The above study is an example of renal images that you can expect with Kidney Scintigraphin™.

Kidney Scintigraphin™ (2,3 dimer-capto succinic acid) is a new investigational radiopharmaceutical developed by Medi+Physics. The biodistribution is similar to chloromeradrin.

For information on the clinical use and licensure of Medi+Physics Kidney Scintigraphin™ call toll free (800) 227-0483 or in California (800) 772-2446.


* An Investigational New Drug.
First
Fluorine-18
now
Iodine-123
Gallium-67
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Potassium-43

These cyclotron produced products are now available daily, Monday thru Friday from Medi+Physics. For further information, please contact the Medi+Physics Laboratory nearest you. In San Francisco our main office is at 5855 Christie Ave., Emeryville, California (415) 658-2184. In Los Angeles phone (213) 245-5751, in Chicago (312) 671-5444, or in New York/New Jersey (201) 757-0500.
The Raytheon/ICN GammaSet 500 adds a major new dimension to automatic gamma counters: The unique Programmable Sample Cassette. Each 10-sample cassette can be easily programmed for automatic selection of counting parameters and user identification. The cassette can be coded for preset time, preset count, background subtract, and isotope selection on the 4-mode, dual scaler. The cassette concept also makes system loading and unloading considerably faster.

And there are other key reasons why the GammaSet 500 is more than just a sample changer:

*Contamination-proof "Set and Forget" Operation.* Sample counting/changing operation—including shut-off—is completely automatic and under full protection of the transparent cover. The foldaway electronics drawer, when closed, keeps controls from being changed accidentally. Data is recorded by printing lister, teletypewriter or punched paper tape.

*Multi-User Capability.* Rapid loading, 500 sample capacity accommodates many different users with various test requirements. Cassette can be loaded in random order and interrupted at any time for manual counting.

In virtually any gamma counting application the GammaSet 500 will give new operating convenience, versatility and economy.

For full details, write Raytheon Company, Medical Electronics, 40 Second Avenue, Waltham, Mass. 02154. (617) 890-3240.
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Radiopharmaceutical Division
Atomlight Place, North Billerica, Mass. 01862
Telephone (617) 667-9531

Canada: NEN Canada Ltd., Dorval, Quebec. Tel: (514) 636-4971, Telex: 05-821808
Europe: NEN Chemicals GmbH, D6072 Dreieichenhain, Siemensstrasse 1, Germany. Tel: Langen (06103) 85035
ALBUMIN MICROSPHERES (HUMAN) FROM THE 3M BRAND ALBUMIN MICROSPHERE 99mTc-LABELING KIT

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FOR CONSISTENT LUNG IMAGES
day after day after day after day!
USE 99mTc ALBUMIN MICROSPHERES

- Uniform Shape and Size
  Perfectly spherical, the 3M Albumin Microspheres are uniformly sized to 15-30 microns in diameter. This uniformity, coupled with an extremely low tendency to agglomerate, results in truer images of lung perfusion. The result — no hot spots or extra-lung activity.

- Integral, yet Biodegradable
  Each Albumin Microsphere is a single homogeneous sphere of albumin — they won't disintegrate in the vial or syringe. Yet, microspheres readily clear from the lung. Pulmonary clearance half-times are long enough for multiple view imaging but are still short enough to allow daily imaging, if required. Microscopic analysis of lung tissue in the mouse showed 99 percent of the administered microspheres were gone after 29 hours.1

- Eliminate Interference from “Free” Technetium
  “Free” isotope need no longer interfere with the scan. The unique filter construction of the Microsphere Labeling Vial allows the free isotope to be removed, leaving just labeled microspheres for suspension.

- Stable Kit
  Currently the expiration date of each kit is 6 months after the date of manufacture. You can stock the kit and have it available for immediate use. Even a department doing a moderate amount of lung imaging can take advantage of quantity discounts.

- Each Lot FDA Approved
  Thoroughly tested by 3M, each lot is checked by the Bureau of Biologics, FDA, and approved for shipment. This provides a double-check of sterility, lack of pyrogens, and all the important performance parameters of the kit.

INDICATIONS Scintillation imaging of the lungs with 99m Tc-Labeled Albumin Microspheres is indicated as an adjunct to other diagnostic procedures whenever information about pulmonary circulation is desired.

CONTRAINDICATIONS The safety of Albumin Microspheres in patients with a known right-to-left cardiac shunt has not been established and its use in such patients is contraindicated.

SIDE EFFECTS Although no anaphylactic or allergic reactions have been reported in patients following the administration of Albumin Microspheres, the possibility should be considered that hypersensitivity reactions may occur rarely in patients who receive additional doses of the Microspheres.

