be board certified or eligible. Send resume to William M. Bridger, M.D., Dept. of Pathology, Baptist Medical Center, 2105 E. South Boulevard, Montgomery, AL 36198.

NUCLEAR MEDICINE PHYSICIAN AT the Assistant Professor level. Applicant should be board certified or eligible in nuclear medicine (ABNM). Background in diagnostic radiology is preferred. Excellent clinical and research capabilities are available (positron emission tomography, dynamic x-ray computerized tomography and nuclear magnetic resonance). Strong interest in research and teaching is highly desirable. Send curriculum vitae to A. Alavi, M.D., Chief, Div. of Nuclear Medicine, Dept. of Radiology, Hospital of the University of Pennsylvania, 3400 Spruce St., Philadelphia, PA 19104. The University of Pennsylvania is an equal opportunity/affirmative action employer.

CHIEF TECHNOLOGIST POSITION IS available at the Veterans Administration Medical Center, Salt Lake City, Utah, affiliated with the University of Utah Medical School. Applicants must possess a bachelors degree and must be registered or certified by the Society of Nuclear Medicine. Candidate must have previous supervisory experience and background with cardiac and other computer-assisted scanning techniques. Starting salary $18,585-$20,467, based on experience. Position has an excellent fringe benefit package. To apply, send application to Personnel Service, VA Medical Center, 500 Foothill Drive, Salt Lake City, UT 84148, or call (801)582-1565, Ext. 1563. Equal Opportuntiy Employer.

NUCLEAR MEDICINE, DIAGNOSTIC ultrasound physician (ABNM), to join one full-time physician in multihospital and office practice in California. Significant experience in cardiac nuclear medicine and "hands on" talent in diagnostic ultrasound required. Reply: Stephen J. Bruny, M.D., Nuclear Associates Medical Group, 3526 E. Shields, Fresno, CA 93726.

EXCELLENT OPPORTUNITY FOR AN individual presently working in a supervisory role to take charge of a modern, progressive, nuclear medicine department in a 607-bed, acute-care hospital with a teaching program. The successful candidate must have an RRT or NMTCB certification with 5 or more years of progressively responsible experience in nuclear medicine technology. A Bachelor of Science degree and 3 years of supervisory experience is preferred. Excellent salary and benefits. Forward resume to Employment Office, Sinai Hospital of Detroit Professional Building, Suite 012, 14800 W. McNichols, Detroit, MI 48235; (313)493-6161. Equal Opportunity Employer, M/F.

WE ARE PRESENTLY SEEKING SERVices of a physician board certified in nuclear medicine or with special competence in nuclear medicine. This physician must be a radiologist willing to accept some responsibility in general radiology. Our practice is located in a busy, 250-bed community hospital south of Boston. The practice currently consists of five full-time and two part-time radiologists engaged in all aspects of general radiology, interventional radiology, nuclear medicine, and ultrasound. The position is available immediately, however, selection of a physician could be delayed until July of 1982 if necessary. O'Halloran & Nickrosz Radiological Associates Inc., 909 Sumner St., Stoughton, MA 02072; (617)344-5100.

POSITIONS WANTED

BOARD CERTIFIED NUCLEAR MEDicine physician trained at University of California, extensive experience in imaging nuclear medicine and ultrasound, seeking practice location/association. Reply: Box 700, Society of Nuclear Medicine, 475 Park Ave. So., New York, NY 10016.

RESEARCH CHEMIST WITH PH.D. IN Organic Chemistry. Three years experience in radiolabeling of antibiotics and monoclonal antibodies with isotopes of indium and ruthenium. Desires academic or industrial employment. Reply Box 702, Society of Nuclear Medicine, 475 Park Ave. So., New York, NY 10016.

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EXAMINATIONS

AMERICAN BOARD OF RADIOLOGY Examinations. The oral examination for 1982 will be given the week beginning May 31 in Louisville, Kentucky. The 1982 written examination will be held on October 7 and October 8 at 14 sites. All candidates must attend the two half-day sessions. The deadline for the receipt of completed applications for examination in any year is September 30 of the preceding year. Information is available from The American Board of Radiology, Kahler East, Rochester, Minnesota 55901; Phone: (507)282-7838.

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

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NUCLEAR MEDICINE LABORATORY SUPERVISOR

The Memorial Hospital, a 371-bed, University affiliated teaching hospital located in Worcester, Massachusetts, is presently seeking an individual to supervise and direct the overall operation of our modern well equipped Nuclear Medicine Laboratory, which includes RIA and computer capabilities.

Applicants should possess nuclear technology registration and 2-5 years of nuclear medicine experience. Supervisory experience preferred.

We offer an excellent salary and benefit package. Please forward resumes to the Personnel Office.

