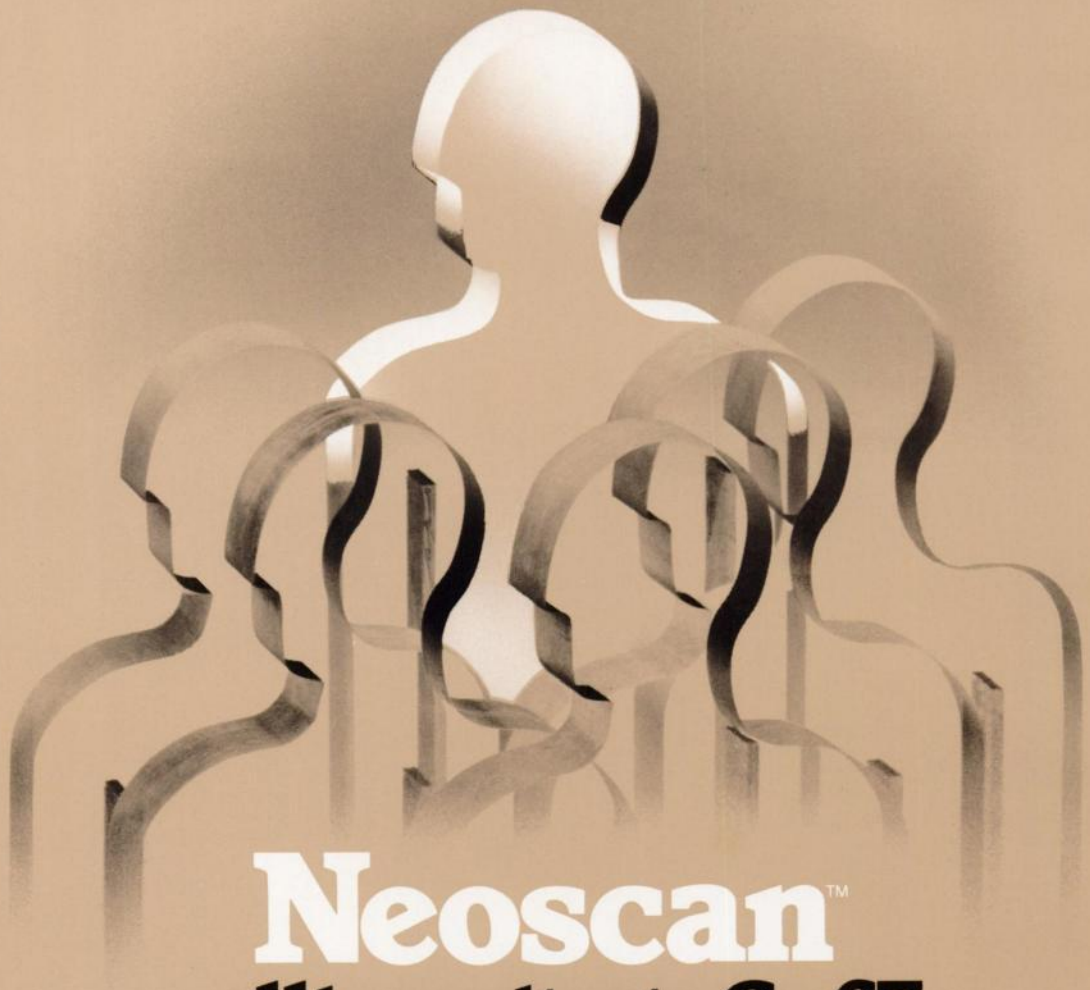
When nuclear medicine discusses gallium imaging, one name will keep coming up...



Neoscan™
gallium citrate Ga 67

from medi+physics™

NEOSCAN MEANS gallium citrate Ga 67 from Medi-Physics, Inc. Neoscan can aid in demonstrating the presence and extent of Hodgkin's disease, lymphoma *and* bronchogenic carcinoma. Positive uptake in the absence of prior symptoms warrants follow-up as an indication of a potential disease state.

NEOSCAN MEANS a gallium citrate Ga 67 that is produced by MPI on both the East and West Coasts and is available from 6 locations across the country for easy access when you need it. Neoscan is calibrated twice weekly in two convenient sizes: 3.0mCi and 13.2mCi.

NEOSCAN MEANS a gallium citrate Ga 67 that MPI will send to you with no additional delivery charge along with your supply of Sodium Iodide I 123, Technetium Prepared Products or Xenon 133-V.S.S. (xenon Xe 133).

With deliveries to meet your needs.

Contact the facility nearest you to arrange a standing order:

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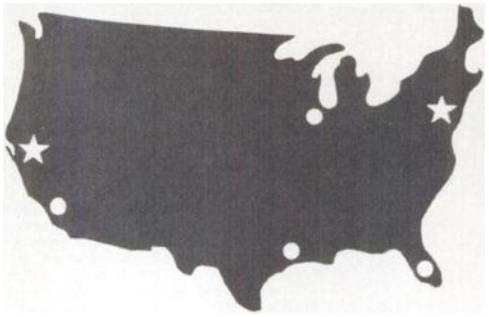
Toll Free (In Calif.) (800) 772-2446;
(Outside Calif.) (800) 227-0483

Los Angeles (213) 245-5751

Houston (713) 641-5731
Toll Free (Inside Tex.) (800) 392-1893



Chicago (312) 671-5444
Toll Free (Outside Ill.) (800) 323-3906

New York/New Jersey (201) 757-0500
Toll Free (Outside N.J.) (800) 631-5367

Miami (305) 557-0400

Neoscan™

gallium citrate Ga 67

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

DESCRIPTION: Neoscan for diagnostic use is supplied as a sterile, apyrogenic aqueous solution for intravenous injection. Each milliliter of the solution contains 2 millicuries of gallium Ga 67 at calibration time, no-carrier-added, 2.5% sodium citrate, and 1% benzyl alcohol as a preservative. The pH is between 4.5-7.5. Gallium Ga 67, with a half-life of 78.1 hours, is cyclotron produced by the proton irradiation of zinc Zn 68-enriched zinc oxide. The radionuclidic composition, at calibration time, is not less than 98.9% of the total activity from gallium 67 with less than 1% of the total radioactivity due to gallium 66 and with zinc 65 and other radiocontaminants contributing less than 0.1% of the total activity.

INDICATIONS AND USAGE: Neoscan may be useful to demonstrate the presence and extent of Hodgkin's disease, lymphomas, and bronchogenic carcinoma. Positive gallium Ga 67 uptake in the absence of prior symptoms warrants follow-up as an indication of a potential disease state.

CONTRAINDICATIONS: None known.

WARNINGS: This radiopharmaceutical should not be administered to children or to patients who are pregnant or to nursing mothers unless the information to be gained outweighs the potential hazards. Ideally, examinations using radiopharmaceuticals, especially those elective in nature, in women of child-bearing capability should be performed during the first few (approximately 10) days following the onset of menses.

PRECAUTIONS: A thorough knowledge of the normal distribution of intravenously administered gallium citrate Ga 67 is essential in order to accurately interpret pathologic studies. The finding of an abnormal gallium concentration usually implies the existence of underlying pathology, but further diagnostic studies should be done to distinguish benign from malignant lesions. Neoscan is intended for use as an adjunct in the diagnosis of certain neoplasms. Negative results do not preclude the presence of disease.

Gallium citrate Ga 67 as well as other radioactive drugs, must be handled with care. Appropriate safety measures should be used to minimize radiation exposure to clinical personnel and to patients, consistent with proper patient management.

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

Adequate reproduction studies have not been performed in animals to determine whether this drug affects fertility in males or females, has teratogenic potential, or has other adverse effects on the fetus. Gallium citrate Ga 67 should be used in pregnant women only when clearly needed.

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

Safety and effectiveness in children have not been established.

ADVERSE REACTIONS: No adverse reactions have been reported with the use of Neoscan at this time.

DOSAGE AND ADMINISTRATION: The recommended adult (70 kg) dose is 2-5 millicuries. Neoscan is intended for intravenous administration only. The patient dose should be measured by a suitable radioactivity calibration system immediately prior to administration.

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

Approximately 10% of the administered dose is excreted in the feces during the first week after injection. Daily laxatives and/or enemas are recommended from the first day of injection until the final images are obtained in order to cleanse the bowel of radioactive material and minimize the possibility of false positive studies.

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

HOW SUPPLIED: Neoscan is supplied as a no-carrier-added sterile apyrogenic aqueous solution for intravenous use. Each milliliter contains 2 mCi ± 10% gallium Ga 67 at the time of calibration with 2.5% sodium citrate. Benzyl alcohol 1% is present as a preservative. The pH is between 4.5-7.5.

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

When you think of gallium imaging, think of Neoscan™ from

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SQUIBB Q.C. ANALYZER

Accurate

Displays percent of total radioactivity which appears as the bound or hydrolyzed fraction of radiopharmaceutical chromatographic separation. Measurement accuracy: ±0.3%. Self-contained, pre-programmed computer/counter designed to count, store, analyze and read out results digitally.

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Simple-to-perform procedure. Isotope energy independent and can be used for the analysis of any radioisotope or radiopharmaceutical.

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Analysis completed in 5-15 minutes. Calculation of results automatically programmed internally, independently of operator.

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For high-quality lung perfusion imaging

PULMOLITE™

Technetium Tc 99m Aggregated Albumin Kit

Convenient
stores at room temperature

Rapidly prepared
inject sodium pertechnetate Tc 99m into vial, shake for 30 seconds—and it's ready for administration

Complete
no additional reagents or equipment

Economical
5 vial package and 30 vial Convenience Pak

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

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

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

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

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 children or to pregnant or lactating women unless the expected benefits to be gained outweigh the potential risks.

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

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

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

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

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

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

It is also recommended that, because of the increasing probability of agglomeration with aging, a batch of Technetium Tc 99m aggregated albumin not be used after eight hours from the time of reconstitution. Refrigerate at 2° to 8°C after reconstitution. If blood is withdrawn into the syringe, unnecessary 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. 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 aggregated albumin should be used in pregnant women only when clearly needed.

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

Safety and effectiveness in children have not been established.

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

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

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

Hypersensitivity reactions are possible whenever protein-containing materials such as Tc 99m-labeled aggregated albumin 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 (70kg) is 1 to 4 millicuries. The volume of the dose may vary from 0.2 to 1.3ml.

The recommended number of aggregated albumin particles to be administered per dose is 200,000-700,000 with the suggested number being approximately 350,000.

For ease and accuracy in dispensing the prepared agent, it is recommended that prior to reconstitution, concentrated sodium pertechnetate Tc 99m be further diluted to a volume of 8ml with fresh, preservative-free sodium chloride injection (U.S.P.).

How Supplied: PULMOLITE™ Technetium Tc 99m Aggregated Albumin Kit is supplied in kits of five (5) or thirty (30) vials, sterile and non-pyrogenic, each vial containing in lyophilized form:

Aggregated albumin (human)-1.0mg
Normal human serum albumin-10mg
Sodium chloride-10mg
Stannous chloride dihydrate, maximum-0.07mg

Each vial contains 3.6-6.5 x 10^6 aggregated albumin particles.

PULMOLITE contains no preservative; after reconstitution the shielded vial should be stored at 2° to 8°C.

Included in each five (5) vial kit is one (1) package insert and six (6) radiation labels. Included in each thirty (30) vial kit is one (1) package insert and thirty-six (36) radiation labels.

Cat. No. NRP-415

NEN

New England Nuclear
Medical Diagnostics Division

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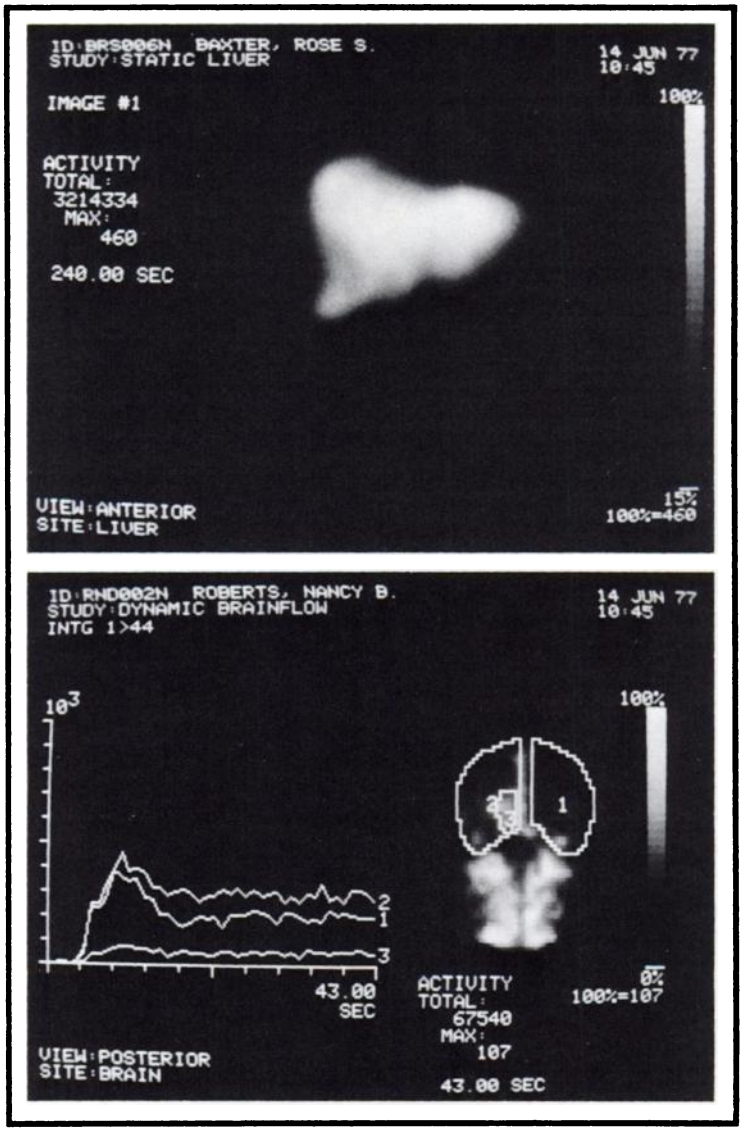
Your image depends on our quality

NMS, the **Artronix Nuclear Medicine System,** is a computer system for the acquisition and analysis of gamma camera image data. **NMS** operates on the Artronix MODULEX multi-task computer system.

NMS consists of a large number of integrated programs which are designed to permit smooth and efficient operation. Various configurations provide for simultaneous acquisition of camera data in either list or frame mode, comprehensive data analysis with interactive graphic capabilities, and programming in both FORTRAN and MUMPS. In addition to many built-in analysis and display features, the system supports customized data acquisition and analysis.

Command Program Sequences provide users with the ability to design studies for complete organ function imaging by merely specifying a string of different imaging commands. This customized study,created in minutes, can be filed away as an organ function protocol available for unlimited usage.

A complete software package operating in conjunction with the **Model 2721/2722 Nuclear Medicine Interface Subsystem** with its cache memory and compendium of gated data acquisition modes provides today's most comprehensive Nuclear Cardiology acquisition and analysis subsystem.



Bolus Studies can be acquired in combinations of up to 100 frames/second for up to 1,000 total frames. This is the simplest and yet most useful and comprehensive of the analysis procedures.

Tracer Activity Curves provide the basis for the measurement of a broad spectrum of cardiac performance parameters, including left-to-right shunts, cardiac output, stroke volume, pulmonary transit time and both left and right ventricular ejection fractions.

Blood Pool Studies can be acquired directly in frame mode into the cache memory in the **NMS** interface with the averaged cardiac cycle ranging from 8 to 128 data frames of sizes 128x128 to 32x32 respectively.

Left ventricular ejection fraction, peak fractional ejection rate, peak circumferential fiber shortening, and peak flow time measures are computed and displayed along with the ED and ES images and LV activity curves.

For more information about the **Artronix Nuclear Medicine System,** call or write Artronix, Inc.

Nuclear Medicine System

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The ice is out at Mallinckrodt.

THE QUALITIES YOU LIKED IN OUR FROZEN PRODUCT ARE ALL HERE IN ITS LYOPHILIZED SUCCESSOR.

Mallinckrodt research has now developed a formula that combines the quality features of our frozen **TechneScan MAA** product with the convenience of lyophilization. Our goal was to match—as closely as possible—particle-size range and consistency specifications that had been established with the frozen process. In our search we were determined not to compromise current product performance or specifications of our frozen product for the sake of convenience.

The introduction of Mallinckrodt's **TechneScan MAA**—Lyophilized—represents the successful conclusion of our search for a specially designed freeze dry process.

No need to freeze. Simply refrigerate for these same quality features.

Safety . . .

TechneScan MAA is very well tolerated. Effective lung excretion half-life is approximately 3.8 hours—virtually complete biological excretion occurs in about 24 to 48 hours. Although the possibility exists, there is, to date, no evidence of antibody formation.

Increased Shelf Life . . .

The expiration date of each **TechneScan MAA** lyophilized kit is now one year after date of manufacture. This extended shelf life permits the convenience of larger inventories plus the cost savings of buying in quantity.

Reliable Consistency . . .

Reconstitution does not affect either particle quality or size distribution. The particle size does not change after the addition of pertechnetate solution. There is no tendency for the particles to hydrate and increase in size after labeling. WE ENCOURAGE MICROSCOPIC EVALUATION AND COMPARISON!

Controlled Particle-Size Range . . .

Specifications require that not less than 90% of the particles be 10 to 90 microns in size, with not more than 10% below 10 microns, and none greater than 150 microns. Our investigations indicate that, typically, 90% of the **TechneScan MAA** particles are in the 10-40 microns range. This controlled particle size range, plus the fact that there is no tendency to agglomerate, results in good images of lung perfusion.

High Tagging Efficiency . . .

The tagging efficiency experienced with the **TechneScan MAA** kit is remarkably consistent, always at or near 100% conversion of pertechnetate to labeled MAA, with no loss of the label for up to 24 hours.

Easy Preparation . . .

Preparation of **TechneScan MAA** Tc 99m is easy.
(1) Allow five minutes to reach room temperature.
(2) Add Tc-99m.
(3) Agitate gently.
(4) Wait fifteen minutes for high tagging efficiency.

That's all!

Economy . . .

The **TechneScan MAA** Kit doesn't need expensive accessory equipment. Up to 15 adult patients can be scintigraphed from the preparation of a single vial of **TechneScan MAA**. This helps reduce the procedure cost per patient.

For those who were acquainted with the frozen product, we give our assurance of continued satisfaction; for those who were unable to use frozen **TechneScan MAA** because of storage considerations, we invite your evaluation of our lyophilized formula. For further information contact your Mallinckrodt representative.

LYOPHILIZED TechneScan® MAA (AGGREGATED ALBUMIN (HUMAN)) LUNG SCAN KIT

Consult package insert for complete prescribing information, a summary of which follows the next page.

Mallinckrodt® NUCLEAR

RADIOPHARMACEUTICALS

Mallinckrodt, Inc.
P.O. Box 5840
St. Louis, MO 63134


Mallinckrodt
NUCLEAR
TechneScan® MAA KIT
AGGREGATED
ALBUMIN (HUMAN) KIT
(Lyophilized)
Catalog No. 093
Store at 2°C – 8°C

The ice is out at Mallinckrodt.

THE QUALITIES YOU LIKED IN OUR FROZEN PRODUCT ARE ALL HERE IN ITS LYOPHILIZED SUCCESSOR.

TechneScan MAA LYOPHILIZED (AGGREGATED ALBUMIN (HUMAN))

Multi-Dose Kit for the Preparation of Technetated (Tc 99m) Aggregated Albumin (Human)

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), 120 micrograms of stannous chloride dihydrate, 80 milligrams of lactose, 24 milligrams of succinic acid and 1.4 milligrams of sodium acetate. **TechneScan MAA** is prepared from albumin that was nonreactive when tested for hepatitis B antigen (HB_SAg) by radioimmunoassay. Each vial contains approximately $8 \pm 2 \times 10^6$ 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 aggregated albumin, with a labeling efficiency of 90 percent or greater.

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, examination 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 is 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-homogenous 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 aggregated albumin 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 aggregated albumin should be used in pregnant women only when clearly needed.

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

Safety and effectiveness in children have not been established.

As in the use of any radioactive material, care should be taken to minimize radiation exposure to the patient, consistent with proper 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 preparations of Tc 99m-labeled aggregated albumin have been reported.

Hypersensitivity reactions are possible whenever protein-containing materials such as Tc 99m labeled aggregated albumin 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.

HOW SUPPLIED

Catalog Number	
093	**TechneScan MAA** Kit (Lyophilized)

Kit Contains:

5—Aggregated Albumin (Human) Reaction Vials (1 ml each)—for the preparation of Technetated (Tc-99m) Aggregated Albumin (Human)

Reaction Vial Contains (in lyophilized form):

- 2.0 mg Aggregated Albumin (Human) ($8 \pm 2 \times 10^6$ particles)
- 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 $8 \pm 2 \times 10^6$ 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, 5 radiation labels and 5 radioassay information string tags.

Mallinckrodt NUCLEAR
RADIOPHARMACEUTICALS

Mallinckrodt, Inc.
P.O. Box 5840
St. Louis, MO 63134

When Toshiba gave nuclear medicine the world's first jumbo gamma-camera in 1973, the medical community was very impressed. But we were dedicated to giving you more, so we introduced the world's first jumbo gammacamera with high resolution, fine diagnostic detail over a large area. That was important, but we knew it still wasn't enough.

Now, we are introducing the latest in the state-of-the-art, the GCA-402. The world's first Super High Resolution, Large Field Gammacamera combining stability and exceptional workload capability in one instrument. Frankly, we're pleased.

Toshiba's system approach allows for no compromise where clinical diagnostic values are concerned. The GCA-402 is a prime example. High resolution is the basis for obtaining useful diagnostic images. The intrinsic resolution and linearity of the GCA-402, combined with its range of ten collimators provides unsurpassed images of exceptional diagnostic value. The GCA-402 incorporates 61 photo-multiplier tubes to electronically smooth the image and eliminate the high-energy collimator hole patterns unavoidable in conventional systems. Its 35cm field of view combined with 17 preselected isotope ranges allows unobstructed views of large organs, or groups of organs, as well as whole body scanning.

Toshiba's patented* delay line system and modern IC-technology provide long term stability, trouble free performance, and ease of operation.

Of course, the GCA-402 has a wide range of accessories including special collimators, whole body scanning bed, video tape and film recorders, plus, the GCA-402 may be interfaced to any computer.

This combination of human engineering, fail-proof auto exposure and easy collimator changeover provides the highest efficiency while minimizing patient discomforture.

When you're ready to fill your nuclear medicine department's need for a large field gammacamera, remember Toshiba. We're the first.