HOW SUPPLIED Each kit contains five labeling units. Each labeling unit contains one day's supply of Albumin Microspheres (5mg — enough for 5 to 7 patients) plus all the reagents necessary to attach technetium to the microspheres.

For detailed information about Microspheres and the 3M Brand Albumin Microsphere 99mTc-Labeling Kit, write: Nuclear Products for Medicine, 3M Company, 3M Center, St. Paul, Minnesota 55101, or phone TOLL FREE (800) 328-1671.

1. Data on file at the 3M Company and the Bureau of Biologics.
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<table>
<thead>
<tr>
<th>MOLY</th>
<th>FISSION MOLY</th>
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<tbody>
<tr>
<td>50 mCi</td>
<td>Cat. No. 006</td>
</tr>
<tr>
<td>100 mCi</td>
<td>Cat. No. 007</td>
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<tr>
<td>150 mCi</td>
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<tr>
<td>500 mCi</td>
<td>Cat. No. 011</td>
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Subject to AEC or state licensing regulations
This parameter is a function of the energy of the incident radiation and increases with improved energy resolution. It equals the counts measured with the window width used to obtain the specified intrinsic spatial resolution (FWHM) of the camera.
But performance is determined by hard specifications. Polaroid snapshots of bar phantoms are no substitute. Elscint’s new Gamma Camera leads the way out of the labyrinth with documented proof of performance superiority. Be fair, though, and ask our competitors to produce their comparison specifications.

new gamma camera

The dead time, \( \tau \), is one of the crucial parameters of a camera since it determines the maximum usable count rate. This implies use of the camera for short frame time dynamic studies using very short half-life radiopharmaceuticals, of which high doses may be administered.

This curve clearly shows that a 12 \( \mu \text{sec} \) dead time camera is virtually useless even for countrates from as little as 70 Kcps. The ELSCINT camera with its 1.5 \( \mu \text{sec} \) is usable for countrates higher than 500 Kcps.


Performance Figure-of-Merit

\[
M_E = \frac{F_E \sqrt{A_1 A_2}}{\pi \tau \beta^2} \frac{F_E R_1 R_2}{\tau \beta^2} \cdot 93.6 (\mu \text{sec})^{-1}
\]

- \( F_E \) = Usable count fraction (0.53)
- \( A_1 \) = Detector area with \( \pm 10\% \) uniform response to flooded field exposure.
- \( R_1 \) = Radius of \( A_1 \) (152.5 mm)
- \( A_2 \) = Detector area with intrinsic FWHM \( \leq 10 \text{ mm} \)
- \( R_2 \) = Radius of \( A_2 \) (130 mm)
- \( \beta \) = System deadtime in \( \mu \text{sec} \) (1.5)
- \( \tau \) = Average FWHM within \( A_1 \) (9 mm)

The gamma camera is a working system of many interacting factors, expressed in the performance figure-of-merit, \( M_E \).
This is the simplest way to computerize your scintillation camera

Nuclear Data’s Med Stor™
The dead time, \( \tau \), is one of the crucial parameters of a camera since it determines the maximum usable count rate. This implies use of the camera for short frame time dynamic studies using very short half-life radiopharmaceuticals, of which high doses may be administered.

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The gamma camera is a working system of many interacting factors, expressed in the performance figure-of-merit, \( M_E \).

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(When used with any Dose Calibrator)

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8416 MEMOSCAN—Tape Replay System
Records scan data on magnetic tape which can be played back to produce additional photorecordings. During playback, changes may (or may not) be made in background erase, intensity, and contrast enhancement to provide a readout different from the original. Regenerations can be made at half-size if desired. Brain phantoms above demonstrate variations from same original scan.

8415 PROBE MOUNTED RATEMETERS
To facilitate set-up and positioning, ratemeters can be mounted on the detector.

INTEGRAL PATIENT COUCH
Standard on all Series 84 Scanners.

NOISELESS CRT DISPLAY
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8417 COLORSCAN—Interactive Video Display
A scanner data system capable of displaying data in 8 or 16 colors.
Nuclear Data's new MED STOR™ is a moderately priced computerized image storage and processing system that can be used with any scintillation camera. MED STOR provides computer controlled acquisition of static and dynamic function data, selection of up to four regions of interest, and simultaneous generation of up to four time/activity histograms. It also provides variable image framing rates, high speed list mode acquisition, file and display of patient and study data, static image display selections of 64x64, 128x128, or even 256x256 data points, and almost instant data storage and retrieval by high density magnetic computer tape. This latter capability permits playback of an image in seconds regardless of the real time required for the camera to produce the image.