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The Mercy Hospital of Pittsburgh, Division of Nuclear Medicine and Ultrasound, is seeking qualified individuals to fill newly created positions.

Mercy Hospital is a 620-bed, acute-care teaching complex offering active nuclear cardiology with a full complement of imaging and limited in vitro procedures. Equipment consists of 5 cameras and 3 computers.

Qualifications include: Baccalaureat degree and NMTCB or equivalent registry. There is a comprehensive benefit package. Salary is competitive and commensurate with experience.

If interested, contact:
Personnel Interviewer, Dept. of Human Resources,
THE MERCY HOSPITAL OF PITTSBURGH
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Division of Nuclear Medicine
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For further information contact:
Dr. David H. Feiglin
Head—Division of Nuclear Medicine
Toronto General Hospital
101 College Street
Toronto, Ontario
Canada M5G 1L7

JNM CLASSIFIED PLACEMENT SERVICE SECTION

This section in the *Journal of Nuclear Medicine* contains "Positions Open," "Positions Wanted," "For Sale," and "Equipment Wanted" listings. Nondisplay "Positions Wanted" ads by members of the Society are billed at 70¢ per word for each insertion with no minimum rate. Nondisplay "Positions Wanted" ads by nonmembers and all nondisplay "Positions Open," "For Sale" and "Equipment Wanted" ads by members and nonmembers are charged at 90¢ per word. Display advertisements are accepted at $150 for ⅛ page, $205 for ¼ page, $325 for ½ page, and $560 for a full page.

Closing date for each issue is the 1st of the month preceding publication. Agency commissions and cash discounts are allowed on display ads only. Box numbers are available for those who wish them.

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This course will provide an intense review of nuclear medicine including the basic and clinical aspects of nuclear imaging, in vivo function tests, in vitro and radiobioassay, and radionuclide therapy. It is a supplement to residency training in Nuclear Medicine and Nuclear Radiology and is not designed to substitute for this type of training. The course may also serve, however, as a survey of nuclear medicine science for physicians seeking an overview of this subject prior to the completion of training.

The faculty consists of members of the Andre Meyer Department of Physics-Nuclear Medicine of the Mount Sinai Medical Center and invited guests. Course Director: Stanley J. Goldsmith, M.D.

Mount Sinai School of Medicine Faculty: Drs. Goldsmith, Armas, Cochavi, Horowitz, Nejatheim and Vallabhajosula.

Guest Faculty: Philip O. Alderson, M.D., Director, Division of Nuclear Medicine, Columbia-Presbyterian Medical Center; Professor, Department of Radiology, Columbia University, College of Physicians and Surgeons. Philip A. Bardfeld, M.D., Director, Nuclear Medicine, Nassau County Medical Center; Associate Professor, Department of Radiology, State University of New York at Stony Brook. Letty Lutzker, M.D., Director, Nuclear Medicine, Lenox Hill Hospital; Clinical Assistant Professor, Department of Radiology, Albert Einstein College of Medicine; Leon Malmud, M.D., Director, Department of Nuclear Medicine, Temple Hospital; Professor of Nuclear Medicine and Radiology, Associate Professor of Medicine, Temple University, Health Sciences Center; Moshe Sorek, M.D., Physician-in-Charge, Nuclear Medicine, Brookdale Hospital Center; Assistant Professor of Clinical Radiology, State University of New York, Downstate Medical Center; Wilfredo Sy, M.D. Director, Department of Nuclear Medicine, The Brooklyn Hospital; Assistant Professor, Department of Radiology, State University of New York, Downstate Medical Center.

Fee $300.00. AMA Category 1 credit is available. For further information contact: Director, The Page and William Black Post-Graduate School of Medicine, Mount Sinai School of Medicine, One Gustave L. Levy Place, New York, New York 10029. Tel.: (212)650-6737.

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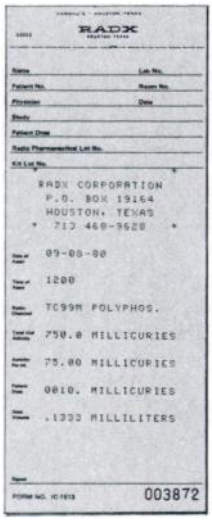
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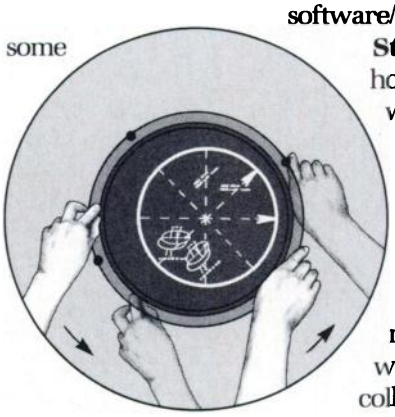