*Patented Delay Line, U.S. Patent Number 3,717,763

Our third is first again

Toshiba's GCA-402 Jumbo Gammacamera

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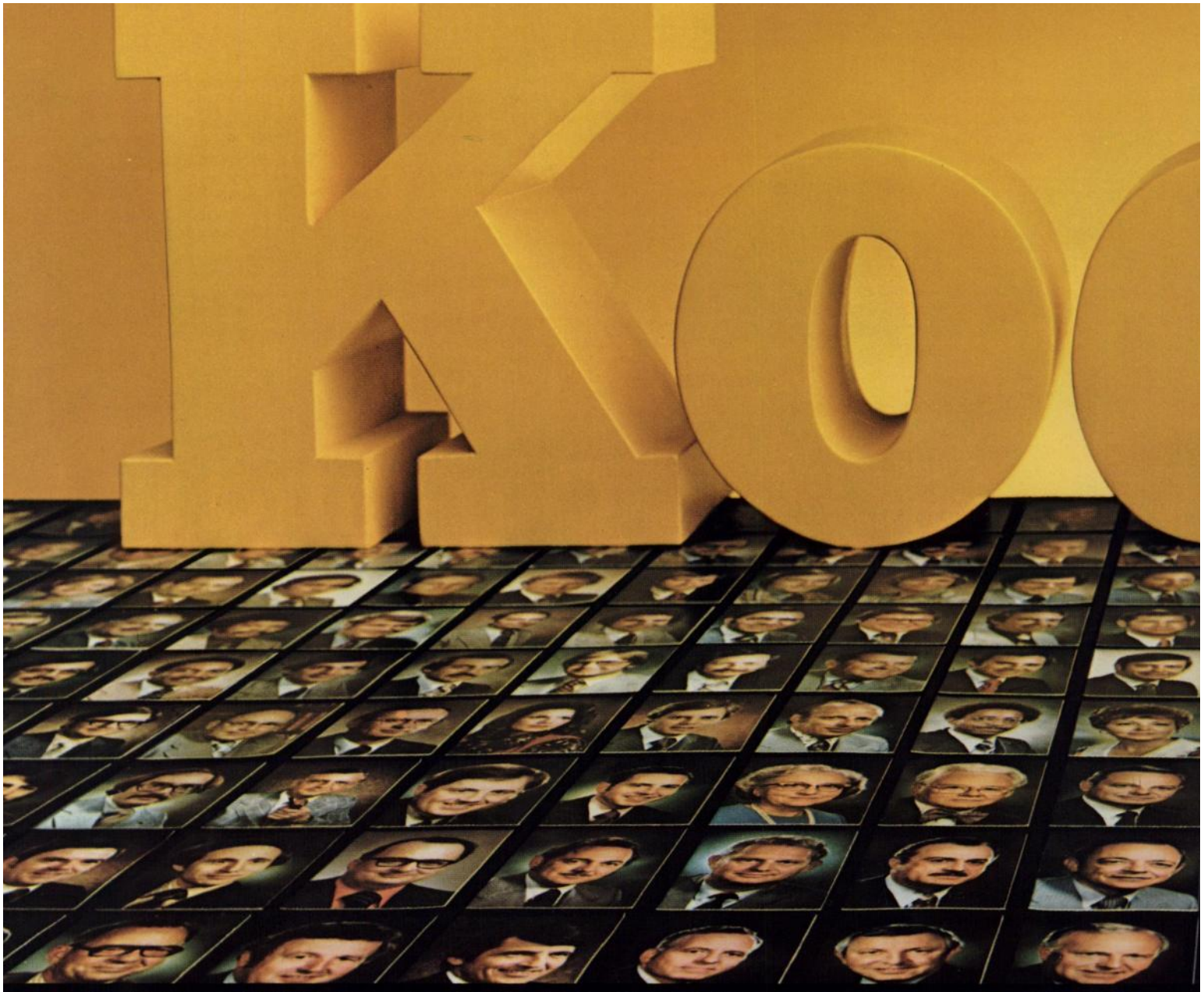

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IT TAKES THE RIGHT PEOPLE.

Kodak has nearly a century of expertise with radiographic imaging products. Your Kodak Technical Sales Representative is your access to everything we know.

The experts shown above represent the Kodak skills that are available to help you in your pursuit of professional excellence.

They range from physical chemists who create the various emulsions, chemicals, and films to the quality control technicians whose word is law when it comes time to release a product to you.

There are instructors from our comprehensive training seminars. There are scientists who spend the years looking for new ways to capture energy in the hope of providing you a more useful image. There are businessmen and women who understand that your profession is also a business and must be operated efficiently.

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Kodak offers you the broadest line of films for your diagnostic imaging—that is one expression of our commitment to your profession. But we do not consider our job done until you hold in your hand the quality image you need. That's why we back our films with so many people. At Kodak, we understand the importance of *total* commitment.

TURNING ENERGY INTO IMAGES

Kodak

COMPUTED TOMOGRAPHY • NUCLEAR MEDICINE
ULTRASOUND • RADIOGRAPHY • THERMOGRAPHY

Pulmonary emboli kill 140,000 people every year.[1]

Most are postsurgical hospital patients or patients suffering from an extended illness.

A simple test might have saved them.

At autopsy, most had undetected thrombi in the deep venous system in the legs.[2] No lung scan would have detected those thrombi. Until recently, the only way to detect deep venous thrombi was painful and risky contrast venography.

But now there is a single nuclear medicine procedure that can detect thrombi in the deep venous system and emboli in the lungs with minimal patient discomfort.

Scanning electron micrograph of an erythrocyte enmeshed in fibrin. (Emil Bernstein and Eila Kairinen, Gillette Company Research Institute, Rockville, Maryland.) SCIENCE

The technique is Radionuclide Thrombo-EmboloGraphy (combined radionuclide venography and lung scanning). Or simply, TEG.

TEG uses 3M's radiopharmaceutical Technetium Tc 99m Albumin Microspheres Injection.

Microspheres injected into the dorsal veins of each foot flow upward through the deep venous system, depicting blood flow and the development of collateral circulation.

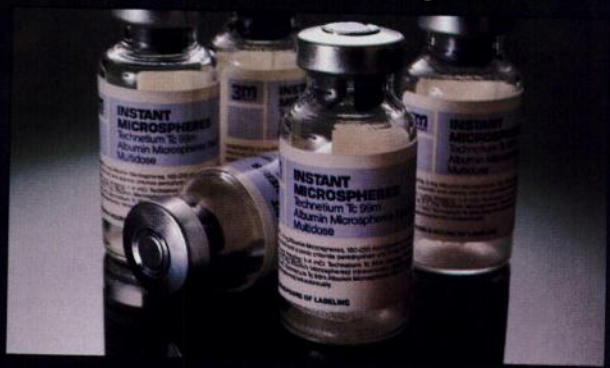
Static images from the procedure show "hot spots"—retained Microspheres suggesting the presence of thrombi. The procedure includes a conventional lung scan for pulmonary emboli.

Radionuclide TEG depicts the patient's thrombo-embolic condition in the iliac, femoral, popliteal, and tibial veins, as well as the lungs.

Clinical tests prove radionuclide venography highly accurate when compared to contrast venography.[3] And there are the added advantages of minimal risk and discomfort to the patient.

For more information on TEG, write: Nuclear Products, 3M Medical Products Division, 3M Center, St. Paul, MN 55101. Or call 800-328-1671.

TEG. It leads you to the problem.



3M COMPANY

PRODUCT INFORMATION

3M Brand Instant Microspheres

TECHNETIUM Tc 99m
ALBUMIN MICROSPHERES KIT
DIAGNOSTIC—FOR INTRAVENOUS USE
MULTIDOSE

Indications and Usage

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

Combined radionuclide venography and imaging of the lungs (thrombo-embolography, TEG) with Technetium Tc 99m Albumin Microspheres Injection is indicated as an adjunct to other diagnostic procedures where deep venous thrombosis in the lower extremities is suspected.

Contraindications

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

Warnings

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

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

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

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

Precautions

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

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

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

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

The suspended Albumin Microspheres will settle with time. Failure to mix the vial contents adequately before use may result in nonuniform distribution of radioactivity.

It is also recommended that Technetium Tc 99m Albumin Microspheres Injection 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*.

If aggregation of the Albumin Microspheres is observed, the vial should be sonicated or shaken vigorously.

Adequate reproduction studies have not been performed in animals to determine whether this drug effects fertility in males or females, has teratogenic potential, or has other adverse effects on the fetus. Technetium Tc 99m Albumin Microspheres Injection 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 the occupational worker.

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

Adverse Reactions

The most frequently reported adverse reactions associated with the use of Technetium Tc 99m Albumin Microspheres Injection are transient facial flushing and dyspnea. Less frequent adverse reactions are transient nausea, perspiration and cyanosis. An adverse reaction, which occurs rarely, is severe respiratory distress.

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 preparations of Tc 99m labeled aggregated albumin have been reported.

1. Hume M, Sevitt S, Thomas DP: Venous thrombosis and pulmonary embolism. Cambridge, Harvard University Press, p. 4, 1970.
2. Sevitt S, Gallagher N, Venous thrombosis and pulmonary embolism, a clinico-pathological study in injured and burned patients. *Brit J Surg* 48:475, 1961.
3. Henkin RE, Yao JST, Quinn JL et al: Radionuclide venography (RNV) in lower extremity venous disease. *J Nucl Med* 15:171, 1974.

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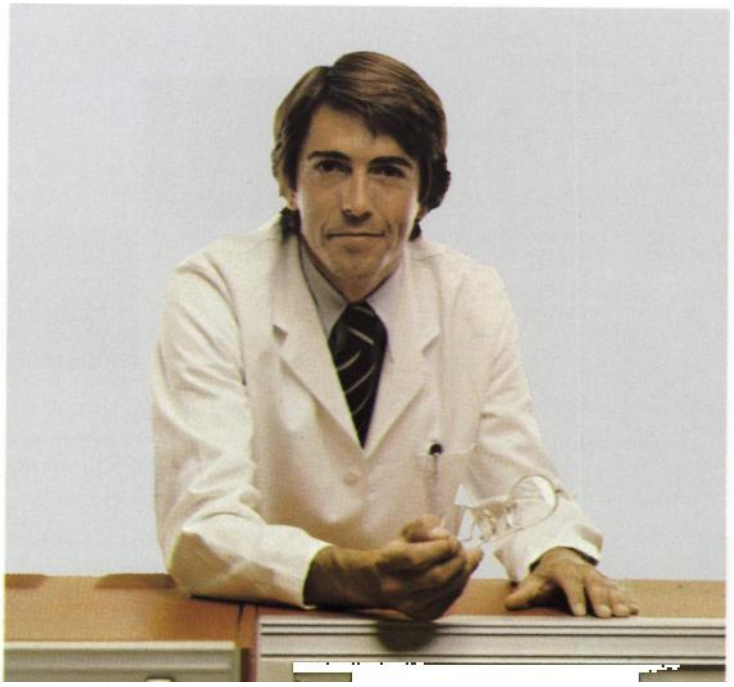
Ask a doctor.



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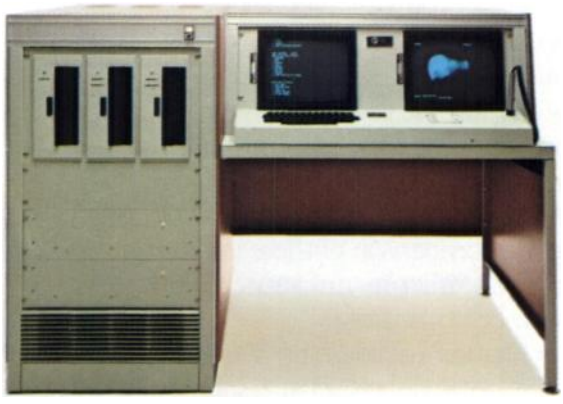

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THE ELSCINT DYMAX LARGE FIELD CAMERA

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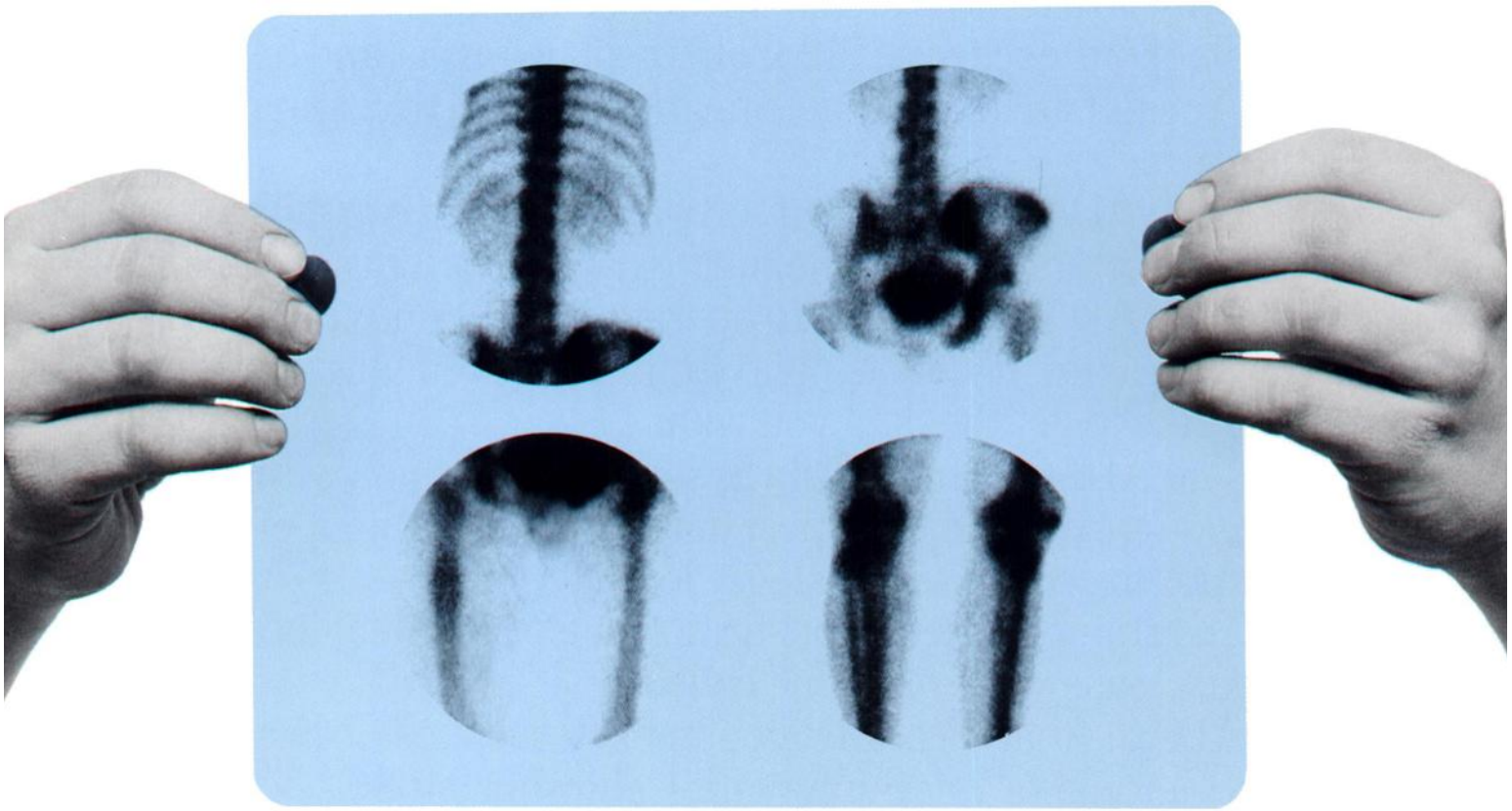

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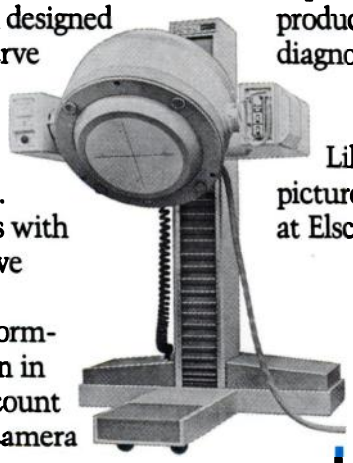

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*Walter D. Obrist, et al. STROKE, Vol. 6, May-June, 1975, pp. 245-256.

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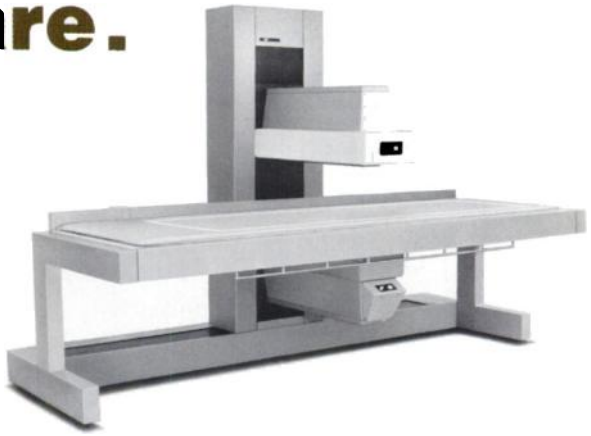

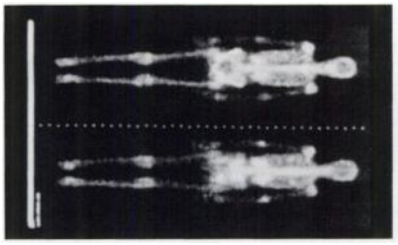

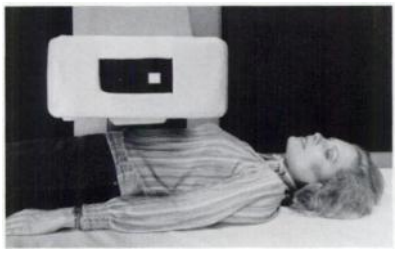

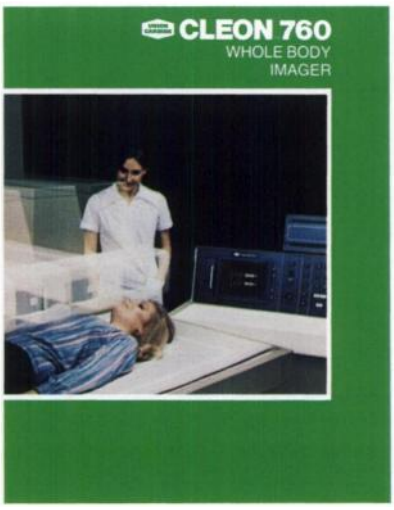

The Union Carbide Whole Body Imager is a high speed imaging system designed to provide high resolution whole body images, in two tomographic planes, three to five times faster than a conventional rectilinear scanner or gamma camera. In organ mode the system is ideal for Gallium and other static organ imaging procedures.

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The system requires minimal setup – just the establishment of focal depth and PHA window settings.

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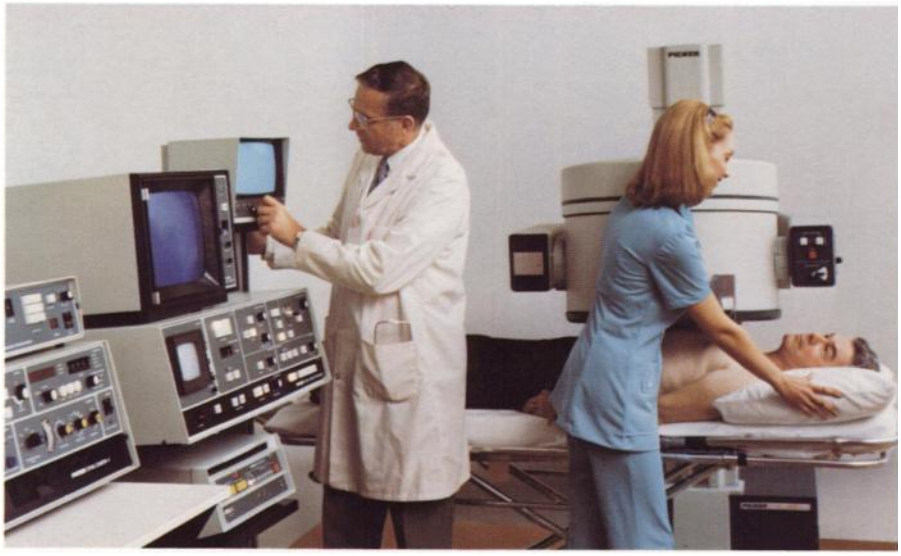
[1] *Timpe, G.M. Precautions for Avoiding ^{133}Xe Release From Charcoal Xenon Traps. Journal of Nuclear Medicine Technology Volume 4, Number 4, Pages 208-209.*

A complete nuclear image



As the uses for nuclear medicine continue to expand, the responsibilities of the nuclear physician and the radiologist will increase just as rapidly. Their services are requested in more and more disciplines. Picker gamma-camera systems have been designed to allow the physician to select and refine the views he needs. Picker Dyna®Camera accessories help our cameras to see more. As our systems have grown more sophisticated in their ability to deliver results, they've also become simpler to use and maintain.

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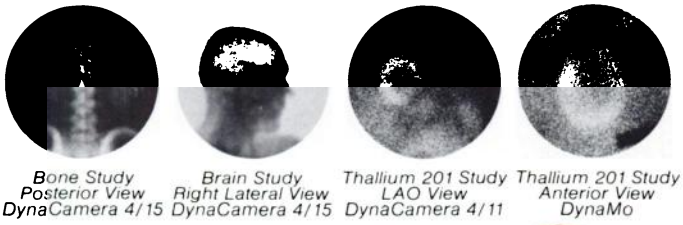

Bone Study Posterior View DynaCamera 4/15 | *Brain Study Right Lateral View DynaCamera 4/15* | *Thallium 201 Study LAO View DynaCamera 4/11* | *Thallium 201 Study Anterior View DynaMo*

DynaCamera 4/11 for unparalleled resolution—3.6 mm FWHM. DynaCamera 4/11 delivers big performance in small areas and lets you visualize small lesions, often hidden and shows larger lesions with clearer definition. With the 4/11, you can easily image the myocardium to locate and measure infarcts, get precise region placement in left ventricular ejection fraction studies, and obtain cardiac-output measurements.