Though MED STOR is a real computerized system, you don't have to be a programmer or computer expert to use it fully. MED STOR has complete built-in software and operates totally by simple understandable pushbuttons. And, because MED STOR is a true computerized system, it represents only the beginning of your department's image processing and storage capability. MED STOR readily upgrades at any time to the advanced and programmable MED II image storage and processing system.

Important questions to consider before you computerize your scintillation camera.

1) Which is the only company that actually makes its own scintillation cameras and medical computers? (Nuclear Data)
2) Who is the most experienced producer of computerized image storage and processing systems in the world? (Nuclear Data)
3) Which company has the most such systems in routine clinical use? (Nuclear Data)
4) What one computerized image storage and processing system has done away with the typewriter keyboard and is operated totally by simple pushbuttons? (Med Stor)
5) What company has the most experience in interfacing computers with cameras? (Nuclear Data)
6) Which modestly-priced image storage and processing system is a real computer and not just a hard-wired multichannel analyzer? (Med Stor)
7) Which company can be described in these words: "...The most sophisticated developer of software in this field and who has been doing it for a longer time than anyone else and who has more clinical software than anyone else in this field..."? (Nuclear Data)
8) Which computerized image storage and processing system can actually be mastered in about two hours? (Med Stor)
9) Which computerized image storage and processing system can be readily and most inexpensively upgraded to Nuclear Data's advanced MED II? (Med Stor)
10) Who has an active user's group that exchanges and develops clinical software? (Nuclear Data)
11) Which computerized image storage and processing system has been successfully interfaced with every major scintillation camera? (Med Stor)
12) Which computerized image storage and processing system is accompanied by a Nuclear medical computer application specialist? (Med Stor)

These are some important reasons for computerizing your scintillation camera with MED STOR. There are more in store. To learn about them, write to the Nuclear Data office nearest you.

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Fibrinogen is the simplest of all current diagnostic methods; unlike phlebography, which requires complex, expensive equipment and movement of the patient, the fibrinogen technique is economically and practically viable in any hospital, from the large metropolitan establishment to the small cottage unit.

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"There can now be no doubt about the importance of deep vein thrombosis and its sequelae." And there can now be no doubt about the importance of fibrinogen in the control of this potentially fatal condition.

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Data reduction is straightforward: gamma counts are presented in standard Teletype™ form, adaptable through standard ASCII punched tape to any offline computer, such as the lab processor or central institutional processor. Rely on Micromedic Systems' extensive experience: let us recommend the data reduction process best suited to your individual needs.

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"There can now be no doubt about the importance of deep vein thrombosis and its sequelae" And there can now be no doubt about the importance of fibrinogen in the control of this potentially fatal condition.

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2659/SEP 73
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Other advantages you've come to expect from the scanner leader are present in great abundance in Picker's Magna Scanner 1000. Large (24 x 75") field, big enough for 97 1/2% of all skeletal surveys...pushbutton control of scan parameters unique to each organ...pushbutton calibration that assures constant film density (patient-to-patient, week-to-week).

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A pH optimum of 5.5-6.0 is necessary for optimal generation of Angiotensin I, to achieve the ultimate sensitivity in patient screening.\textsuperscript{1,2,3,4}

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The complete sequence imaging system with built in physiological trigger functions.

study: Tc 99m pertechnetate renal flow
exposure: 0.8 seconds frame
mode: 16 frame dynamic recorded on sheet
of 11” x 14” X-ray film

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• Up to 36 frames of dynamic flow study recorded on 11” x 14” X-ray film
• Physiological trigger options permitting imaging of predetermined multiple phases of the respiratory or cardiac cycles in separate frames.
• Electronic frame advance without any moving mechanical components.
• Electronic frame advance dead time of less than 1/1,000th of a second.
• Variable automatic exposure time per frame of 0.1 second to 10 minutes.
• Compatible with all scintillation cameras.

Introduction
The Multi-Imager System is designed for use with scintillation cameras to provide dynamic flow, static, and physiological function synchronized studies. The system operates by altering the CRT deflection signals, changing the size, location, and duration of the image on the display scope. Frame advance is achieved electronically, yielding sequential exposures with essentially no data loss.