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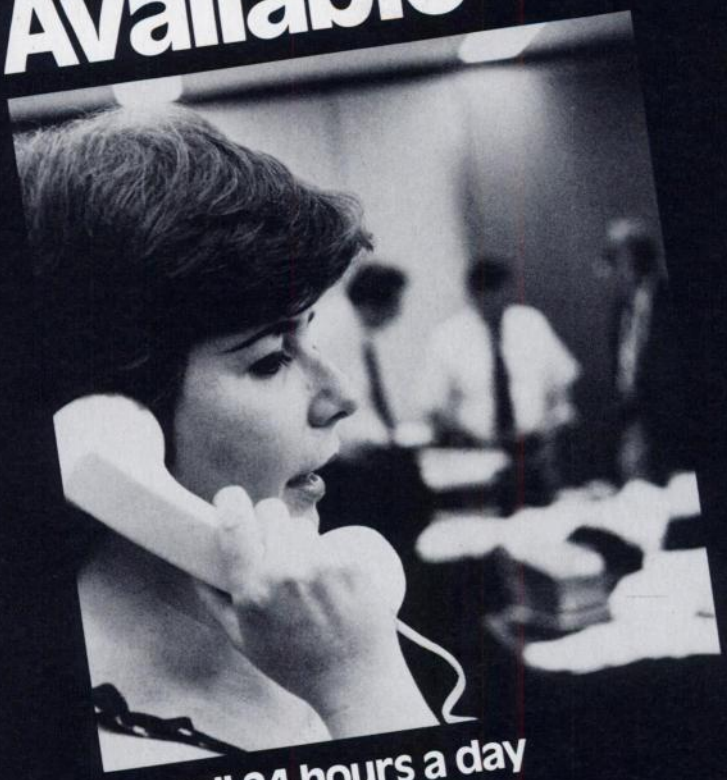

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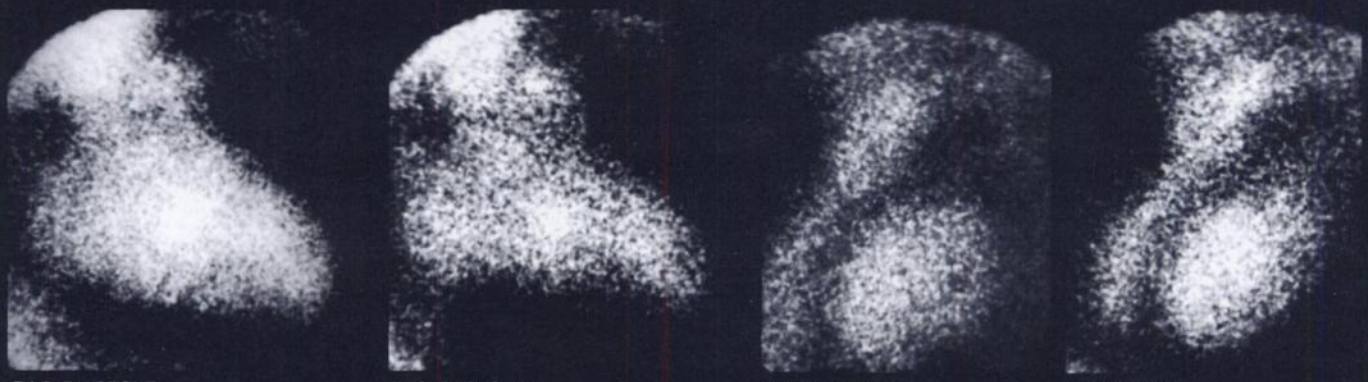

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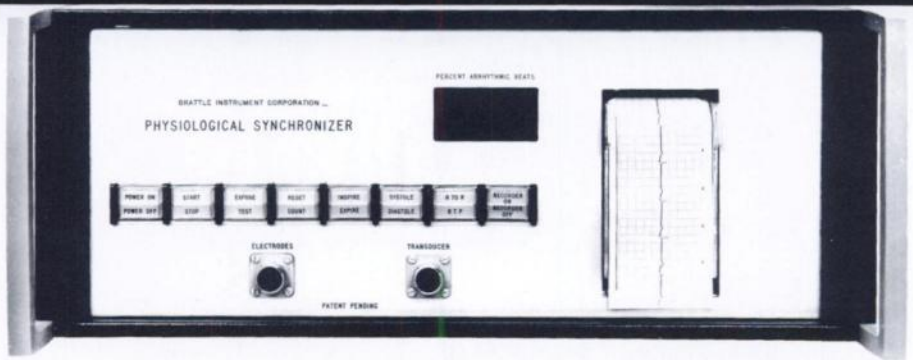

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