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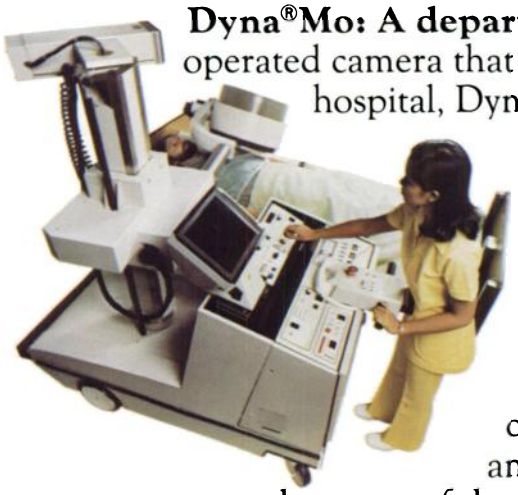

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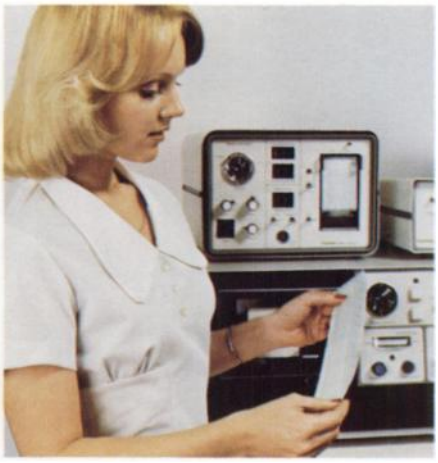

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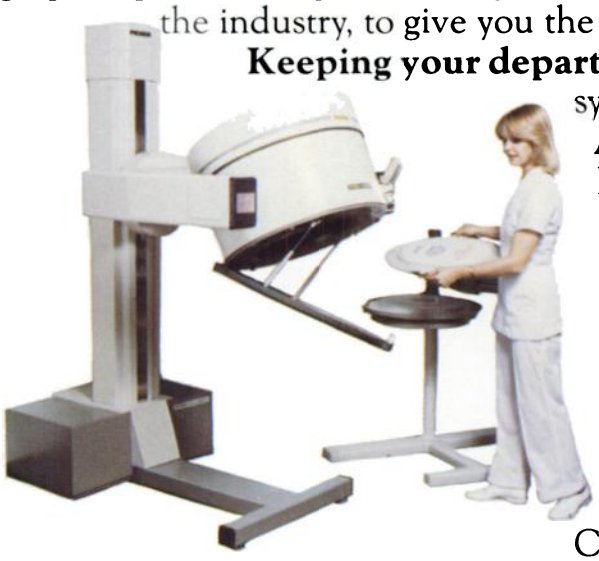

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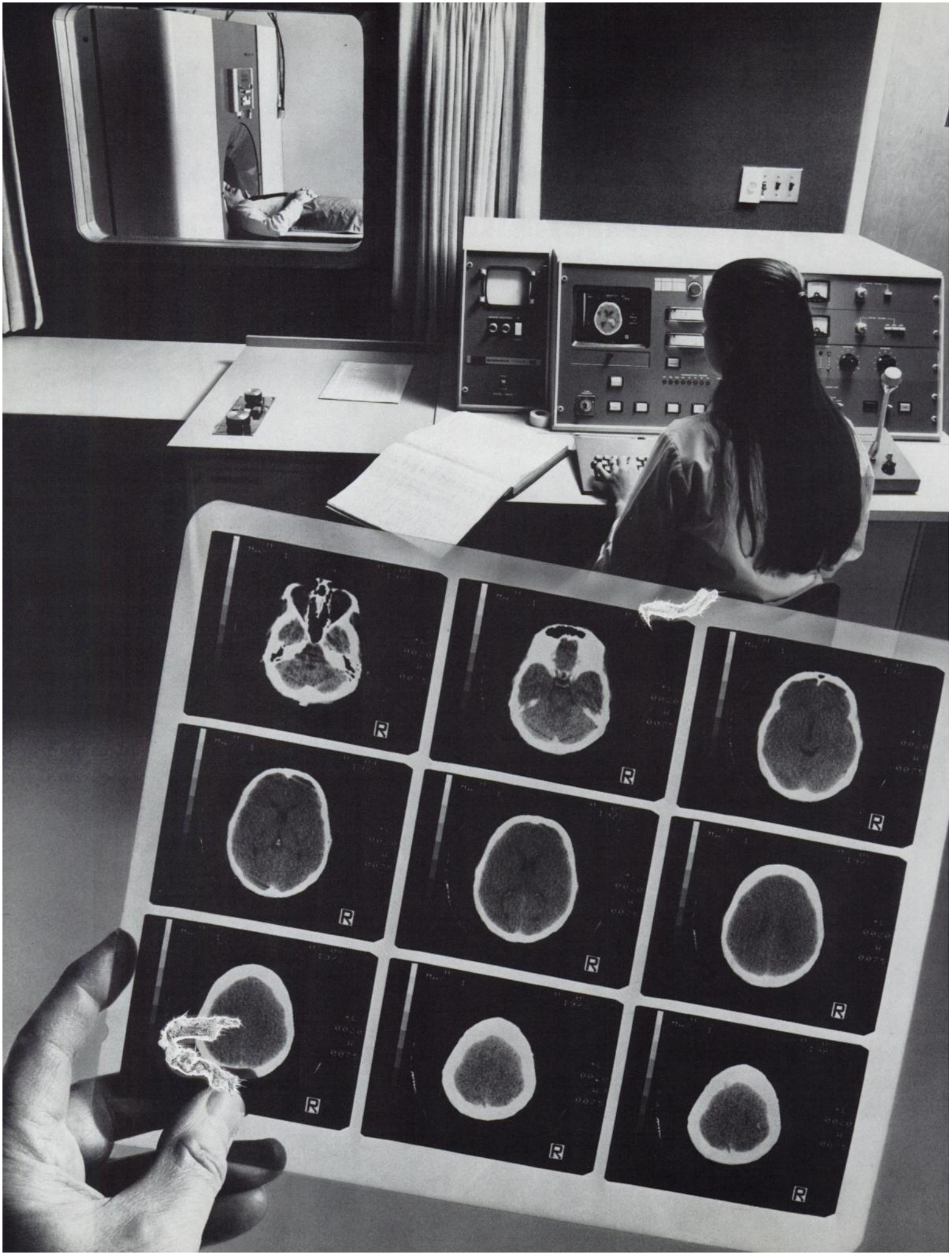

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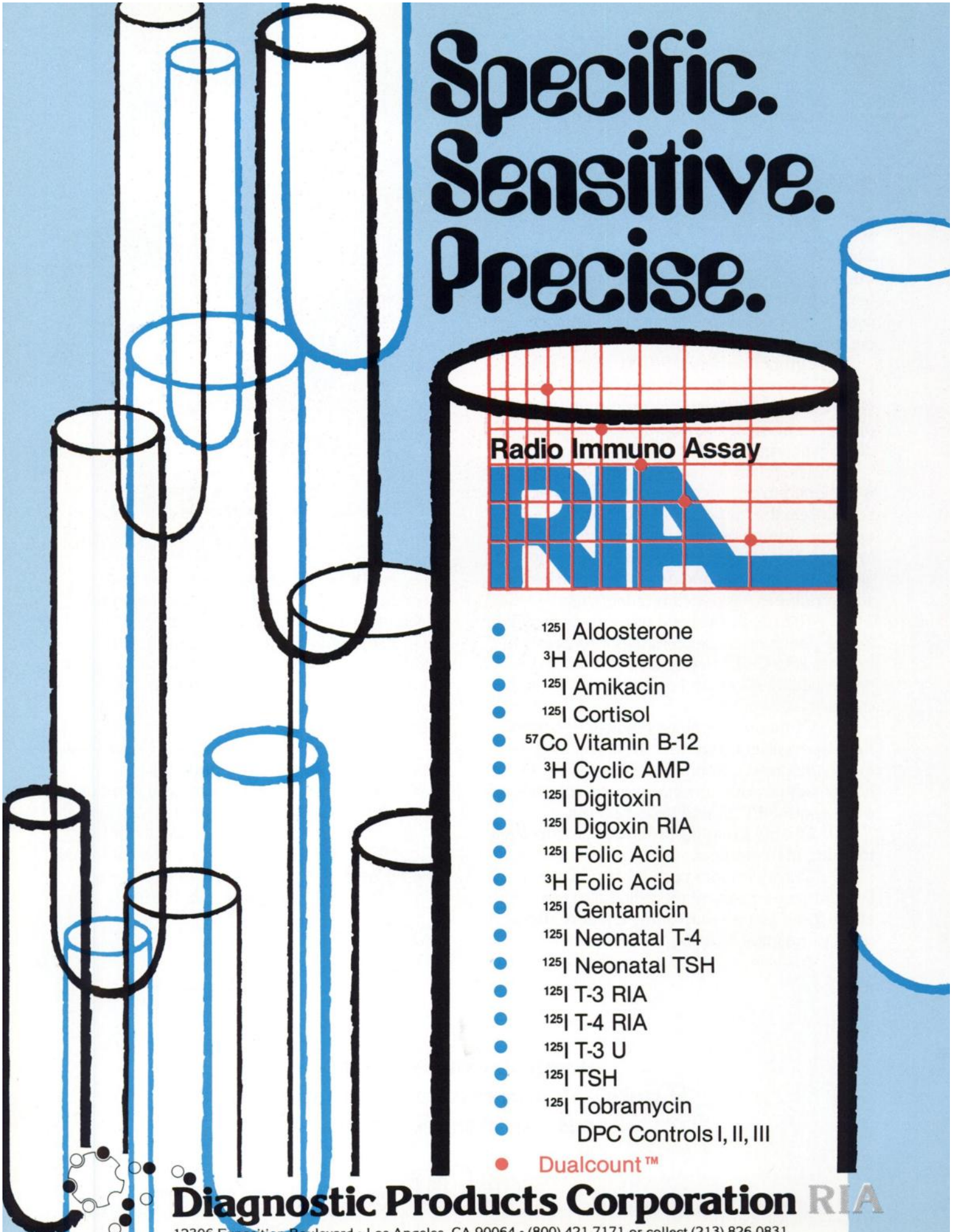
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  Phone: 11-212-8300
  Telex: 391-1121976 TCML-BR
  Aleksander Mizne, Admin.

- Also **HAWAII**
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  P.O. Box 17234
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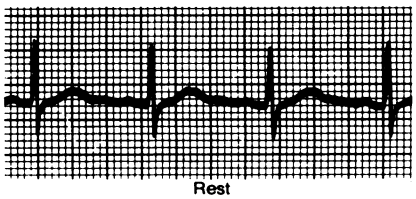
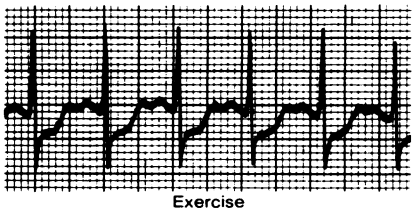
To help rule out, confirm or evaluate

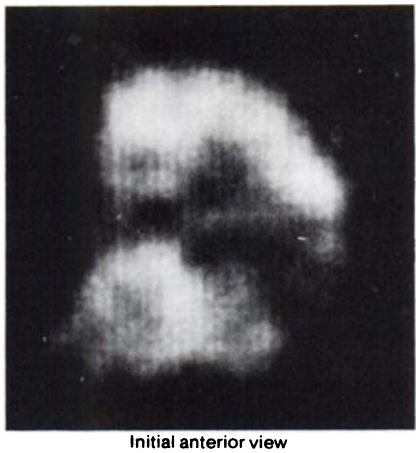
Coronary artery disease



Rest



Exercise



Initial anterior view

Delayed anterior view

Positive stress ECG without angina

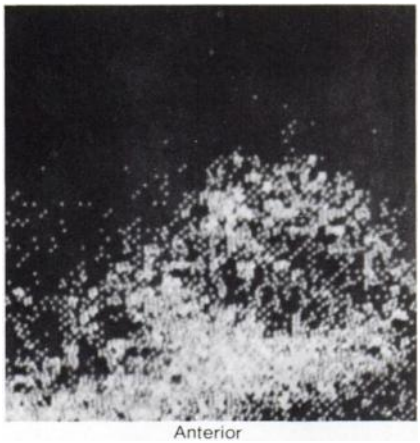
History
A.C., 50-year-old accountant, asymptomatic, required to undergo exercise ECG as part of "executive physical."

ECG findings
Normal at rest, 2.5-3 mm ST-segment depression on exercise; denied accompanying angina.

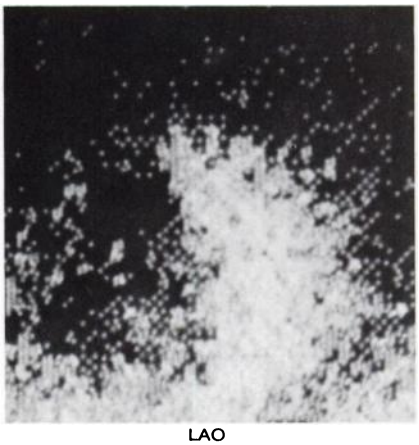
Thallium-201 imaging
Large apical defect on immediate post-exercise anterior view; defect filled in on delayed images.

Working diagnosis
Coronary artery disease, confirmed on preoperative angiography.

Acute myocardial infarction



Anterior



LAO

Early diagnosis

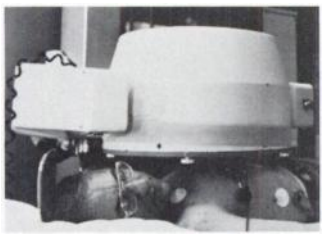
History
J.B., 54-year-old construction worker, admitted to CCU following episode of severe chest pain, diaphoresis, dizziness. Patient fell to ground upon onset of symptoms, severely bruising left thigh, chest wall. No history of angina pectoris or prior MI; ECG documented left bundle branch block.

Serum enzymes, ECG
Elevated shortly following admission; isoenzyme analysis unavailable to differentiate elevation secondary to trauma from possible elevation secondary to acute MI; ECG nondiagnostic because of LBBB.

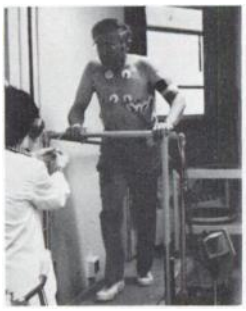
Thallium-201 imaging
Images made upon admission displayed anterior wall defect (anterior view), large septal defect (LAO view).

Working diagnosis
Extensive anteroseptal MI.

To start using thallium-201 in your department, you'll need

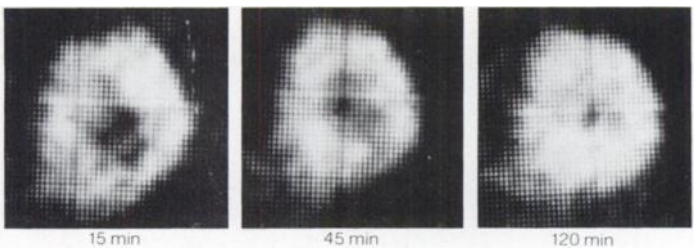


A recent model 37 photomultiplier tube camera
with all-purpose collimator, capable of resolving 1 cm line separations on an Au 195 line phantom



Treadmill or bicycle ergometer and ECG recorder,
to perform maximal stress testing in accordance with good clinical practice

Ability to begin imaging promptly
(within 3–5 minutes) following thallous chloride Tl 201 injection and termination of stress



To get the most out of thallium-201's total diagnostic capability, you'll want

Clinical training in scan interpretation
at an institution experienced in thallium-201 imaging*

Electronic image acquisition and processing,
to help resolve ambiguous studies

Mobile imaging/acquisition instrumentation,
to facilitate acute MI thallium-201 studies when patients cannot be transported to the nuclear medicine department

Continuing medical education on thallium-201,
for your staff and for your referring physicians*

*Your NEN representative may help recommend an institution in your area. For continuing medical education programming, ask your NEN representative or write: Teaching Program Administrator, New England Nuclear, 549 Albany Street, Boston, Mass. 02118.

Thallous Chloride Tl 201

NEN New England Nuclear

See following page for full prescribing information.

Thallous Chloride Tl 201

November 1977

FOR DIAGNOSTIC USE

DESCRIPTION: Thallous Chloride Tl 201 is supplied in isotonic solution as a sterile, non-pyrogenic diagnostic radiopharmaceutical for intravenous administration. The aqueous solution at calibration time contains 1mCi/ml Thallous Chloride Tl 201, adjusted to pH 4.5-6.5 by the addition of hydrochloric acid and/or sodium hydroxide solution. It is made isotonic with 0.9% sodium chloride and is preserved with 0.9% benzyl alcohol. Thallium Tl 201 has a half-life of 73.1 hours and is cyclotron-produced. It is essentially carrier-free, and contains less than 0.25% lead Pb 203 and less than 1.9% Thallium Tl 202.

PHYSICAL CHARACTERISTICS

Thallium Tl 201 decays by electron capture to Mercury Hg 201 with a physical half-life of 73.1 hours.[1] Photons that are useful for detection and imaging are listed in Table 1. The lower energy X-rays obtained from the Mercury Hg 201 daughter of Tl 201 are recommended for myocardial imaging, because the mean %/disintegration at 68-80.3 keV is much greater than the combination of gamma-4 and gamma-6 mean %/disintegration.

Table 1. Principal Radiation Emission Data

Radiation	Mean %/Disintegration	Mean Energy (keV)
Gamma-4	2.65	135.3
Gamma-6	10.0	167.4
Mercury X-rays	94.5	68-80.3

[1]Martin, M.J., Nuclear Data Project, ORNL, January 1977

EXTERNAL RADIATION

The specific gamma ray constant for Thallium Tl 201 is 0.47R/mCi-hr. at 1 cm. The first half-value layer is 0.23mm of lead. A range of values for the relative attenuation of the radiation emitted by this radionuclide that results from the interposition of various thicknesses of lead (Pb) is shown in Table 2. For example, the use of 4.4mm of lead will decrease the external radiation exposure by a factor of about 10,000.

Table 2. Radiation Attenuation By Lead Shielding

mm of Lead (Pb)	Coefficient of Attenuation
0.23	0.5
0.83	10^{-1}
1.9	10^{-2}
3.1	10^{-3}
4.4	10^{-4}
5.7	10^{-5}

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

Table 3. Thallium Tl 201 Decay Chart: Half-Life 73.1 Hours

Hours	Fraction Remaining	Hours	Fraction Remaining	Hours	Fraction Remaining
-72	1.98	18	0.84	72	0.51
-60	1.77	24	0.80	78	0.48
-48	1.58	30	0.75	84	0.45
-36	1.41	36	0.71	90	0.43
-12	1.12	42	0.67	96	0.40
-6	1.06	48	0.63	108	0.36
0*	1.00	54	0.60	120	0.32
6	0.95	60	0.57	132	0.29
12	0.89	66	0.54	144	0.26

*Calibration Time

CLINICAL PHARMACOLOGY: Carrier-free Thallous Chloride Tl 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 Tl 201 correlates well with regional perfusion.

In clinical studies, thallium images have been found to visualize areas of infarction confirmed by electrocardiographic and enzyme changes. Regions of transient myocardial ischemia corresponding to areas perfused by coronary arteries with partial stenoses have been visualized when thallium was administered in conjunction with an exercise stress test. It is usually not possible to differentiate recent from old myocardial infarction, and no exact differentiation can be made between recent myocardial infarction and ischemia.

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

INDICATIONS AND USAGE: Thallous Chloride Tl 201 may be useful in myocardial perfusion imaging for the diagnosis and localization of myocardial infarction.

It may also be useful in conjunction with exercise stress testing as an adjunct in the diagnosis of ischemic heart disease (atherosclerotic coronary artery disease).

CONTRAINDICATIONS: None known.

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

Ideally, examinations using radiopharmaceutical drug products—especially those elective in nature—of women of childbearing capability should be performed during the first ten days following the onset of menses.

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

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

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

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

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

Safety and effectiveness in children have not been established.

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

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

For patients undergoing resting thallium studies, imaging is optimally begun within 10-20 minutes after injection. Several investigators have reported improved myocardial-to-background ratios when patients are injected in the fasting state, in an upright posture, or after briefly ambulating.

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

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

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

RADIATION DOSIMETRY

The estimated absorbed radiation dose[2] to an average patient (70kg) from an intravenous injection of a maximum dose of 1.5 millicuries of Tl 201 is shown in Table 4.

Table 4. Radiation Dose Estimates of Thallous Chloride Tl 201: Absorbed Dose/1.5mCi Thallium Tl 201 Administered

	Rads/1.5mCi
Heart	0.51
Small Intestines	0.97
Kidneys	2.2
Liver	0.93
Red Marrow	0.51
Ovaries	0.85
Testes	0.81
Thyroid	1.12
Total Body	0.36

[2]Values listed include a maximum correction of 13% to the radiation doses from Tl 201 due to the radiocontaminants Pb 203 and Tl 202.

HOW SUPPLIED: Thallous Chloride Tl 201 for intravenous administration is supplied as a sterile, non-pyrogenic solution containing at calibration time, 1mCi/ml of Thallous Tl 201, 9mg/ml sodium chloride, and 9mg/ml of benzyl alcohol. The pH is adjusted to between 4.5-6.5 with hydrochloric acid and/or sodium hydroxide solution. Vials are available in the following quantities of radioactivity: 1.5, 3.0, 4.5, 6.0, and 9.0 millicuries of Thallous Tl 201.

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

Catalog Number NRP-427

New England Nuclear
Medical Diagnostics Division
601 Treble Cove Rd., North Billerica, MA 01862

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Dicopac®

Oral Cyanocobalamin Co 58, Oral Cyanocobalamin Co 57 Bound to Human Gastric Juice, Cyanocobalamin I.M. Injection

INDICATIONS

Dicopac Kit consisting of cyanocobalamin Co 58 and cyanocobalamin Co 57 combined with human intrinsic factor is used to assess vitamin B_{12} absorption in the diagnosis of malabsorption due to the lack of intrinsic factor, e.g. Addisonian (pernicious) anemia, and as a diagnostic adjunct in other defects of intestinal absorption.

CONTRAINDICATIONS - None.

WARNINGS

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

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

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

PRECAUTIONS

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

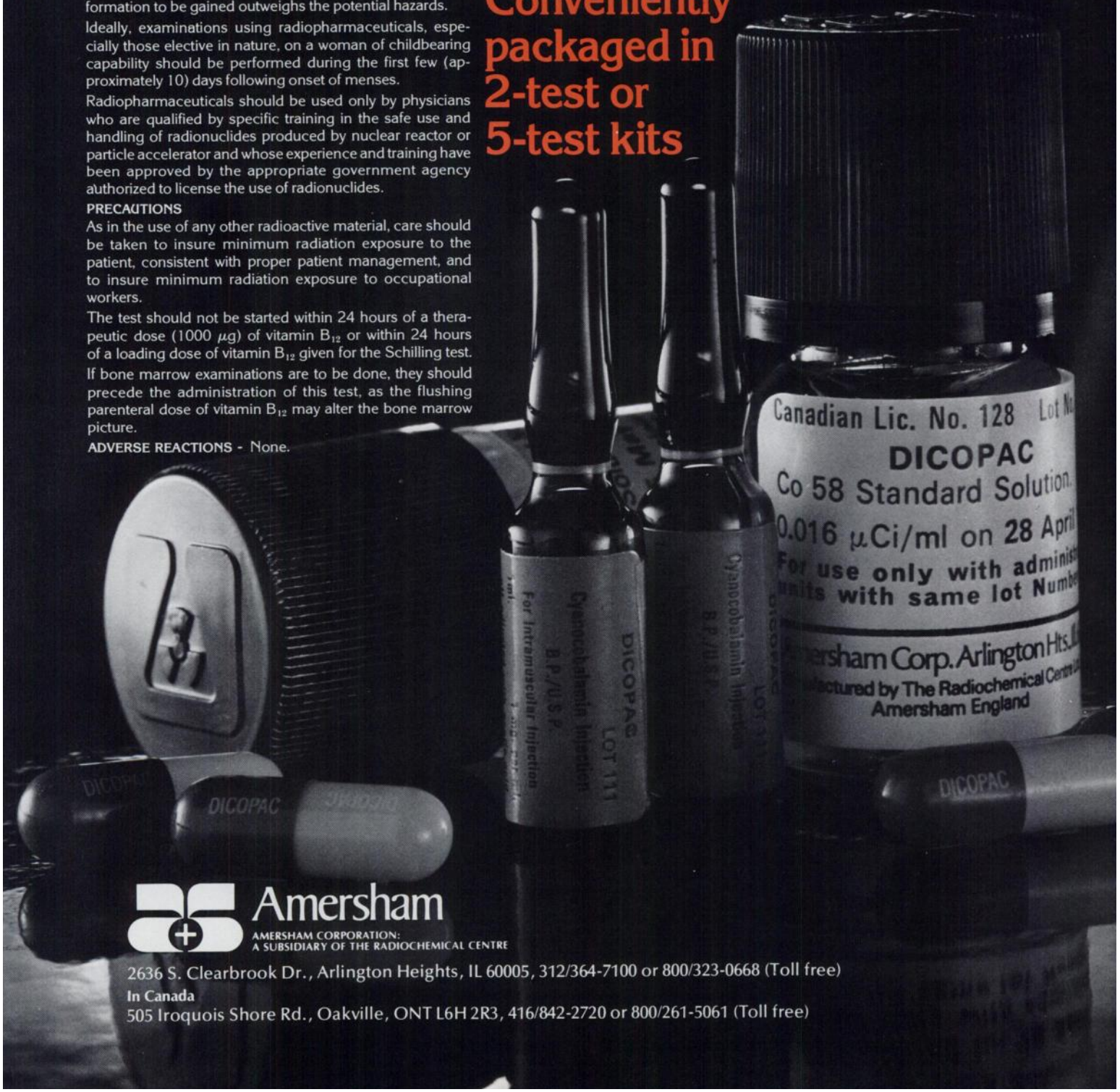
The test should not be started within 24 hours of a therapeutic dose (1000 μg) of vitamin B_{12} or within 24 hours of a loading dose of vitamin B_{12} given for the Schilling test.

If bone marrow examinations are to be done, they should precede the administration of this test, as the flushing parenteral dose of vitamin B_{12} may alter the bone marrow picture.

ADVERSE REACTIONS - None.