Dynamic flow study applications
The Multi-Imager System allows selection of 4, 16, or 36 frame format dynamic flow studies. The three formats vary in the size of the image being recorded and the maximum number of available frames:

<table>
<thead>
<tr>
<th>frame number</th>
<th>11” x 14” X-ray film</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>16</td>
<td>16</td>
</tr>
<tr>
<td>36</td>
<td>36</td>
</tr>
<tr>
<td>format of frames</td>
<td>3.5” diameter</td>
</tr>
<tr>
<td>4</td>
<td>2.0” diameter</td>
</tr>
<tr>
<td>36</td>
<td>1.3” diameter</td>
</tr>
</tbody>
</table>

The exposure time per frame is adjustable from 0.1 second to 10 minutes. The frame advance dead time of the system is less than 1/1,000th of a second. A remote foot operated start switch is also available.

Static study applications
A one frame format allows recording of a life size 10” diameter image on 11” x 14” x-ray film. In addition, the dynamic flow study frame formats can be operated manually, advancing the frame after each view is recorded.

In the 4 frame format four static views can be recorded on a single sheet of 11” x 14” X-ray film, each view image having a diameter of 3.5”. In the 16 frame format a sixteen view bone study can be recorded on a single sheet of 11” x 14” X-ray film, each view image in the correct anatomical orientation, with a diameter of 2.0”.

Physiological trigger accessories
Unlike a motorized camera, the Multi-Imager System can not only advance frames, but also return to re-expose frames. Physiological trigger accessories are available that allow synchronization of recorded data with the patient’s cardiac or respiratory cycle.

The cardiac function system records the systolic image data in one frame and the diastolic image data in a second frame, alternating exposures between the two frames synchronous with the patient’s cardiac cycle. The respiratory function system is useful to minimize respiration motion artifacts in liver and lung studies. Through use of a chest expansion transducer, one frame records the inspiration plateau image data, the second frame records the expiration plateau image data, and the third frame records the image data between the two plateaus. The exposures are cycled through the three frames synchronous with the patient’s respiratory cycle.

With both physiological trigger accessories, all the available image data is recorded, separated into frames corresponding to phases of the cardiac or respiratory cycle.

Photographic recording options
An 11” x 14” format X-ray film camera and a 4” x 5” format scope camera are available for use with the Multi-Imager System.
There's a new way
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acquisition and processing.

CINE 200.

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- Reduces 99mTc exposure by a factor of 200.
- Accepts standard disposable syringes in 2½ to 3cc and 5 to 6cc sizes.
* U.S. Patent 3,596,659

VIAL SHIELD** For 99mTc-Sulphur Colloid Preparation
- Permits heating and drawing of 99mTc-S colloid preparations (and similar solutions) without radiation exposure to technicians.
- Radioactive contents of vials and containers can be viewed, processed and dispensed without being removed from vial shield.
- Reduces radiation level of 25 mCi of 99mTc to background.
** U.S. Patent 3,673,411

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A new diphosphonate bone scanning agent which, when labeled with technetium-99m, produces consistently high-quality bone scans.

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Excellent Scan Quality...
Consistently
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HIGH TARGET TO NON-TARGET RATIO
- Rapid blood clearance
- High bone affinity
- Low soft tissue uptake
- High labeling efficiency
- Dry mix formula
- Stable in vivo

SAFETY
- Sterile and pyrogen-free
- Well-tolerated; no contraindications
- Minimal patient radiation exposure

EASE OF USE
- 6-month shelf life at room temperature; no refrigeration required
- Technetium-labeled
- Can be used with either scanner or camera

The use of Osteoscan, when labeled with technetium-99m, is now classified as a well-established diagnostic procedure. Osteoscan is available to properly licensed radiology and nuclear medicine departments.

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or call:
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Technical Manager
(513) 977-8547
DESCRIPTION
Each vial of OSTEOSCAN contains 5.9 mg disodium edistronate and 0.16 mg stannous chloride as active ingredients. Upon addition of ADDITIVE-FREE \(^{99m}\)Tc-percetenate, these ingredients combine with \(^{99m}\)Tc to form a stable soluble complex.

ACTIONS (CLINICAL PHARMACOLOGY)
When injected intravenously, \(^{99m}\)Tc-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 \(^{99m}\)Tc-labeled OSTEOSCAN.

Three hours after intravenous injection of 1 ml \(^{99m}\)Tc-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 \(^{99m}\)Tc-labeled OSTEOSCAN excised in the feces is below the level detectable by routine laboratory techniques.

INDICATIONS
OSTEOSCAN is a skeletal imaging agent used to demonstrate areas of altered osteogenesis.

CONTRAINDICATIONS
None.

WARNINGS
This radiopharmaceutical should not be administered to patients who are pregnant or lactating unless the information to be gained outweighs the potential hazards. Ideally, extrahepatic imaging 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 menstruation.