One day test for Vitamin B_{12} malabsorption

Conveniently packaged in 2-test or 5-test kits



Amersham

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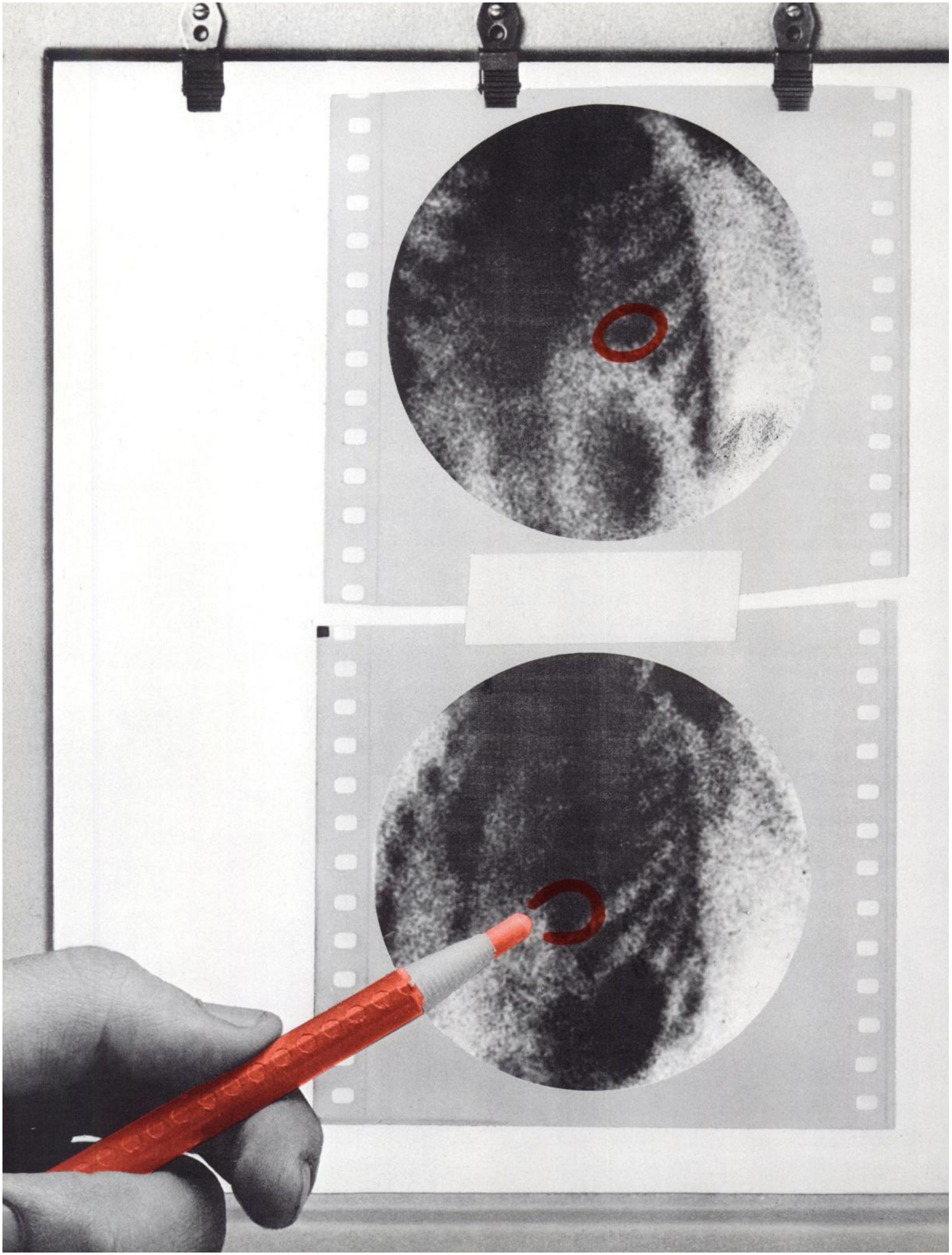


Helps detect, localize, and delineate acute myocardial infarction

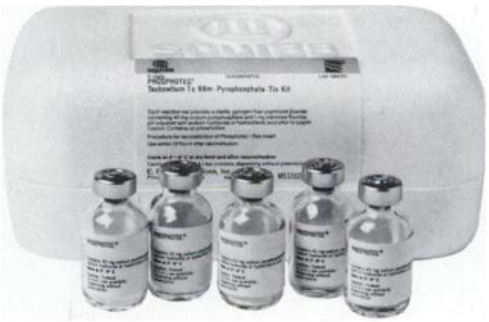
Phosphotec®

Technetium Tc 99m-Pyrophosphate-Tin Kit

In detection of acute myocardial infarction, "the agent of choice [of the several ^{99m}Tc complexes] at the present time is ^{99m}Tc-pyrophosphate."* Imaging is particularly useful in detecting recent infarcts when imaging is performed within 24 hours to six days after onset of suggestive symptoms. An effective adjunct in clinical situations such as equivocal ECG's, postoperative cardiac status, and when standard diagnostic aids are difficult to interpret.

Easy preparation. Two steps:
(1) Add sterile sodium pertechnetate ^{99m}Tc. (Maintain shielding at all times.)
(2) Shake gently, assay dose, and inject IV over 10 to 20 seconds. Cardiac imaging can be performed 45-60 minutes postinjection.

Also indicated for fast, dependable skeletal imaging.



Medotopes® TWENTIETH ANNIVERSARY SQUIBB®

*Holman BL: Imaging the heart in patients with infarction. Cardiovascular Med 1:161-165, Oct, 1976

See next page for brief summary.

Phosphotec®

Technetium Tc 99m-Pyrophosphate-Tin Kit

DESCRIPTION: Phosphotec provides all the nonradioactive components required to prepare a sterile, pyrogen-free technetium Tc 99m-pyrophosphate-tin complex. Each reaction vial contains 40 mg sodium pyrophosphate (equivalent to 23.9 mg anhydrous sodium pyrophosphate) and 1 mg stannous fluoride; the product does not contain a preservative. When sterile, pyrogen-free Sodium Pertechnetate Tc 99m is added to the reaction vial, a technetium Tc 99m-pyrophosphate-tin complex is formed.

INDICATIONS AND USAGE: Technetium Tc 99m-Pyrophosphate-Tin complex may be used as a bone imaging agent to delineate areas of altered osteogenesis. It is also a cardiac imaging agent used as an adjunct in the diagnosis of acute myocardial infarction.

CONTRAINDICATIONS: None known.

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

It has been reported that false-positive or false-negative brain scans may result when brain scans using sodium pertechnetate Tc 99m are performed after a bone scan has been done using an agent containing stannous ions, e.g., a pyrophosphate bone agent. This is thought to be due to the interaction of Tc 99m with stannous ions inside red blood cells. Therefore, in those cases where brain scans are indicated along with imaging of bone or myocardial imaging, the brain scan should be performed first, if feasible. Alternatively, another brain imaging agent, such as Tc 99m DTPA, may be employed. False-positive and false-negative myocardial scans may occur; therefore, the diagnosis of acute myocardial infarction depends on the overall assessment of laboratory and clinical findings.

The contents of the Phosphotec reaction vial are intended only for use in the preparation of Technetium Tc 99m-Pyrophosphate-Tin solution and are **not** to be directly administered to the patient. Any sodium pertechnetate ^{99m}Tc solution which contains an oxidizing agent is **not** suitable for use with Technetium Tc 99m-Pyrophosphate-Tin Kit. The contents of the kit are not radioactive. However, after sodium pertechnetate ^{99m}Tc is added, adequate shielding of the final preparation must be maintained. Technetium Tc 99m-Pyrophosphate-Tin Solution must be used within 12 hours of reconstitution.

PRECAUTIONS: Technetium Tc 99m-Pyrophosphate-Tin solution, 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. Both prior to and following administration of Technetium Tc 99m-Pyrophosphate-Tin solution, the patient should be encouraged to drink fluids and to void as often as possible thereafter to minimize radiation exposure to the bladder and background interference during imaging if not contraindicated by the patient's cardiac status. The patient's cardiac condition should be stable before beginning the cardiac imaging procedure. Interference from chest wall lesions such as breast tumors and healing rib fractures can be minimized by employing three projections (e.g., anterior, lateral, and left anterior oblique).

Adequate reproductive studies have not been performed in animals to determine whether this drug affects fertility in males or females, has teratogenic potential, or has other adverse effects on the fetus. This drug 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 the drug since many drugs are excreted in human milk. Safety and effectiveness in children have not been established.

ADVERSE REACTIONS: No adverse reactions specifically attributable to the use of Technetium Tc 99m-Pyrophosphate-Tin have been reported.

For full prescribing information, see package insert.

HOW SUPPLIED: In a kit containing five reaction vials (5 ml size).

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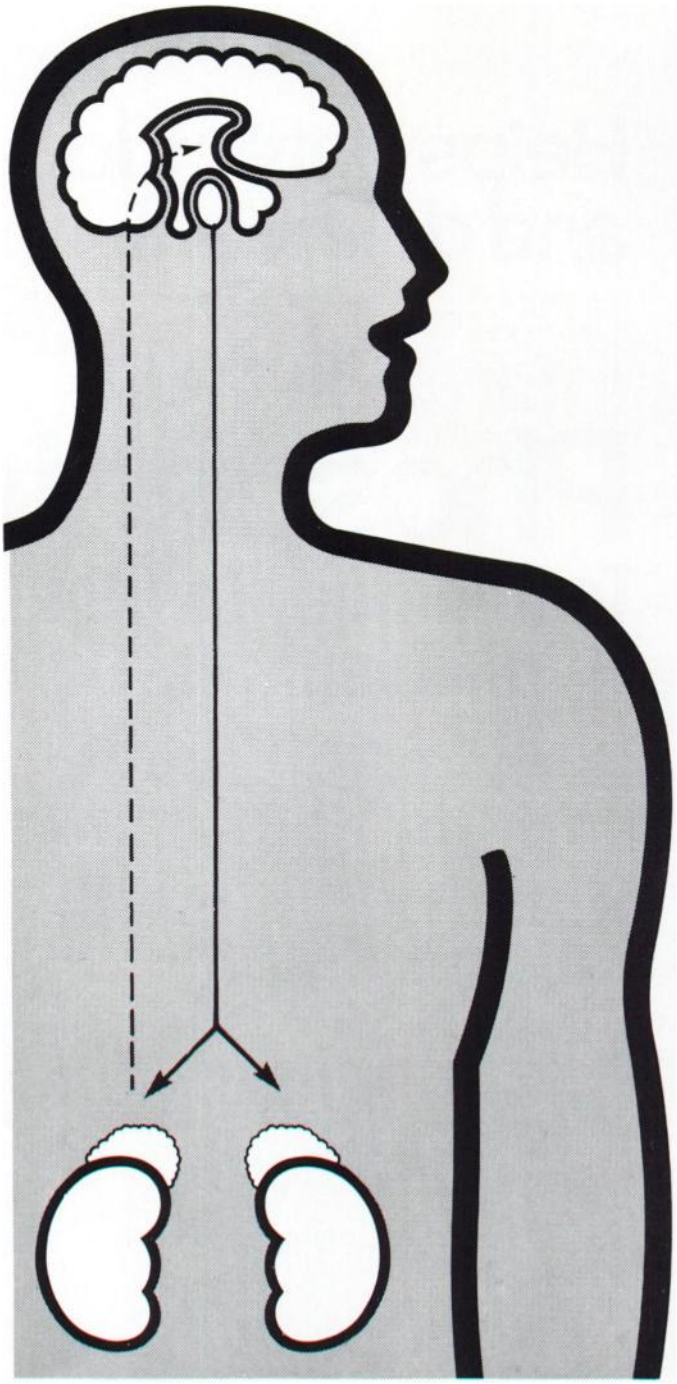

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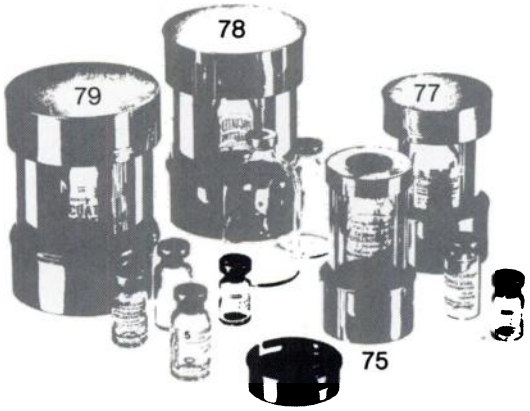

Model	Lead Equivalent	HVL For 99m Tc	Size of Vial Accommodated	Price
75	3 mm	10	5 thru 30 ml	225.00
77	6 mm	20	5 thru 30 ml	275.00
78	9 mm	30	50 and 100 ml	750.00
79	12 mm	40	5 thru 30 ml	750.00

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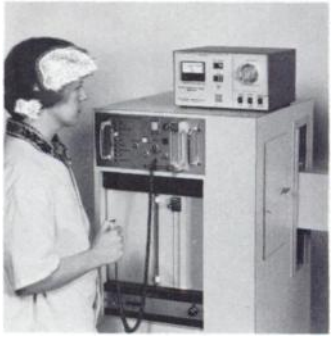

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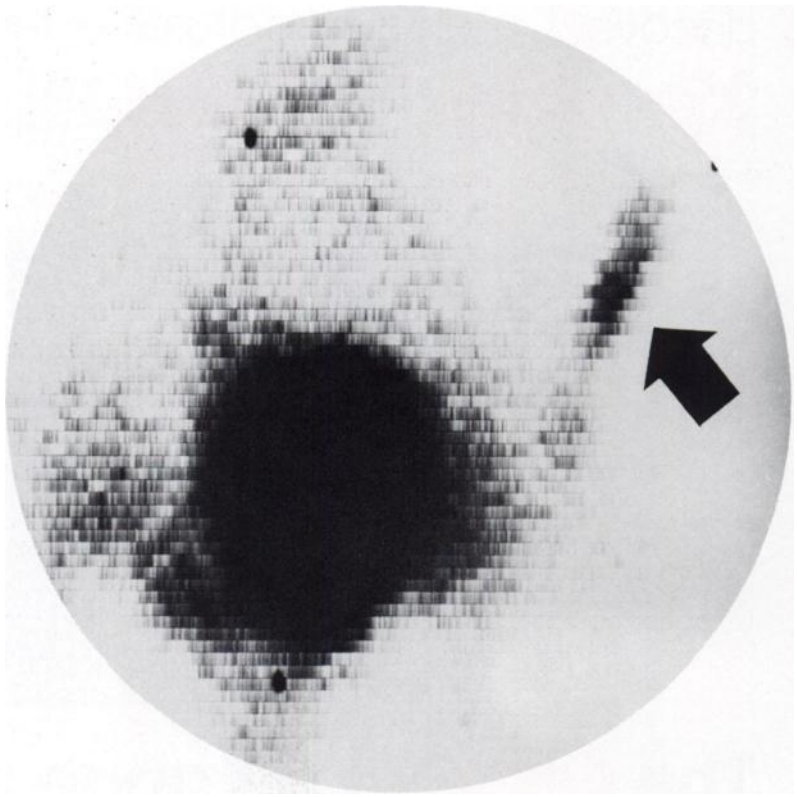
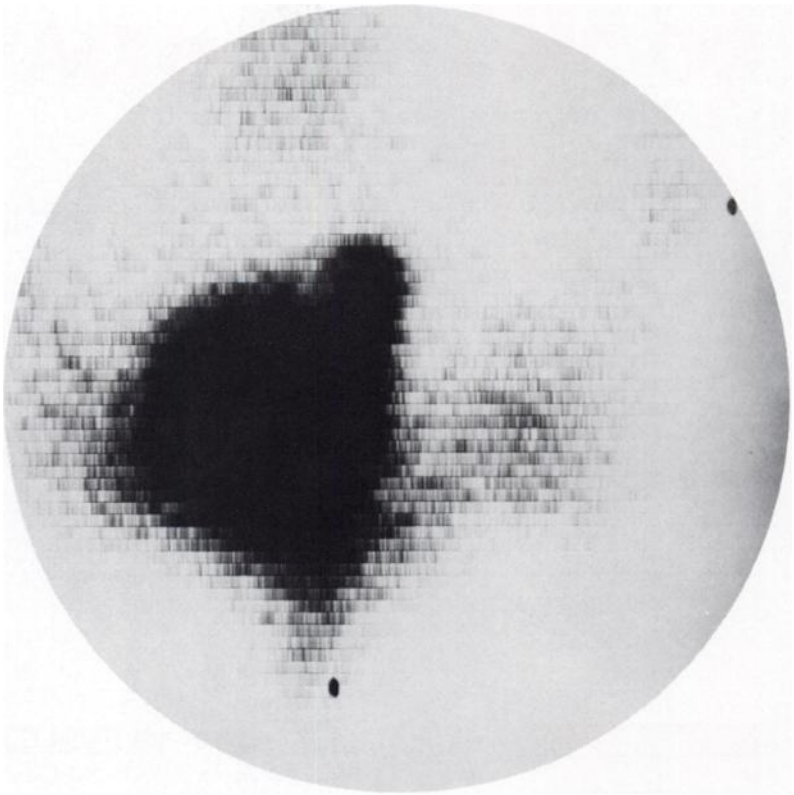
Solitary lesion seen with OSTEOSCAN®[1]

Technetium Tc99m etidronate sodium kit



Same patient scanned with Tc 99m pyrophosphate[1]



In whole body scans from which these skeletal views were taken, a solitary ileal metastasis was seen with Osteoscan, but not with the pyrophosphate imaging agent.

superiority to pyrophosphates for bone lesion detection

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Clinical evidence produced by two groups of investigators[1,2] demonstrates that Osteoscan outperforms pyrophosphates in detecting bone lesions.

"In ten of the 30 scans (33%) one or more metastases not detected on the Tc-PPi [pyrophosphate] image were noted by at least two of the three readers with Tc-HEDP [Osteoscan]."[1]

"...in three of 30 patients the Tc-PPi [pyrophosphate] scan was falsely read as normal by at least two of three readers, whereas metastatic disease was found in these patients with Tc-HEDP [Osteoscan]."[1]

The superior lesion detection demonstrated by Osteoscan may be explained by the higher tumor to normal bone ratios obtained.[2] In fact, it was concluded that Osteoscan "...is at present the agent of choice for routine clinical practice..."[2]

With Osteoscan, you can also expect excellent in vitro stability (greater than 98% tag 8 hours after preparation)...a very low tin level (.16 mg stannous chloride per vial) to minimize the potential for liver visualization or interference with subsequent brain scans...rapid blood clearance...plus excellent in vivo stability due to Osteoscan's P-C-P bond.

For additional information, call or write Procter & Gamble, Professional Services, P.O. Box 85507, Cincinnati, Ohio 45201, (513) 977-5547.

In Europe, contact: Philips-Duphar B.V., Cyclotron and Isotope Laboratories, Petten, Holland.

References:

1. Silberstein, E. B. et al.: Clinical comparison of technetium-99m diphosphonate and pyrophosphate in bone scintigraphy: Concise communication, J. Nucl. Med. 19:161, 1978.
2. Fogelman, I. et al.: A clinical comparison of ^{99m}Tc-hydroxyethylidene diphosphonate (H.E.D.P.) and ^{99m}Tc-pyrophosphate in the detection of bone metastases, Clin. Nucl. Med. 2:364, 1977.

Brief summary of Package Insert. Before using, please consult the full Package Insert included in each kit.

Description: Each vial of OSTEOSCAN contains 5.9 mg etidronate disodium, 0.16 mg stannous chloride and 0.56 mg sodium ascorbate as active ingredients. Upon addition of ADDITIVE-FREE sodium pertechnetate Tc99m the etidronate disodium and stannous chloride combine with Tc99m to form a stable soluble complex.

Clinical pharmacology: When injected intravenously, Tc99m-labeled OSTEOSCAN has a specific affinity for areas of altered osteogenesis. Areas of bone which are undergoing neoplastic invasion often have an unusually high turnover rate which may be imaged with Tc99m-labeled OSTEOSCAN.

Three hours after intravenous injection of Tc99m-labeled OSTEOSCAN, an estimated 40-50% of the injected dose has been taken up by the skeleton. At this time approximately 50% has been excreted in the urine and 6% remains in the blood. A small amount is retained by the soft tissue. The level of Tc99m-labeled OSTEOSCAN excreted in the feces is below the level detectable by routine laboratory techniques.

Tc99m-labeled OSTEOSCAN is also taken up in areas of necrosis and severely injured myocardial cells. Approximately 1.5 hours following intravenous injection 0.01-0.02 percent of the administered dose per gram of tissue is taken up by an acutely infarcted myocardium.

Indications: OSTEOSCAN is a skeletal imaging agent used to demonstrate areas of altered osteogenesis and a cardiac imaging agent used as an adjunct in the diagnosis of acute myocardial infarction. When used as an adjunct in the diagnosis of myocardial infarction the incidence of false negatives has been found to be approximately 14% and false positives about 16%. False negatives may result from failure to observe temporal requirements for good myocardial imaging; false positives may be related to coronary heart disease, left ventricular aneurysms, trauma, repeated cardioversion following coronary by-pass surgery or old myocardial infarcts.

Contraindications: None known.

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

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

The technetium used to tag the product should be routinely tested for molybdenum and aluminum; if an unacceptable level of either is found, the technetium should not be used.

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

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

Bone Imaging:

Both prior to and following Tc99m-labeled OSTEOSCAN administration, patients should be encouraged to drink fluids. Patients should void as often as possible after the Tc99m-labeled OSTEOSCAN injection to minimize background interference from accumulation in the bladder and unnecessary exposure to radiation.

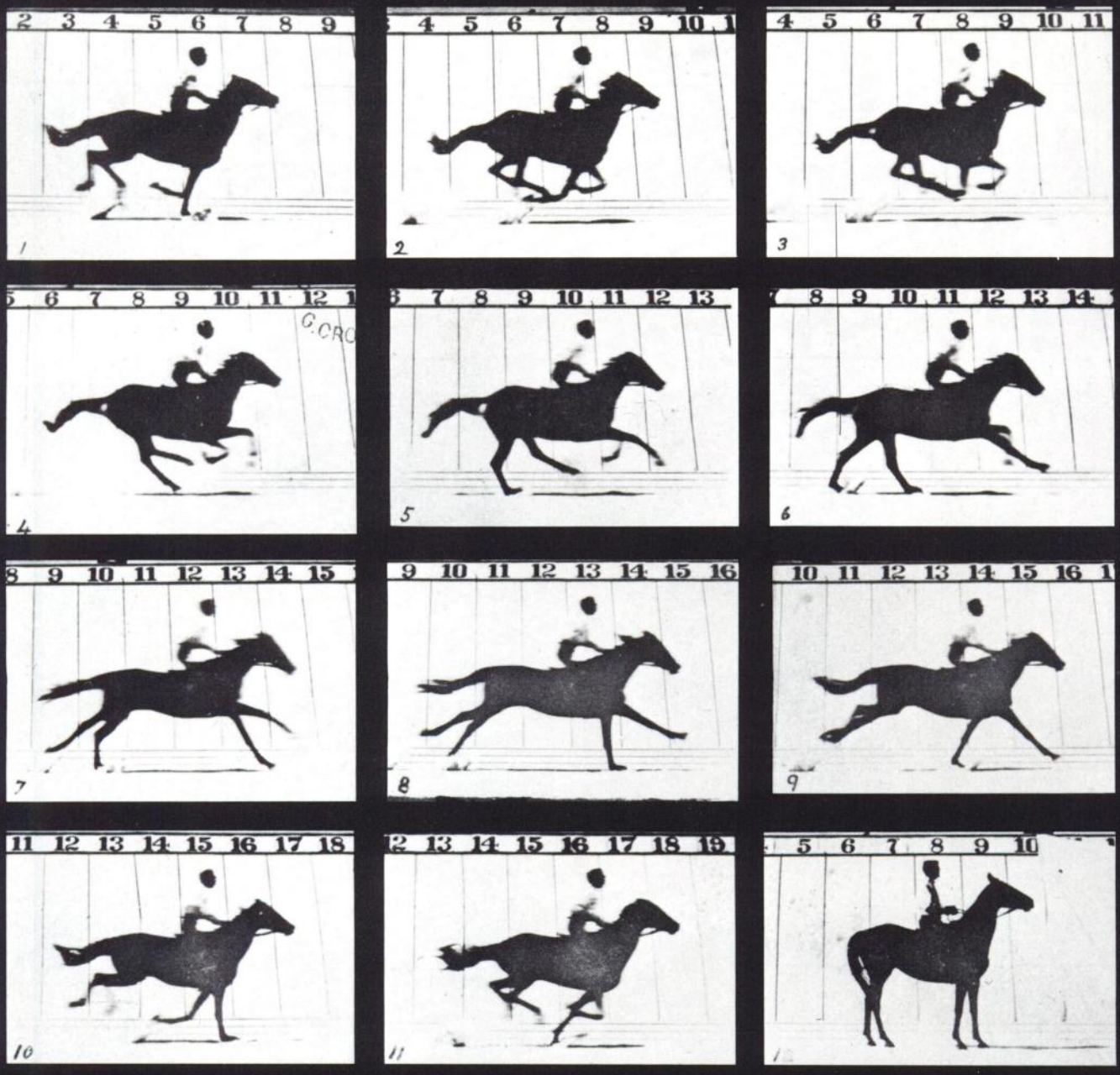
Cardiac Imaging:

Patient's cardiac condition should be stable before beginning the cardiac imaging procedure. If not contraindicated by the cardiac status, patients should be encouraged to ingest fluids and to void frequently in order to reduce unnecessary radiation exposure.

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

Adverse reactions: None known.

Dosage and administration: The recommended adult dose of Tc99m-labeled OSTEOSCAN is 10-15 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 bone imaging should be done 2-4 hours post injection and cardiac imaging 1-1½ hours post injection. The acute myocardial infarct can be visualized from 1-9 days following onset of symptoms with maximum uptake at 2-3 days. It is recommended that three projections of the heart be made (anterior, left anterior oblique and left lateral).



Eadweard Muybridge: *Galloping Horse*, 1878.
International Museum of Photography, Rochester, NY

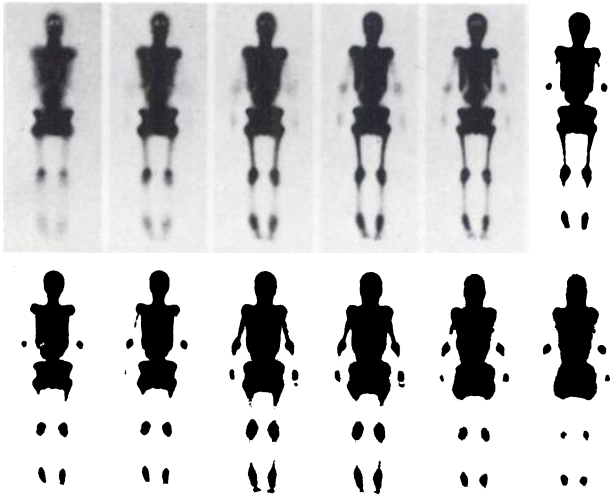
One hundred years ago our concept of how a horse ran was limited to what we thought we saw—the two front legs touching the ground in unison to propel the horse forward, followed by the two hind legs hitting the ground as the front legs recovered. But in 1878, Eadweard Muybridge altered our awareness of reality with 12 great pictures of a galloping horse—stopping the action with a very fast shutter speed. He not only successfully demonstrated that for an instant (panels 2 & 3) all four legs actually lose touch with the ground altogether, but also that horses only place one leg down at a time. Thus, he extended our vision and enabled men to see things that are not normally visible to the human eye.

It took more than one picture to see that horses fly.

Today, the concept of extending vision by utilizing more than one picture has been introduced into nuclear medicine by Searle's PHO/CON Emission Tomographic Scanner. PHO/CON simultaneously provides 12 tomographic images for in-depth representation of the patient in 12 separate coronal planes; thus providing improved capability for locating lesions, as well as enhancing the interpretation of images in many difficult cases by generating additional information on depth, size, shape, and probable nature. PHO/CON also minimizes the need for multiple-view imaging due to its ability to differentiate between confusing overlying activity and that of the target area of interest, and has often provided valuable clinical information in certain planes that was not evident in the one or two images offered by other nuclear cameras. And, because of a flexibility of format sizes, PHO/CON not only permits a wide variety of studies to be performed—from brain and soft tissue to whole body—but it is rapidly demonstrating its superiority for studies using Gallium-67.

PHO/CON® Emission Tomographic Scanner defines lesions better with 12 GREAT IMAGES.

For additional information on how the 12 great images of the PHO/CON Emission Tomographic Scanner can help you see things other nuclear systems may not, contact Searle Radiographics, a member of the Searle Imaging group.



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Searle Radiographics
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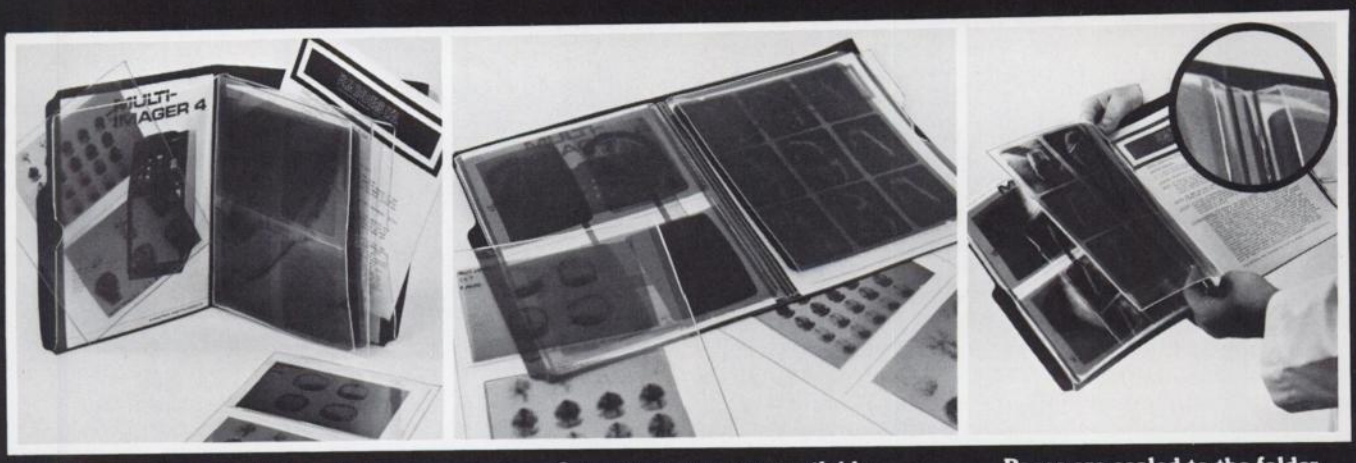

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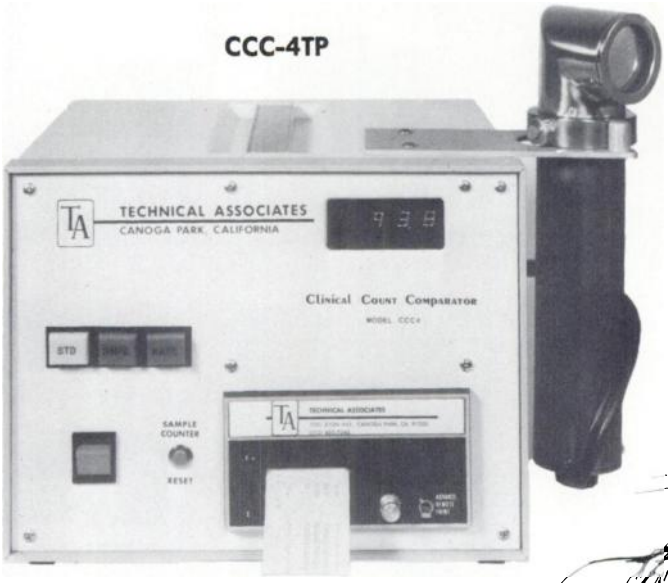

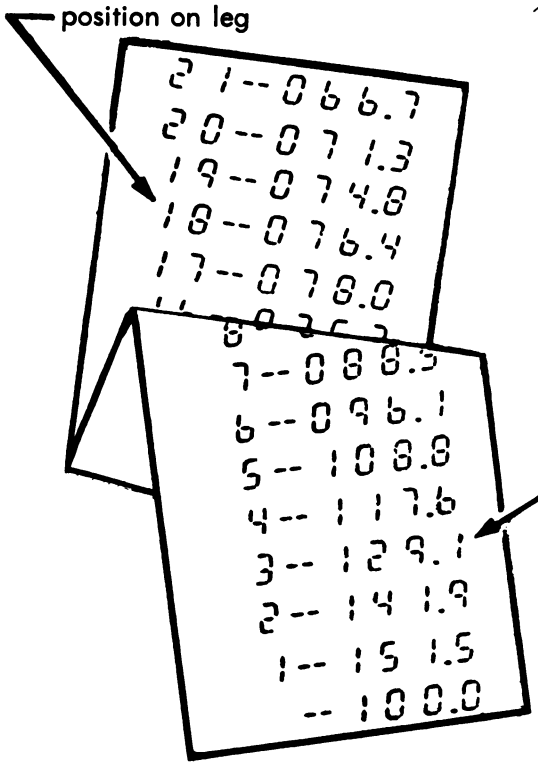

percent uptake

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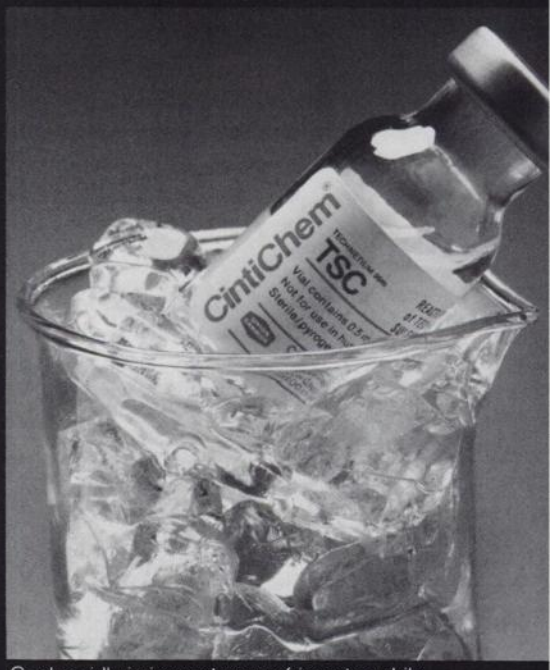

Cool rapidly in ice water or refrigerator while observing proper radiation safety measures. Refer to package insert for full preparation instructions.

New! TSC preparation now takes less time.

The CINTICHEM® TSC reagent kit for imaging of functioning reticuloendothelial cells in the liver, spleen and bone marrow requires less of your time to prepare than any other sulfur colloid kit available.

- Needs boiling only once for 5 minutes. Other kits can demand 2 boilings plus cooling period.
- Buffer is injected into the reaction vial immediately after removal from the boiling water bath.
- Dose vial is then rapidly cooled in an ice-water bath or similar cold environment.

Take advantage of our other CINTICHEM products for nuclear medicine:

- Technetium 99m HEDSPA (Etidronate Disodium[1] Tin Kit for use in preparation of Technetium Tc 99m Etidronate Tin Complex)
- Technetium 99m DTPA (DTPA Tin Kit for use in preparation of Technetium Tc 99m DTPA Tin Chelate)
- Technetium 99m MAA (Technetium Tc 99m Aggregated Albumin)
- Technetium 99m HSA (Technetium Tc 99m Human Serum Albumin)

All of the above are available in multidose and unit dose kits.

- Technetium Tc 99m Generator for the production of Sodium Pertechnetate Tc 99m, available in 500, 1000, 1500, or 2000 millicuries.

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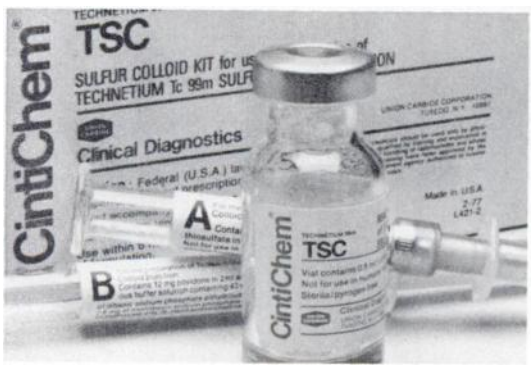

[1]USAN designation for 1-hydroxy-ethylidene-1,1-disodium phosphonate HEDSPA.

indications and usage
Technetium Tc 99m Sulfur Colloid Injection is used as an agent for imaging areas of functioning reticuloendothelial cells in the liver, spleen, and bone marrow.

contraindications
None known.

warnings
The contents of the two syringes, one syringe containing the sodium thiosulfate solution and the second syringe containing the appropriate buffer solution, are intended ***only*** for use in the preparation of the Technetium Tc 99m Sulfur Colloid Injection and ***are not to be directly administered to the patient.***
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.
This radiopharmaceutical preparation should not be administered to children or to patients who are pregnant or during lactation unless the expected benefits to be gained outweigh the potential hazards.
Ideally, examinations using radiopharmaceuticals, especially those elective in nature, of a woman of childbearing capability should be performed during the first few (approximately 10) days following the onset of menses.

precautions
The components of the kit are sterile and pyrogen-free. It is essential that the user follows the directions carefully and adheres to strict aseptic procedures during preparation of the colloid.
The stability of the colloidal preparation may be decreased in the presence of polyvalent cations, thus resulting in the agglomeration of the individual colloidal particles. These larger particles are likely to be trapped by the pulmonary capillary bed following intravenous injection.
It is recommended that Sodium Pertechnetate Tc 99m solutions containing more than 10 micrograms/ml of aluminum ion not be used for formation of the Technetium Tc 99m Sulfur Colloid Injection. The Sodium Pertechnetate Tc 99m solution must also be free of any traces of oxidizing agents such as peroxides and hypochlorites.
Technetium Tc 99m Sulfur Colloid Injection is physically unstable and as such the particles will settle with time. Failure to agitate the vial adequately before use may result in non-uniform distribution of radioactivity.
It is also recommended that because of the increasing probability of agglomeration with aging, a batch of Technetium Tc 99m Sulfur Colloid Injection not be used after six hours from the time of formulation.
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 Sulfur Colloid Injection 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.
Technetium Tc 99m Sulfur Colloid Injection, as well as other radioactive drugs, must be handled with care and appropriate safety measures should be used to minimize external radiation exposure to clinical personnel. Also, care should be taken to minimize radiation exposure to patients, consistent with proper patient management.

adverse reactions
Hypersensitivity reactions, including anaphylaxis, have been reported in patients receiving sulfur colloid preparations.

dosage and administration
The suggested intravenous dose range used in the average patient (70 kg) is 1 to 8 millicuries of Technetium Tc 99m Sulfur Colloid Injection.
When orally administered, the Technetium Tc 99m Sulfur Colloid Injection is not absorbed from the G.I. tract.
The patient dose should be measured by a suitable radioactivity calibration system immediately prior to administration.
Radiopharmaceuticals should be used only by physicians who are qualified by specific training in the safe use and handling of radionuclides produced by nuclear reactor or particle accelerator and whose experience and training have been approved by the appropriate government agency authorized to license the use of radionuclides.

how supplied kit contents
5 STERILE REACTION VIALS, each containing 0.5 ml 1.0 N hydrochloric acid in water.
5 STERILE SYRINGES, (labeled "A"), each containing 1.7 mg anhydrous sodium thiosulfate in 1 ml aqueous solution.
5 STERILE SYRINGES, (labeled "B"), each containing 12 mg povidone in 2 ml aqueous buffer solution containing 43 mg of dibasic sodium phosphate anhydrous, 2.6 mg of monobasic sodium phosphate monohydrate, and 16 mg of sodium hydroxide.
5 RADIOACTIVE SYMBOL LABELS.
10 PRESSURE-SENSITIVE LABELS for final Technetium Tc 99m Sulfur Colloid Injection preparation.
1 PACKAGE INSERT.

storage
Store kit contents at room temperature (18-25° C).

preparation
The following directions must be carefully followed for optimum preparation of the Technetium Tc 99m Sulfur Colloid Injection.
1. Affix radioactive symbol label to reaction vial.
2. Aseptically inject 0.1-5.0 ml of sterile Sodium Pertechnetate Tc 99m, up to 75 millicuries which must contain less than 10 micrograms of aluminum, into the reaction vial. Relieve the excess pressure in the vial by withdrawing an equal volume of air. Mix the solution.
3. Assemble the thiosulfate syringe (labeled "A") and inject the total contents into the reaction vial with gentle agitation. Relieve the excess pressure by withdrawing an equal volume of air and remove the needle.
4. Immediately immerse the reaction vial in a vigorously boiling water bath, deep enough to cover the entire liquid contents of the vial. Keep the vial in the water bath for 5 minutes plus or minus 30 seconds.
5. During heating step, assemble buffer syringe cartridge (labeled "B").
6. Remove vial from water bath, place in lead shield, and vent using 20 gauge, disposable needle.
7. Immediately inject contents of syringe B into reaction vial.
8. Remove vent and shake gently for a few seconds.
9. Rapidly cool to room temperature (note: rapid cooling in an ice bath is preferable) before use and then affix the descriptive label to the dose vial shield. Maintain adequate shielding of the radioactive colloid preparation. Do not use the preparation after six hours from the time of formulation.

UNION CARBIDE **CintiChem®**

Technetium 99m
TSC Sulfur Colloid Kit for Use in Preparation of Technetium Tc 99m Sulfur Colloid Injection

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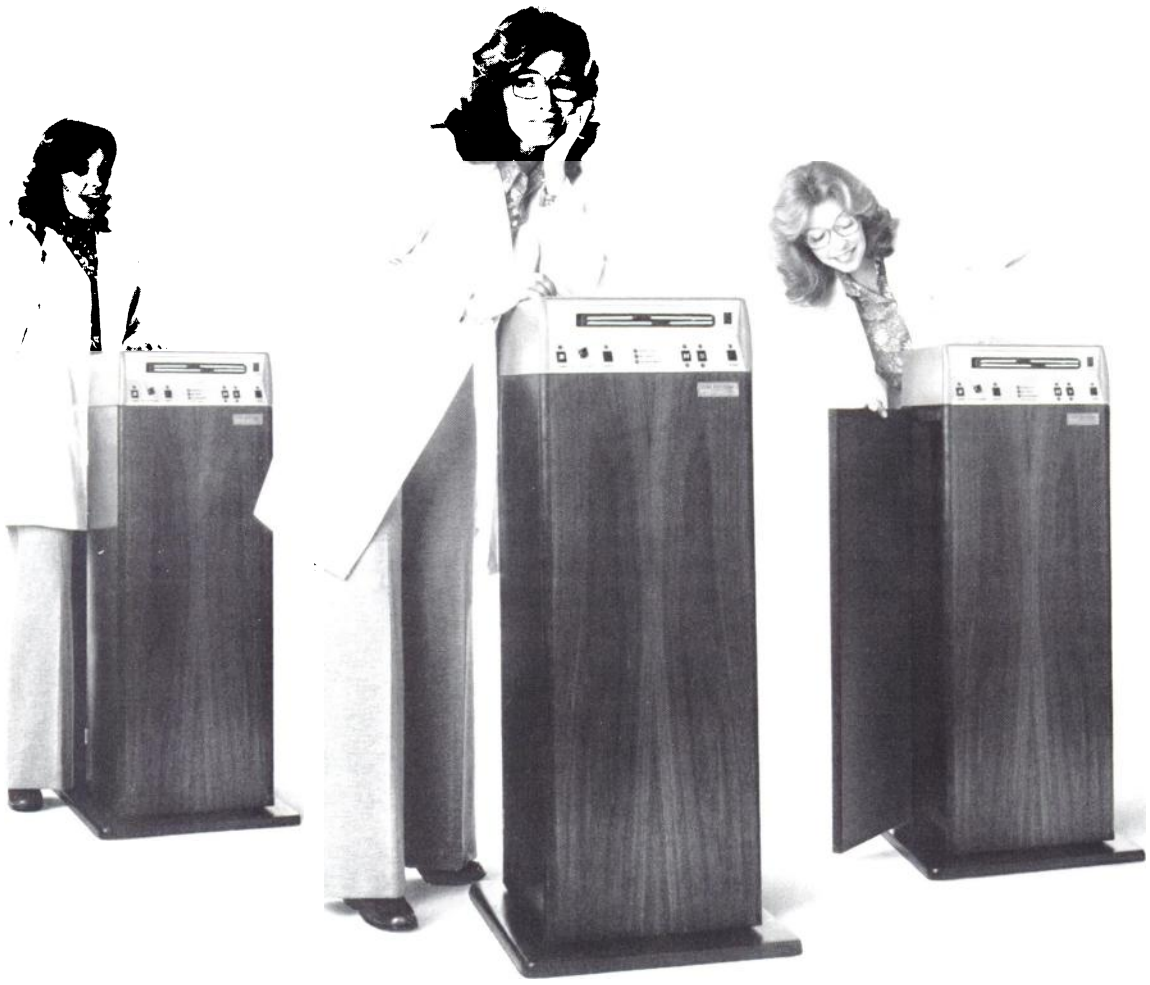

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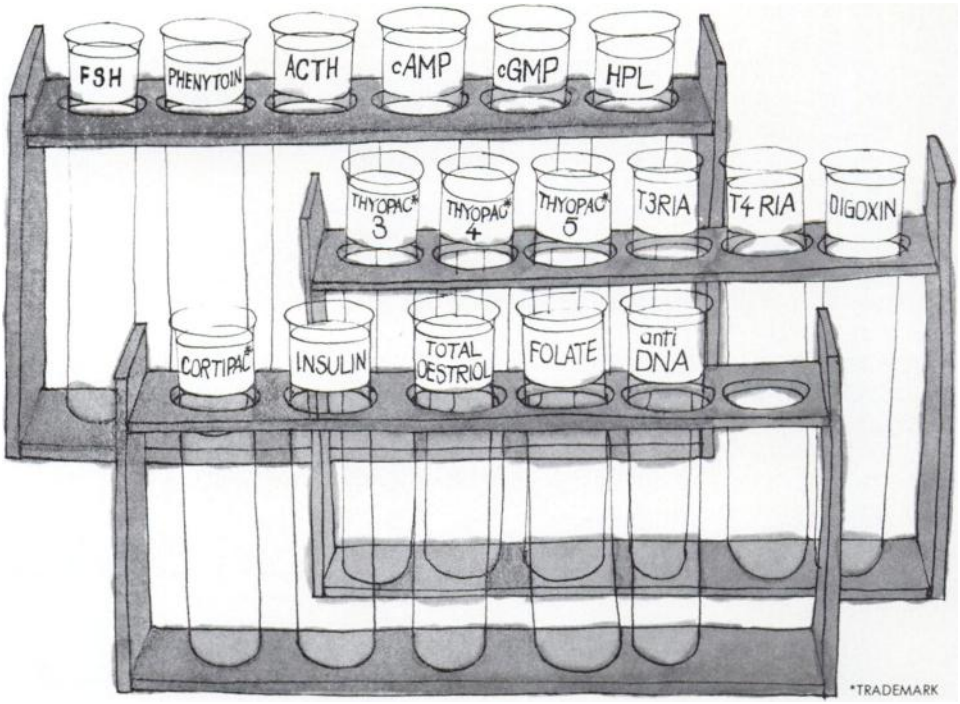
Ho hum. Simplified front panel controls make picture-taking a breeze.

Where Beta's best – superb clinical images in any format, positive or negative.



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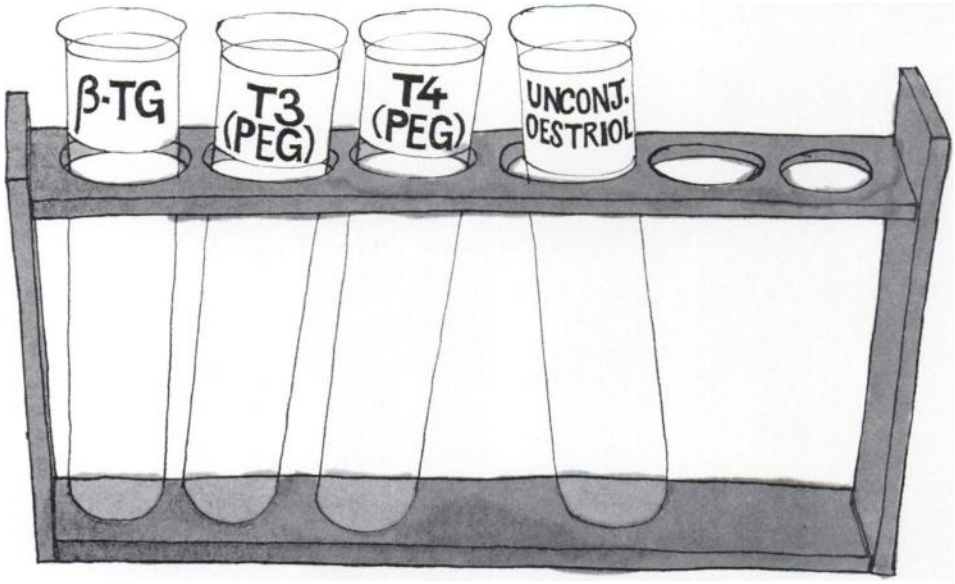

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NUCLIDE: TECHNETIUM 99M
LOT NO. 4SG-310 KIT NO. 14NK-159
ABSORBENT: Whatman #1
SOLVENT: Normal Saline
DATE: 30 JAN 78

Q.C. DATA

HISTOGRAM OF ACTIVITY DISTRIBUTION

SAMPLE NUMBER	RATIO*
19	0.900
18	0.014
17	0.018
16	0.019
15	0.049

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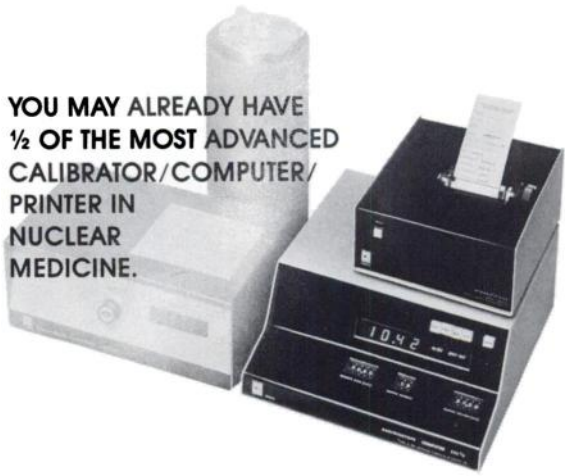

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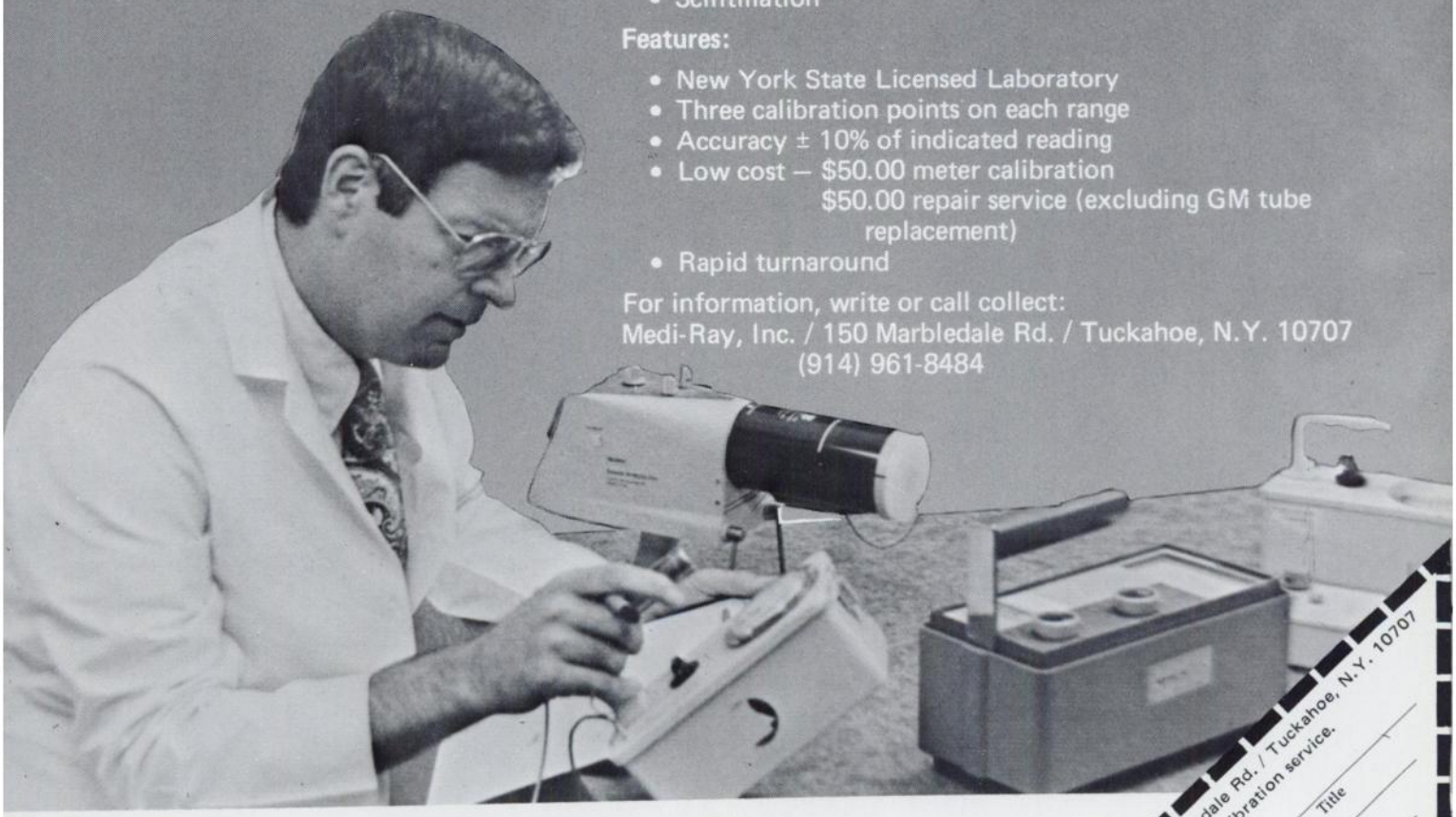

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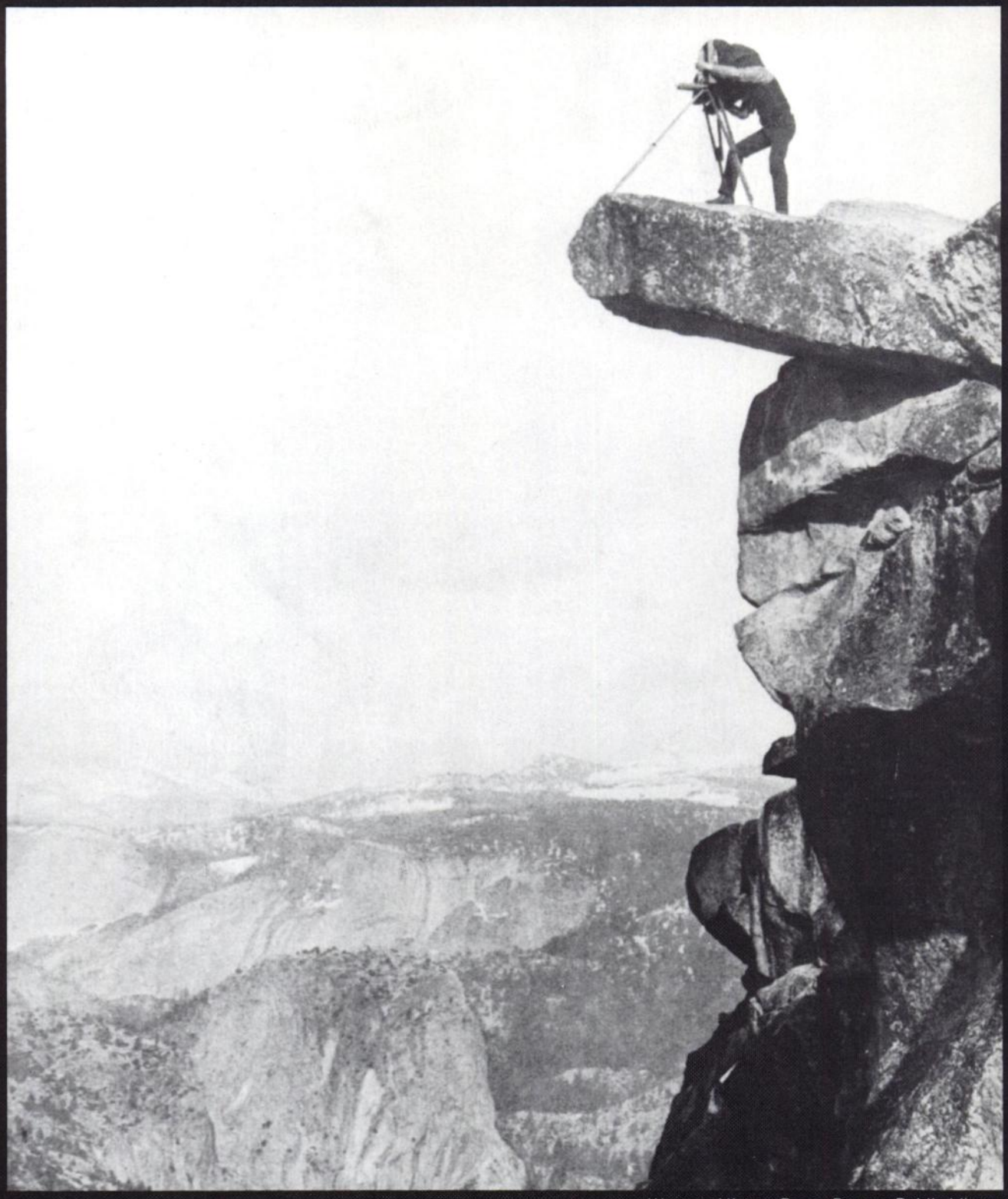

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With the introduction of lighter photographic cameras that enabled man to seek new perspectives from which to take pictures, new horizons in realism were made possible. Searle Radiographics similarly influences technology in the field of nuclear medicine with its extensive line of systems that extend the clinical utility of nuclear cardiology throughout the hospital.

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RADIOLOGIST, BOARD CERTIFIED in Nuclear Medicine, to join large multispecialty pre-paid medical group. Opportunity to expand department and plan department for new hospital in 1982. Salary negotiable. Liberal fringe benefits. Contact: Hawaii Permanente Medical Group, Inc.. 1697 Ala Moana Boulevard, Honolulu, Hawaii 96815. An Equal Opportunity Employer.

NUCLEAR MEDICINE TECHNOLOgist, C.S.R.T.(N.M.), for private imaging facility in Western Canada. Reply to: Mrs. Shirley Almond, Mission Profession Centre, 106, 2303 - 4th Street, S.W., Calgary, Alberta, T2S 2S7 Canada.

PHYSICIAN, NUCLEAR MEDICINE, opening in 450 bed teaching hospital to head division of Nuclear Medicine, 83,000 diagnostic examinations with full range of diagnostic equipment. Opportunity to plan new equipment acquisition. Desire individual with two year background in Nuclear Medicine—Board Eligible or Board Certified in Nuclear Medicine with interest in full range of Radionuclide imaging procedures particularly cardiac studies. Must have background in Radiology, preferably Board Certification. Equal Opportunity Employer. Contact: Peter K. Spiegel, M.D., Chairman, Section of Diagnostic Radiology, Mary Hitchcock Memorial Hospital, 2 Maynard Street, Hanover, New Hampshire 03755. 603-643-4000, Ext. 2011.

NUCLEAR MEDICINE RESIDENCY. 830 bed VA general hospital offers AMA approved two year program. Two positions available July 1979. Located in San Fernando Valley 15 minutes from affiliated hospitals (UCLA and Wadsworth VA). Program covers isotope and ultrasound imaging, in vivo and in vitro procedures, including RIA. Prerequisite: one-two years post graduate training in medicine, radiology, or pathology. Minimum stipend: $20,000. Contact: Marvin B. Cohen, M.D., Chief, Nuclear Medicine Service. Nondiscrimination in employment. VA Hospital, 16111 Plummer St., Sepulveda, CA 91343.

CONFIDENTIAL SERVICE NATIONwide. We are a search firm dealing nationwide in the Health Care Industry. All fees paid by employer. Forward resume with salary requirements and location preferences to BMI, Health Care Division, P.O. Box 6457, Columbia, S.C. 29260, (803) 787-8710.

NUCLEAR MEDICINE RESIDENT, Two year Residency Program in Nuclear Medicine at The New York Hospital-Cornell Medical Center. Position available July 1, 1979. Contact Jerome G. Jacobstein, M.D., Division of Nuclear Medicine, The New York Hospital-Cornell Medical Center, 525 East 68th Street, New York, New York 10021.

SUPERVISORY NUCLEAR MEDICINE Technologist. Opening in a 478-bed teaching hospital for an ARRT registered nuclear medicine technologist with a minimum of 5 yrs. experience, at least one year of which was spent in a supervisory capacity. Proficiency in imaging, computer assistant data analysis and in-vitro work including radioimmunassay essential. We offer a competitive salary and generous fringe benefits. Send resume to Personnel Department, Cabrini Medical Center, 227 E. 19th St., NY, NY 10003. An Equal Opportunity Employer.

NUCLEAR MEDICINE TECHNOLOgist for expanding community hospital. Ideal climate, excellent salary, fringes. Contact: Personnel, Marcus J. Lawrence Memorial Hospital, Box 548, Cottonwood, AZ 86326 (602-634-2251)

LEAD NUCLEAR MEDICINE TECHnologist. Applications are invited from Registered Nuclear Medicine Technologists for Lead Nuclear Medicine Technologist position in the Nuclear Medicine Department, Providence Medical Center, Seattle, WA. Technologist with 2 years experience. Preferred background in nuclear cardiology and MDS computers or equivalent systems. Management experience preferred. Aggressive technologist needed to assist with development of new nuclear cardiology service. Apply to Neal L. Wilson, P.A., Department of Radiology Services, Providence Medical Center, 500 17th Avenue, Seattle, WA 98124, 206-326-5591.

NUCLEAR MEDICINE TECHNOLOgist. Immediate opening, 413 bed hospital with full range of In-Vivo and In-Vitro Procedures offered. These include full range of Nuclear Cardio procedures. Cameras (with on line computers) and rectilinear scanner in use. Applicant must be ARRT NM or ASCP NM registered or registry eligible. Experience in RIA desirable. Will be rotated through both sections of Nuclear Medicine i.e. In-Vitro and In-Vivo. Department geared to continuing education philosophy. Opportunity to attend seminars conferences etc. Excellent starting salary and employee fringe benefit program. Please submit resume or for more information contact: Paul K. Schlesinger, Director of Personnel Department, South Chicago Community Hospital, 2320 East 93rd Street, Chicago, Illinois 60617, Telephone: (312) 978-2000 Ext. 5160

NUCLEAR MEDICINE TECHNOLOgist. Position available now at 420 bed teaching hospital located in Northern New England College Community. Must be ARRT registered or registry eligible. Send resume to: Mrs. Colley—Mary Hitchcock Memorial Hospital, Dartmouth Hitchcock Medical Center, Hanover, N.H. 03755. An Equal Opportunity Employer.

NUCLEAR MEDICINE TECHNOLOgist for independent corporation in Central Illinois. Work at community hospitals under supervision of our Director of Nuclear Medicine. Small, young company offers room for growth. Competitive salary and fringe benefits for aggressive individual. Contact Ms. Jean Bettridge, Midwest Nuclear, Inc., 201 W. University Ave., Champaign, Illinois, 61820 (217) 352-5600.

ATLANTA-NUCLEAR MEDICINE AND General Radiology opportunity to join six-man group at busy 370 bed suburban hospital in large growing medical center complex. Require certified radiologist with expertise and special interest in nuclear medicine. Latest equipment including LFOV camera, computer, CT scanner. Enquire (404) 256-8818, Mrs. Hays.

NUCLEAR MEDICINE SUPERVISOR. Supervisory position available in nuclear medicine department of expanding 650-bed teaching hospital affiliated with UNC Medical School. ARRT registered and two years supervisory experience required. Excellent benefit plan. Send resume and salary requirement to: Employment Manager, NC Memorial Hospital, Chapel Hill, N.C. 27514. An Equal Opportunity/Affirmative Action Employer.

DEPARTMENT OF NUCLEAR MEDIcine. The University of Massachusetts Medical School is seeking a faculty member to join the Department of Nuclear Medicine to begin on July 1, 1979, or soon thereafter. It is essential that the candidate have proven excellence and achievement in research and teaching. Clinical expertise in all aspects of Nuclear Medicine is also required. Rank and salary depend on experience and qualifications. Send curriculum vitae and three letters of reference to: Dr. L. E. Braverman, University of Massachusetts Medical Center, Department of Nuclear Medicine, 55 Lake Avenue North, Worcester, MA 01605, (617) 856-3176. The University of Massachusetts Medical School is an equal opportunity/affirmative action employer.

REGISTERED NUCLEAR MEDICINE Technologist. Modern medical center located in Georgia's oldest city, 20 minutes from the Atlantic Ocean has opening for a Registered Nuclear Medicine Technologist. Benefits include: Paid Vacation, Hospitalization, Life Insurance, Excellent Retirement Program. Salary commensurate with experience. Send resume to: Victor Dominguez, RTR, Dept. of Radiotherapy, Memorial Medical Center, P.O. Box 23089 Savannah, Ga. 31403, 1-912-352-8810. An Equal Opportunity Employer.

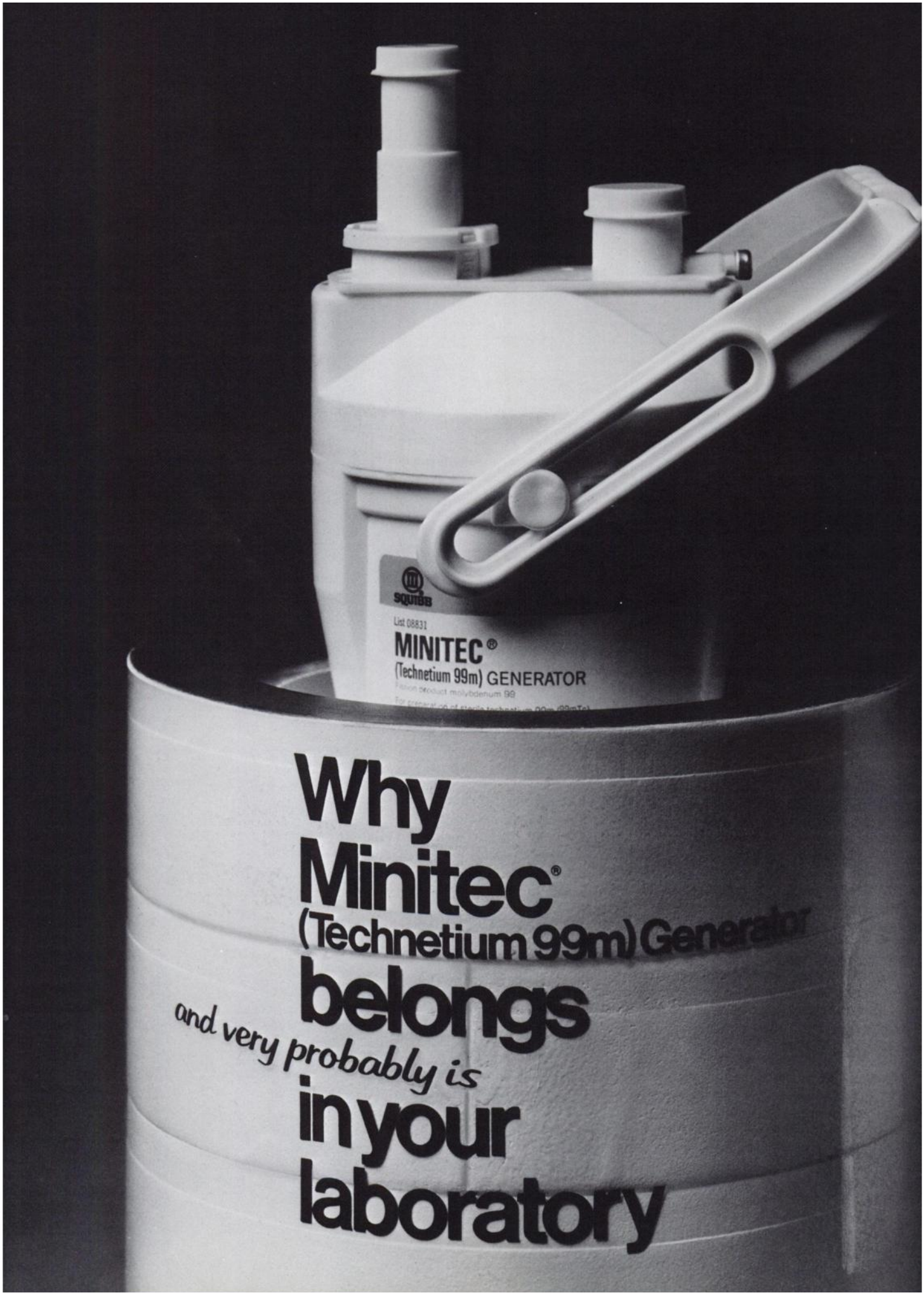
NUCLEAR MEDICINE TECHNOLOgist needed in 600 bed hospital with an expanding Nuclear Medicine/Ultrasound/CT Department. Excellent working conditions with liberal benefit program. Salary commensurate with experience. Send resume to Personnel Director, Methodist Medical Center, 7th-9th on Faraon, St. Joseph, Missouri 64501. An equal opportunity employer.

NORTHERN NEW JERSEY NUCLEAR Medicine Physician, part-time, need to help in hospital Radioisotope Department. Board certified or Board eligible only. Salary open. Inquires kept confidential. Reply Box 1000 Society of Nuclear Medicine, 475 Park Ave. So., NY, NY 10016.

NUCLEAR MEDICINE RESIDENCY Medical College of Wisconsin. Two year integrated program including 710 bed VA General Hospital, 600 bed County Medical Complex and two large community hospitals. Several cameras each interfaced to computer. Ultrasound training included. Positions available to July 1979. Nondiscrimination in employment. Contact Robert C. Meade, M.D. Chief, Nuclear Medicine Service VA Center, Milwaukee, WI 53193 414-384-2000, EXT 2138

POSITIONS WANTED

PATHOLOGIST/NUCLEAR MEDICINE Physician seeks relocation in 1979-80. Board certified in AP, CP, and NM. 714-453-9103 evenings.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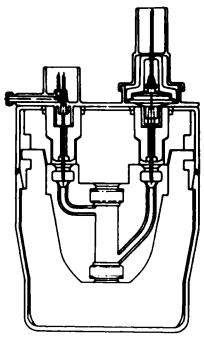
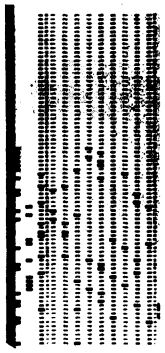


Radiation Safety

Minitec® (Technetium 99m) Generator was designed for safety as well as efficiency. Protective shielding (⅝") surrounds collecting vial during elution and dose withdrawal. No exposed tubing: 1⅝" lead around column affords high shielding-to-activity ratio. Maxi-Shield™ provides additional 1½" of solid lead shielding...only cap is removed for elution.



Computer Assistance

Customtec®, a free, exclusive Squibb computer service, custom-tailors generator size and delivery schedule to meet a lab's daily ^{99m}Tc requirements. Programs planned by Customtec reduce waste, increase efficiency and promote radiation safety by providing technetium when it is needed—in amounts that are needed. Ask your Squibb Representative for a free program.

Customer Service

Squibb Technical Associates have had extensive training in nuclear medicine, radiopharmaceuticals, RIA and instrumentation. When you need technical information or have an unusual problem, a call to your local TA brings the quick, personal attention of an experienced specialist. Assistance is also available at Squibb headquarters. Telephone 609-921-4100 or write Medotopes Technical Customer Service, P.O. Box 4000, Princeton, N.J. 08540.

Perfect Combinations

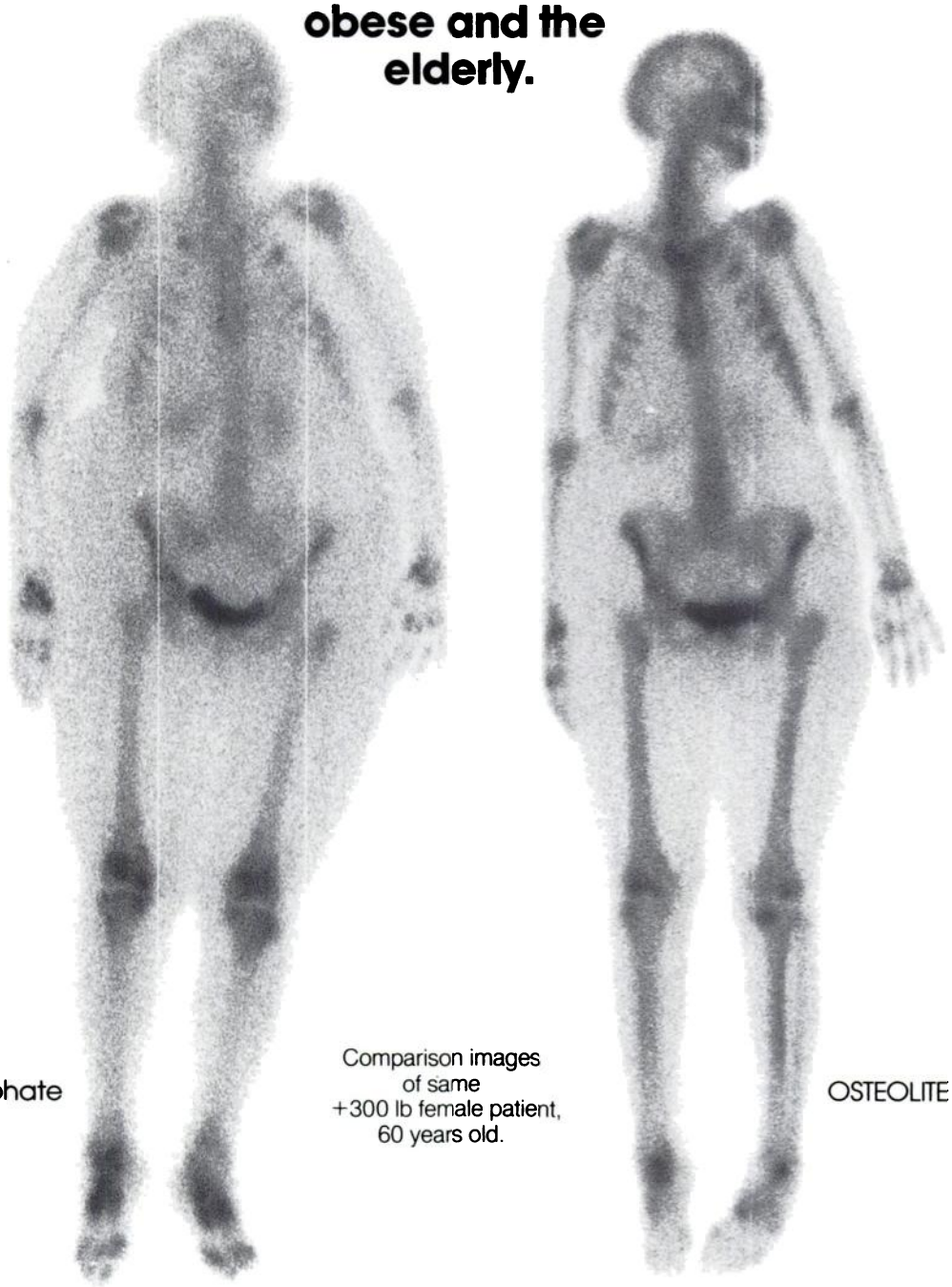
Products designed to complement each other are more likely to produce a better end product. When sodium pertechnetate eluate obtained from Minitec (Technetium 99m) Generator is utilized in Squibb imaging kits, the results are purity, quality, and compatibility.

See next page for brief summary.

Medotopes®
SQUIBB®

Most bone agents perform reasonably well in thin, young patients.

OSTEOLITE provides high-quality images—even in the obese and the elderly.



Pyrophosphate

Comparison images of same +300 lb female patient, 60 years old.

OSTEOLITE

OSTEOLITE

Technetium Tc 99m Medronate Sodium Kit (MDP)

NEN

Whether you perform two bone scans a day or three per hour

Most rapid blood clearance[1]

- Ninety minutes after injection, MDP blood clearance is approximately equal to that of typical pyrophosphate agents at six hours postinjection.
- At three hours, MDP blood levels are considerably less than those of EHDP and pyrophosphate.

Result: low-background studies, whether you must scan early to meet patient-flow demands, or at three hours for more optimal image detail.

Lowest soft tissue activity[1,3]

The "difference in soft tissue activity (highest with polyphosphate and lowest with MDP) is discernible in clinical images."[1] A University of Minnesota study found that only 4% of 175 MDP images showed moderate to marked soft tissue activity, compared to 17% of EHDP images[3]

Result: highest assurance of imaging all skeletal structures.

Highest target-to-background differential[2]

OSTEOLITE's rapid blood clearance and lower soft tissue uptake enable current gamma cameras to routinely resolve radius and ulna, tibia and fibula, phalanges, etc.

Result: confidence of detecting resolution-challenging alterations in osteogenesis...even roentgenographically "invisible" fractures and small metastases near the limits of state-of-art visualization.

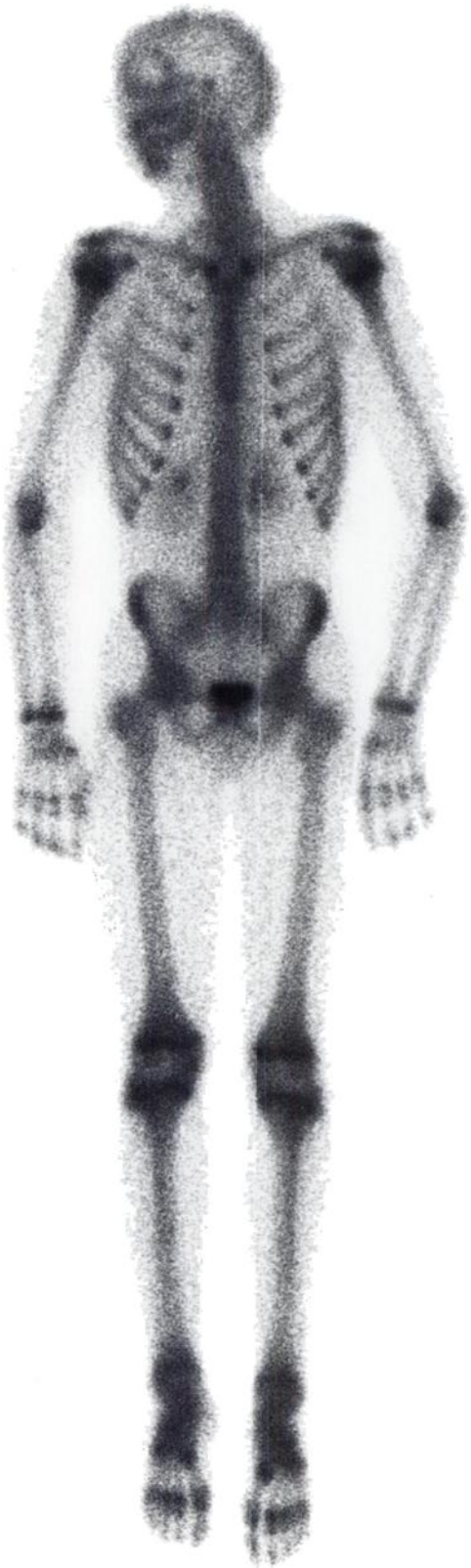
Convenient storage and preparation

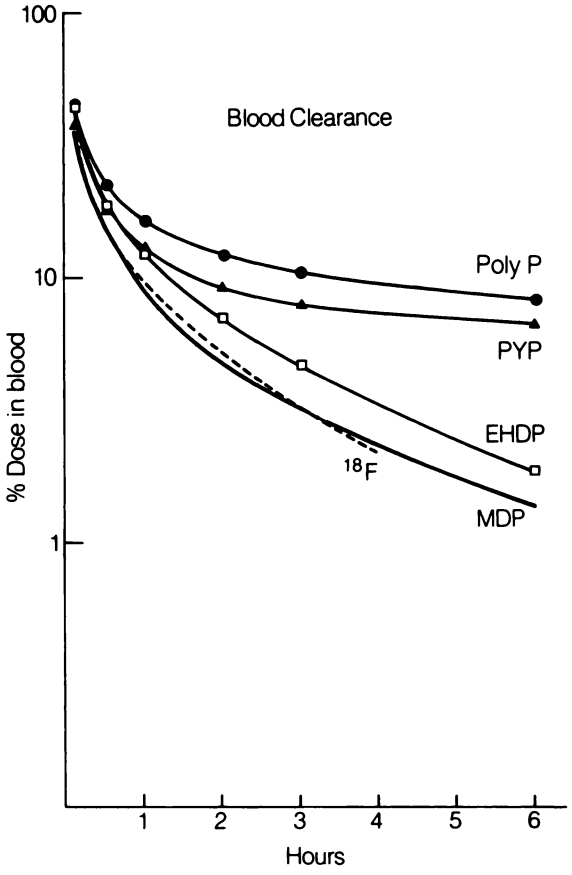
Available in 5-vial or 30-vial "Convenience Packs," OSTEOLITE can be stored and used at room temperature (15-30 C).

1. Subramanian G, McAfee JG, Blair RJ, et al: Technetium-99m-methylene diphosphonate—a superior agent for skeletal imaging: Comparison with other technetium complexes. *J Nucl Med* **16**:744, 1975
2. Davis MA, Jones AG: Comparison of ^{99m}Tc-labeled phosphate and phosphonate agents for skeletal imaging. *Sem Nucl Med* **6**:19, 1976
3. Forstrom L, et al: Data on file at New England Nuclear, Medical Diagnostics Division, North Billerica, MA

OSTEOLITE™

Technetium Tc 99m Medronate Sodium Kit (MDP)





Blood clearance of MDP in humans, following IV injection, compared to three other ^{99m}Tc complexes and ^{18}F (corrected for physical decay), assuming blood volume was 7% of body weight. PYP indicates pyrophosphate and Poly P denotes polyphosphate. (Adapted with permission from Subramanian G et al: *J Nucl Med* **16**:744, 1975.)

New England Nuclear

See following page for full prescribing information.

OSTEOLITE™

Technetium Tc 99m Medronate Sodium Kit (Formerly Known as MDP)

October 1977

DESCRIPTION: New England Nuclear's OSTEOLITE™ Technetium Tc 99m Medronate Sodium Kit (formerly known as MDP), is supplied sterile and non-pyrogenic in lyophilized kit form suitable for reconstitution with sodium pertechnetate Tc 99m to form a diagnostic skeletal imaging agent for intravenous administration. Each vial contains 10mg medronate disodium and 0.85mg stannous chloride dihydrate; 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.

PHYSICAL CHARACTERISTICS

Technetium Tc 99m decays by isomeric transition with a physical half-life of 6.02 hours. (SOURCE: Martin, M. J. Nuclear Data Project, Oak Ridge National Laboratory, March, 1976.) Photons that are useful for imaging studies are listed in Table 1.

Table 1. Principal Radiation Emission Data—Technetium Tc 99m

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

To facilitate correction for physical decay of Technetium Tc 99m, the fractions of initial activity that remain at selected intervals after the time of calibration are shown in Table 2.

Table 2. Physical Decay Chart: Technetium Tc 99m Half-Life 6.02 Hours

Hours	Fraction Remaining	Hours	Fraction Remaining
0*	1.000	8	.398
1	.891	9	.355
2	.794	10	.316
3	.708	11	.282
4	.631	12	.251
5	.562	18	.126
6	.501	24	.063
7	.447		

*Calibration Time

EXTERNAL RADIATION

The specific gamma ray constant for Technetium Tc 99m is 0.8R/mCi-hr. at 1cm. The half value layer is 0.2mm of Pb. To facilitate control of radiation exposure from millicurie amounts of Technetium Tc 99m, the use of a 6.35mm thick standard radiation elution lead shield will attenuate the radiation emitted by a factor greater than 10^{-6}.

Table 3. 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}
5.4	10^{-6}
6.3	10^{-7}

CLINICAL PHARMACOLOGY: Upon intravenous injection, Technetium Tc 99m OSTEOLITE exhibits a specific affinity for areas of altered osteogenesis. In humans, blood levels fall to 4-10% of the injected dose by two hours post-injection and to 3-5% by three hours. During the first 24 hours following its administration in patients with normal renal function, 50-75% of the radioactivity is excreted into the urine and less than 2% of the injected dose remains in the vascular system.

Uptake of the Technetium Tc 99m in bone appears to be related to osteogenic activity and to skeletal blood perfusion. The deposition in the skeleton is bilaterally symmetrical, with increased accumulation in the axial structure as compared to the appendicular skeleton. There is increased activity in the distal aspect of long bones as compared to the diaphyses. In pediatric patients, in whom the epiphyseal centers are still open, there is more marked accumulation of the radiopharmaceutical in the distal aspects of long bones than is seen in adults in whom the epiphyseal centers are closed. Localized areas of abnormal accumulation of the radiopharmaceutical may be seen in primary skeletal malignancies, metastatic malignancies to bone, acute or chronic osteomyelitis, arthritides, recent fractures, areas of ectopic calcification, Paget's disease, regional migratory osteoporosis, areas of aseptic necrosis and, in general, any pathological situation involving bone in which there is increased osteogenic activity or localized increased osseous blood perfusion. Since increased osteogenic activity and localized increased osseous blood perfusion are not usually present in chronic bone diseases, bone imaging agents, in general, are not effective in detecting such diseases. Localized areas of decreased accumulation of the radiopharmaceutical may be noted in areas of bone which have received localized fields of external radiation or to which blood flow has been interrupted. OSTEOLITE has also been noted to accumulate in areas of acute myocardial infarction from one to fourteen days after the pathologic event.

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

CONTRAINDICATIONS: None known.

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

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

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

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

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

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

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

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

Safety and effectiveness in children have not been established.

ADVERSE REACTIONS: None reported.

DOSAGE AND ADMINISTRATION: The recommended dose for the average 70kg adult patient is 15mCi with a range of 10-20mCi. The patient dose should be measured by a suitable radioactivity calibration system immediately prior to administration.

Optimal imaging results are obtained within one to four hours after administration.

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

The vial contains no bacteriostat.

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

RADIATION DOSIMETRY

The estimated absorbed radiation dose to an average patient (70kg) from an intravenous injection of a maximum dose of 20 millicuries of Technetium Tc 99m OSTEOLITE is shown in Table 4.

Table 4. Absorbed Radiation Dose

Organ		Technetium Tc 99m Medronate Sodium (rads/20mCi)
Total Body		0.13
Bone Total		0.70
Red Marrow		0.56
Kidneys		0.62
Liver		0.16
Bladder Wall	2 hr void	2.60
	4.8 hr void	6.20
Ovaries	2 hr void	0.24
	4.8 hr void	0.34
Testes	2 hr void	0.16
	4.8 hr void	0.22

Method of calculation: A Schema for Absorbed-Dose Calculations For Biologically Distributed Radionuclides, Supplement No. 1, MIRD Pamphlet No. 1, p. 7, 1968.

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

Medronate Disodium—10mg
Stannous Chloride Dihydrate—0.85mg

The pH is adjusted to between 7.0–7.5 with hydrochloric acid and/or sodium hydroxide solution. The contents of the vial were lyophilized under nitrogen. Store at room temperature (15°-30° C). Included in each five (5) vial kit is one (1) package insert and six (6) radiation labels. Included in each thirty (30) vial kit is one (1) package insert and thirty-six (36) radiation labels.

INSTRUCTIONS FOR PREPARATION OF TECHNETIUM Tc 99m OSTEOLITE: Aseptically inject 2 to 8ml of sodium pertechnetate Tc 99m (pertechnetate in isotonic saline without a bacteriostat) into the supplied vial of OSTEOLITE enclosed by a radiation shield. Swirl for at least ten seconds to dissolve completely. Label appropriately. Suitable labels have been supplied with each OSTEOLITE Kit. Use within six hours after reconstitution. For optimum results, this time should be minimized.

Using proper shielding, the vial containing the reconstituted solution should be visually inspected to insure that it is clear and free of particulate matter.

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

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

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

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

Los Angeles: NEN West, 17210 South Gramercy Place, Gardena, California 90247 Tel: 213-321-3311
Canada: NEN Canada, 2453 46th Avenue, Lachine, Que. H8T 3C9 Tel: 514-636-4971
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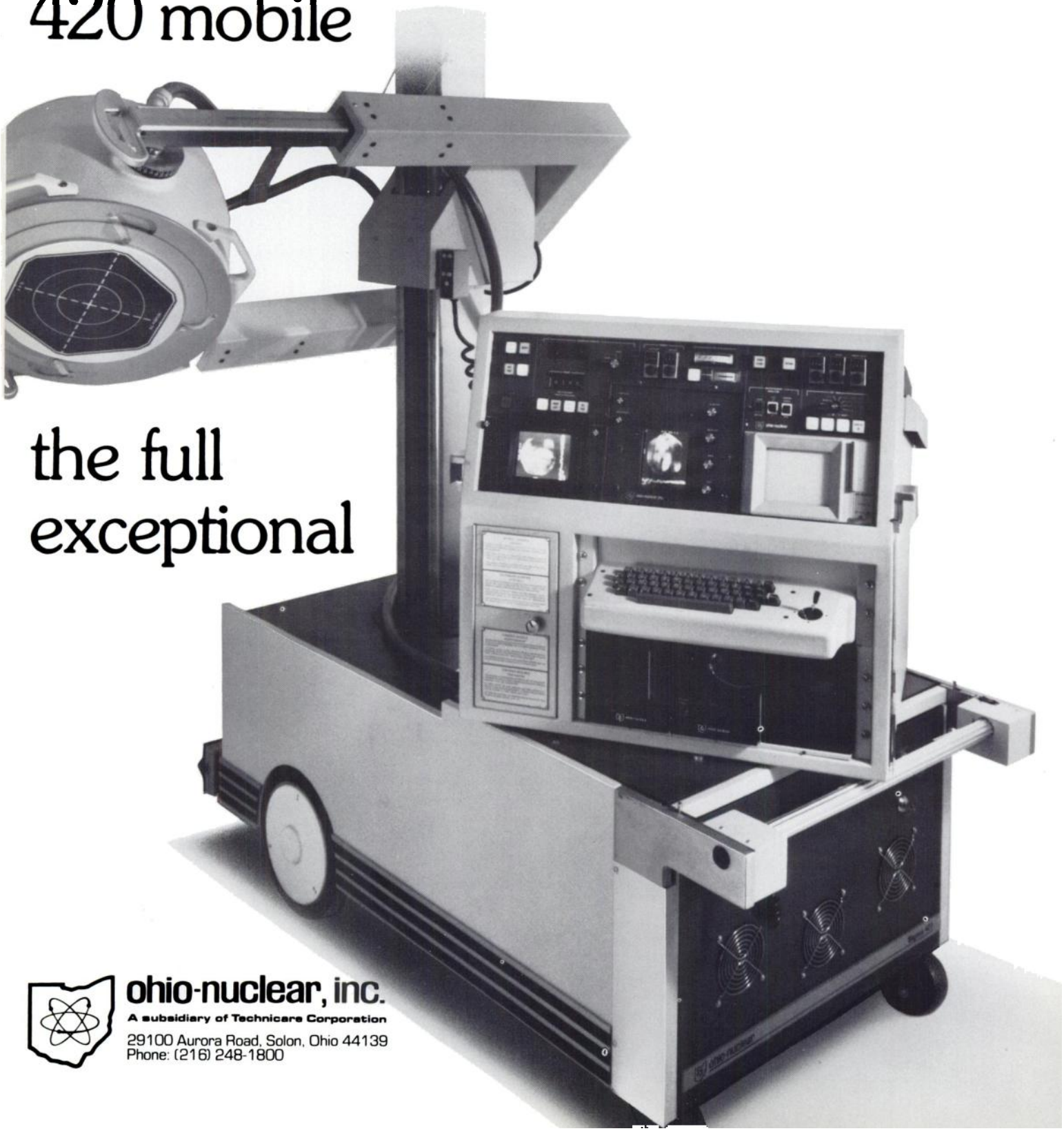

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A subsidiary of Technicare Corporation
29100 Aurora Road, Solon, Ohio 44139
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PRELIMINARY PROGRAM

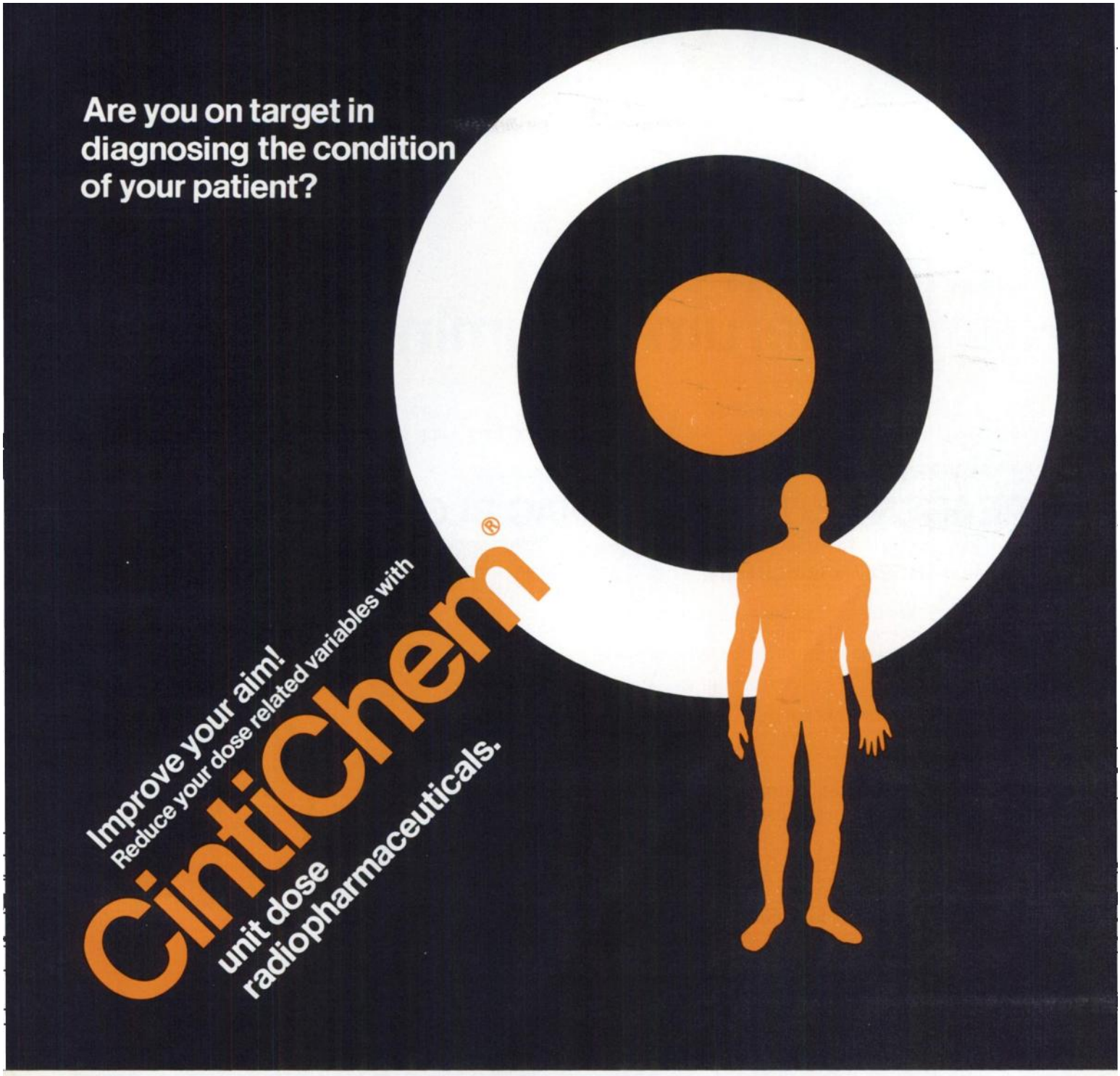
SECOND INTERNATIONAL SYMPOSIUM ON RADIOPHARMACEUTICALS

Sponsored by the Radiopharmaceutical Science Council of the Society of Nuclear Medicine to be held March 19-23, 1979 at the Olympic Hotel. Seattle, Washington

Monday - March 19	Tuesday - March 20	Wednesday - March 21	Thursday - March 22
KEYNOTE SPEAKER: Gov. Dixie Lee Ray	**FUNCTIONAL IMAGING:** H. Atkins (Brookhaven Nat'l Lab.)	**RES/BILIARY:** M. Loberg (Univ. of Maryland)	**PANCREAS, PROSTATE AND ADRENALS:** M. Blau (SUNY, Buffalo)
PANEL ON REGULATORY AFFAIRS: Leaders from Gov't., Industry & Users	**INORGANIC RADIOPHARMACEUTICALS** E. Deutsch (Univ. of Cincinnati)	**RENAL:** S. Winchell (Medi+Physics)	**THYROID:** H. Nishyama (FDA)
RADIONUCLIDE PRODUCTION P. Silvester (U. K.)	**ORGANIC RADIOPHARMACEUTICALS** A. Wolf (Brookhaven Nat'l Lab.)	**CENTRAL NERVOUS SYSTEM:** M. J. Welch Mallinckrodt Inst. of Rad.	**SKELETAL:** M. Francis (Procter & Gamble Co.)
QUALITY CONTROL: K. Kristiansen (Denmark)	**IMMUNOLOGY** R. Elkins (U. K.)		**CARDIOPULMONARY** J. Pohost (Mass. Gen . Hosp.) G. Hamilton (Univ. of Wash.)
	ONCOLOGY/ HEMATOLOGY: J. Adelstein (Peter Bent Brigham Hospital) G. Ege (Canada)	**SALMON BARBEQUE**	

NOTE: Registration will be open beginning at 3:30 pm on Sunday.
Scientific & Commercial Exhibits will be open Monday thru Thursday.
Scientific Tours will be available on Friday.

Abstract forms, registration, programs and hotel information available from:
Conference Department, Society of Nuclear Medicine, 475 Park Avenue South, New York, New York 10016.



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Maximum vial activity 30 mCi/1 ml

Easy to prepare (see directions): Just add sterile preservative-free water, Technetium 99m pertechnetate, then shake. Requires no electrolytic equipment or time-consuming procedures.

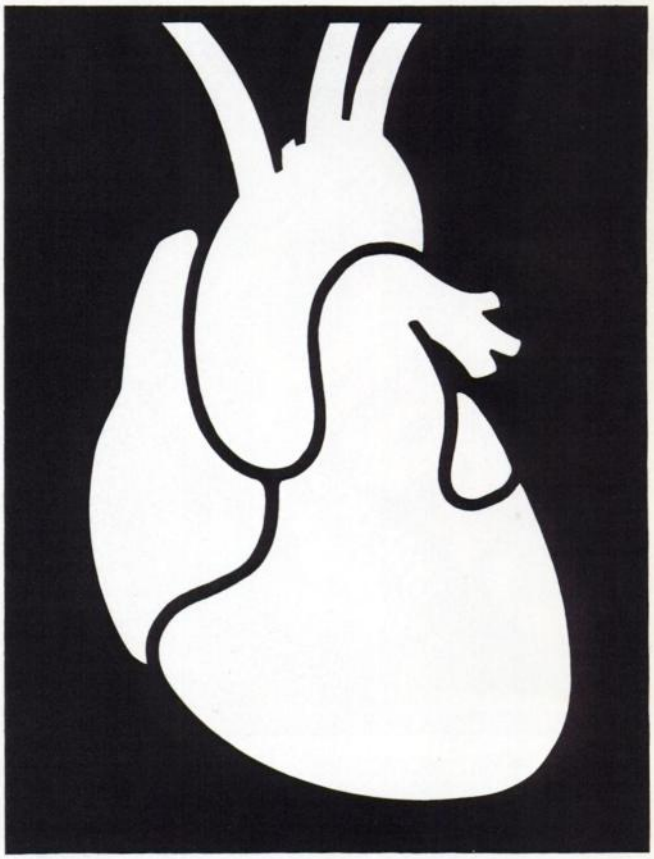
High blood concentrations: Approximately 60% remains in the circulation after 2 hours, approximately 45% after 4 hours (in normal patients).

Consistently high binding efficiency: Technetium binding range of 90-99% immediately after tagging.

Stable formulation: Uses stannous tartrate, which is more stable to air oxidation than stannous chloride.

Free from extraneous constituents: Following aseptic preparation, final product contains HSA, water, stannous tartrate, and sodium chloride.

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



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Union Carbide Corporation
Medical Products Division
Nuclear Products
Tuxedo, New York 10987

(OPPOSITE PAGE: PRODUCT INFORMATION)

CintiChem®
TECHNETIUM 99m

HSA Unit Dose Kit
TECHNETIUM Tc 99m HUMAN SERUM ALBUMIN UNIT DOSE REAGENT KIT
DIAGNOSTIC— FOR INTRAVENOUS USE

description

The kit consists of 10 unit dose reaction vials each containing a lyophilized mixture of 7 mg human serum albumin and 0.08 mg stannous tartrate. Hydrochloric acid was added prior to lyophilization for pH adjustment. All components are sterile and pyrogen-free. When a solution of sterile and pyrogen-free Sodium Pertechnetate Tc 99m in isotonic saline is mixed with these components, following the instructions provided with the kit, Technetium Tc 99m Human Serum Albumin is formed, with a labeling efficiency of 90% or greater. The product so derived has a pH of 2.5-3 and is intended for intravenous injection. The precise structure of Technetium Tc 99m Human Serum Albumin is not known at this time. The Normal Human Serum Albumin in this preparation was nonreactive when tested for hepatitis B surface antigen (HB_SAg) by radioimmunoassay.

physical characteristics

Technetium Tc 99m decays by isomeric transition with a physical half-life of 6.03 hours[1]. Photons that are useful for detection and imaging studies are listed in Table I.

table I. principal radiation emission data

radiation	mean % / disintegration	mean energy (keV)
Gamma-2	87.9	140.5

[1]Dillman, L.T. and Von der Lage, F.C., Radionuclide Decay Schemes and Nuclear Parameters for Use in Radiation-Dose Estimation. MIRD Pamphlet No. 10, p. 62, 1975.

external radiation

The specific gamma ray constant for Technetium Tc 99m is 0.8 R/millicurie-hour 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 II. For example, the use of 2.7 mm of Pb will decrease the external radiation exposure by a factor of 1,000.

table II. 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 intervals relative to the time of calibration are shown in Table III.

table III. physical decay chart:
Tc 99m, half-life 6.03 hours

hours	fraction remaining	hours	fraction remaining
0*	1.000	7	.447
1	.891	8	.399
2	.795	9	.355
3	.708	10	.317
4	.631	11	.282
5	.563	12	.252
6	.502		

*Calibration Time. (Time of Preparation)

clinical pharmacology

Normal Human Serum Albumin, being a normal component of blood, leaves the vascular space at a rate slow enough to permit imaging procedures utilizing radioactive tags. Technetium Tc 99m Human Serum Albumin does not rapidly leak from the vascular space, nor is there significant accumulation in organs other than those of excretion, the kidney and bladder. Therefore, the vascular system may be imaged with a minimum of background and organ interference. In humans, a two-component blood clearance rate is observed, the T 1/2 slow component ranging from 10 to 16 hours. Twenty-four hour urine clearance averaged 39%.

indications and usage

Technetium Tc 99m Human Serum Albumin is used as an agent for imaging the heart blood pool and to assist in the detection of pericardial effusion and ventricular aneurysm.

contraindications

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

warnings

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.

This radiopharmaceutical preparation should not be administered to children or to patients who are pregnant or to nursing mothers unless the expected benefits to be gained outweigh the potential hazards.

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

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

Technetium Tc 99m Human Serum Albumin must not be used after three hours from the time of formulation.

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 Human Serum Albumin should be used in pregnant women only when clearly needed.

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

Safety and effectiveness in children have not been established.

Technetium Tc 99m Human Serum Albumin, as well as other radioactive drugs, must be handled with care and appropriate safety measures should be used to minimize external radiation exposure to clinical personnel. Also, care should be taken to minimize radiation exposure to patients, consistent with proper patient management.

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.

adverse reactions

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

dosage and administration

The suggested intravenous dose used in the average patient (70 kg) is 3-5 millicuries of Technetium Tc 99m Human Serum Albumin.

Each dose should be measured by a suitable radioactivity calibration system immediately prior to 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.

radiation dosimetry

The estimated absorbed radiation doses[2] to an average patient (70 kg) from an intravenous injection of a maximum dose of 5 millicuries of Technetium Tc 99m Human Serum Albumin are shown in Table IV.

table IV. estimated absorbed dose

tissue	absorbed radiation dose (rads / 5 mCi)
Brain	0.047
Marrow	0.076
Kidneys	0.063
Bladder	0.166
Ovaries	0.082
Testes	0.079
Total Body	0.073

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

how supplied

kit contents

10 STERILE UNIT DOSE REACTION VIALS (5 cc, gold aluminum overseal), each containing 7 mg human serum albumin and 0.08 mg stannous tartrate, lyophilized. Hydrochloric acid was added prior to lyophilization for pH adjustment.

20 PRESSURE-SENSITIVE LABELS for final Technetium Tc 99m Human Serum Albumin preparation.

1 PACKAGE INSERT.

storage

Store kit contents in refrigerator (2-8°C). Do not freeze.

disposal

The residual materials may be discarded in ordinary trash provided the vials and syringes read background with an appropriate low range survey meter. It is suggested that all identifying labels be destroyed before discarding.

directions

The following directions must be carefully followed for optimum preparation of the Technetium Tc 99m Human Serum Albumin.

1. Aseptically swab rubber septum of sterile vial containing the sterile, lyophilized human serum albumin.
2. Aseptically inject 0.5 ml of Sterile Water for Injection; withdraw an equal volume of air.
3. Mix contents by swirling.
4. Place vial in appropriate lead shield.*

*Use Unit Dose vial shield, Catalog No. 17500501.

5. Aseptically swab rubber septum of shielded vial.
6. Aseptically inject 1.3 ml of Sodium Pertechnetate Tc 99m having a maximum activity of 30 millicurie/ml into the vial; withdraw equal volume of air.
7. Mix contents of vial by gentle shaking for 10 seconds.
8. Affix pressure-sensitive label to shielded vial.
9. Allow to stand for 20 minutes after mixing to allow maximum tagging.
10. The TECHNETIUM 99m HSA is ready for use.
11. Mix contents of vial (step 7) prior to withdrawing patient dose.
12. Mix contents of syringe by repeated inversion immediately prior to injection.
13. Maintain adequate shielding of the radioactive preparation.
14. Do not use the preparation after 3 hours from the time of formulation.

The radioactivity concentration of the final Technetium Tc 99m Human Serum Albumin preparation may be calculated by using the following formula:

C = A/V where C equals radioactivity concentration of the preparation (millicuries/ml).

A = Tc 99m activity added to the reaction mixture vessel (millicuries).

V = Total volume in the final mixture (ml).

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

UNION CARBIDE

Medical Products Division
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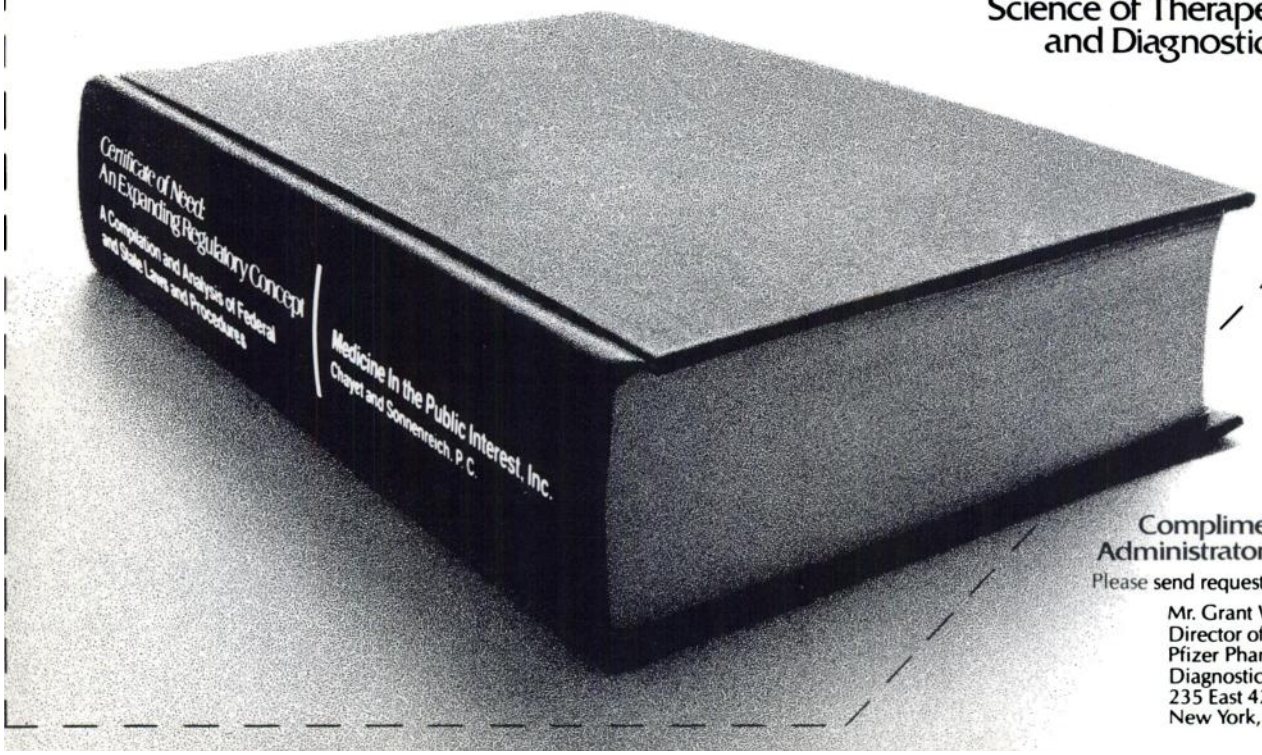

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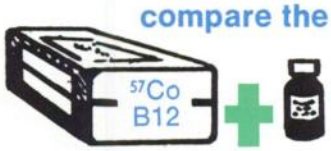

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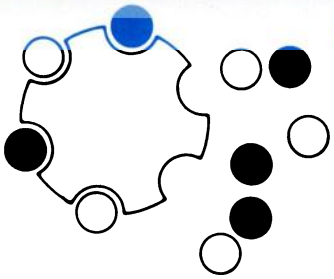

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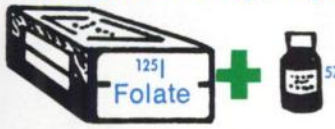

	FOLATE
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RUN-TO-RUN	3-5%
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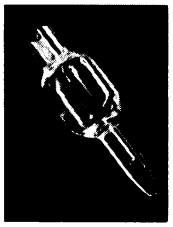

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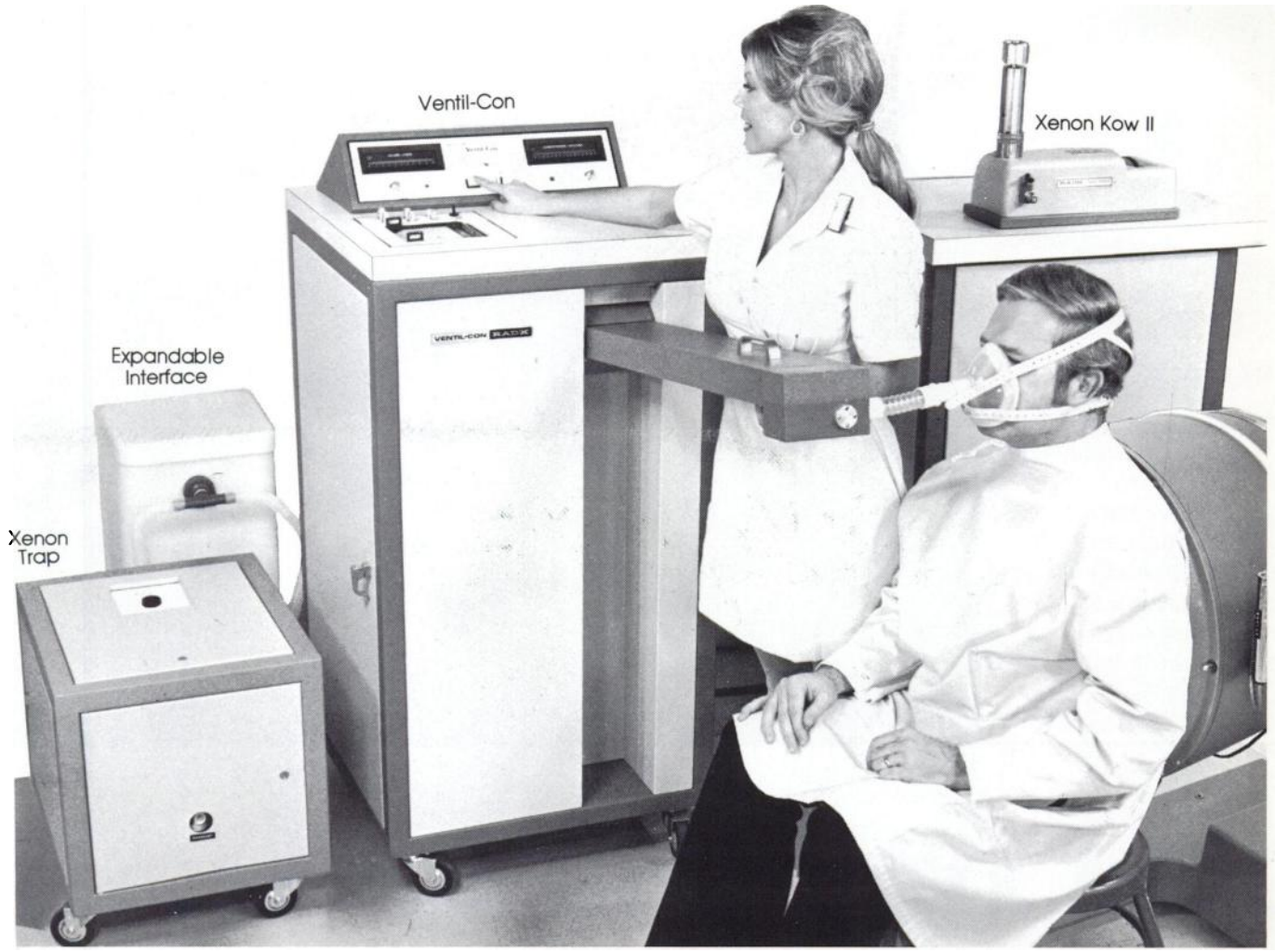

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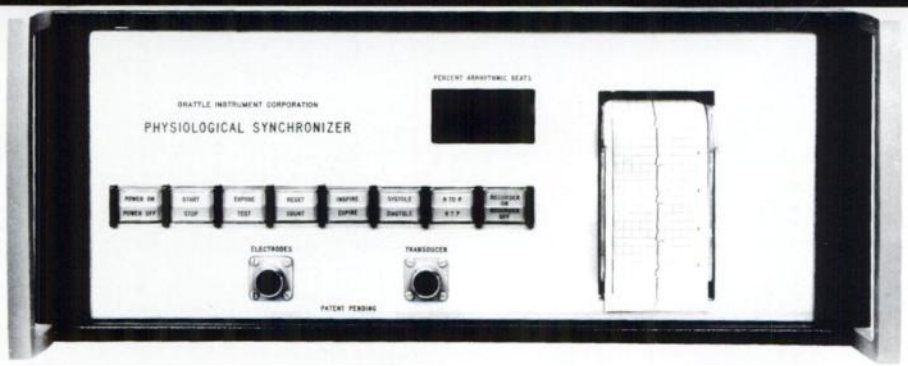
The RAO view shows akinesis of the lower antero-lateral wall and apex; and contraction of the inferior wall and high up the antero-lateral wall. The LAO view shows good contraction posteriorly and akinesis of the septal aspect of the chamber. Patient was injected IV with 20mCi of ^{99m}Tc-labelled Human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



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

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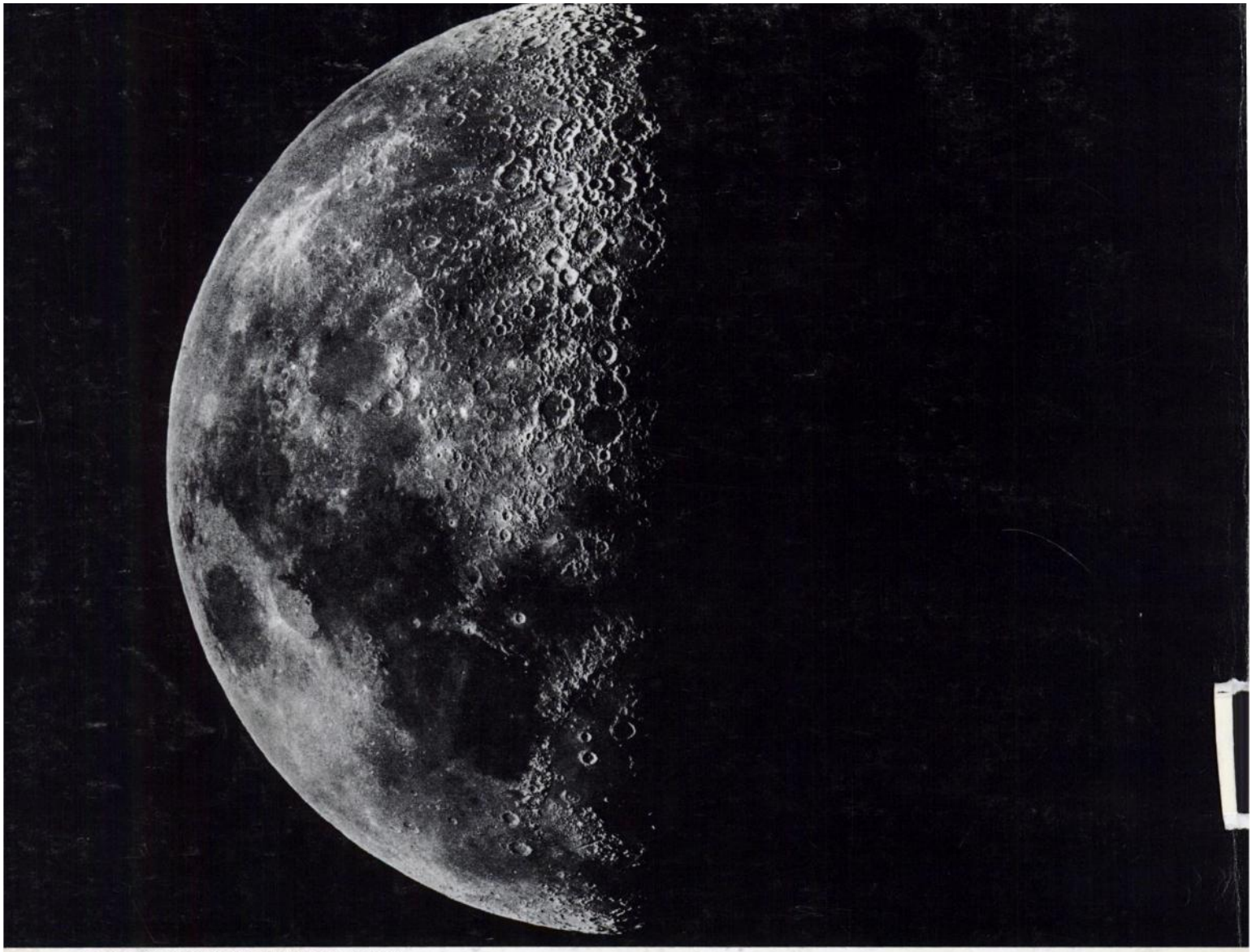

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