Radiopharmaceuticals should be used only by physicians who are qualified by specific training in the safe use and handling of radionuclides produced by nuclear reactor or particle accelerator and whose experience and training have been approved by the appropriate government agency authorized to license the use of radionuclides. The \(^{99m}\)Tc-generator should be tested routinely for molybdenum breakthrough and aluminum. If either is detected, the eluate should not be used.

PRECAUTIONS
Both prior to and following \(^{99m}\)Tc-labeled OSTEOSCAN administration, patients should be encouraged to drink fluids. Patients should void as often as possible after the \(^{99m}\)Tc-labeled OSTEOSCAN injection to minimize background interference from accumulation in the bladder and unnecessary exposure to radiation. 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.

ADVERSE REACTIONS
None.

DOSEAGE AND ADMINISTRATION
The recommended adult dose of \(^{99m}\)Tc-labeled OSTEOSCAN is 1 ml with a total activity range of 10-15 mCi. \(^{99m}\)Tc-labeled OSTEOSCAN should be given intravenously by slow injection over a period of 30 seconds within three (3) hours after its preparation. Optimum scanning time is 3-4 hours postinjection. The patient dose should be measured by a suitable radioactivity calibration system immediately prior to administration.

PHYSICAL CHARACTERISTICS
Technetium-99m decays by isotopic transition with a physical half-life of 6 hours! Photons that are useful for imaging studies are listed in Table 1.

Table I. Principal Radiation Emission Data

<table>
<thead>
<tr>
<th>Radiation</th>
<th>Mean % / Disintegration</th>
<th>Mean Energy (keV)</th>
</tr>
</thead>
<tbody>
<tr>
<td>electron, γ-1</td>
<td>98.6</td>
<td>1.7</td>
</tr>
<tr>
<td>Gamma</td>
<td>88.3</td>
<td>140.5</td>
</tr>
<tr>
<td>electron, γ-2</td>
<td>8.8</td>
<td>119.5</td>
</tr>
<tr>
<td>Lint. con.</td>
<td>1.1</td>
<td>137.7</td>
</tr>
<tr>
<td>Gamma-3</td>
<td>0.03</td>
<td>142.7</td>
</tr>
<tr>
<td>electron, γ-3</td>
<td>0.96</td>
<td>121.7</td>
</tr>
<tr>
<td>Kx-rays</td>
<td>6.5</td>
<td>18.4</td>
</tr>
</tbody>
</table>


The specific gamma ray constant for \(^{99m}\)Tc is 0.72 R/μCi·hr at 1 cm. The half-value layer is 4 mm of Pb.

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

Table II. Physical Decay Chart; \(^{99m}\)Tc, half-life 6 hours

<table>
<thead>
<tr>
<th>Hours</th>
<th>Fraction Remaining</th>
<th>Hours</th>
<th>Fraction Remaining</th>
</tr>
</thead>
<tbody>
<tr>
<td>-5</td>
<td>1.779</td>
<td>5</td>
<td>0.562</td>
</tr>
<tr>
<td>-4</td>
<td>1.587</td>
<td>6</td>
<td>0.500</td>
</tr>
<tr>
<td>-3</td>
<td>1.414</td>
<td>7</td>
<td>0.446</td>
</tr>
<tr>
<td>-2</td>
<td>1.260</td>
<td>8</td>
<td>0.397</td>
</tr>
<tr>
<td>-1</td>
<td>1.122</td>
<td>9</td>
<td>0.354</td>
</tr>
<tr>
<td>0*</td>
<td>1.000</td>
<td>10</td>
<td>0.315</td>
</tr>
<tr>
<td>1</td>
<td>0.891</td>
<td>11</td>
<td>0.281</td>
</tr>
<tr>
<td>2</td>
<td>0.794</td>
<td>12</td>
<td>0.250</td>
</tr>
<tr>
<td>3</td>
<td>0.707</td>
<td>13</td>
<td>0.225</td>
</tr>
<tr>
<td>4</td>
<td>0.630</td>
<td>24</td>
<td>0.163</td>
</tr>
</tbody>
</table>

*Calibration Time

RADIATION DOSIMETRY
The estimated absorbed radiation doses1 to an average patient (70 kg) from an intravenous injection of a maximum dose of 15 millicuries of \(^{99m}\)Tc-labeled OSTEOSCAN are shown in Table III. For comparison, the estimated radiation doses from a maximum dose of 4 millicuries of 18F used as a bone imaging agent are also included.

Table III. Radiation Doses

<table>
<thead>
<tr>
<th>Tissues</th>
<th>Absorbed Radiation Dose (^{99m})Tc-OSTEOSCAN (rads/15 mCi)</th>
<th>Absorbed Radiation Dose 18F (rads/4 mCi)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skeleton*</td>
<td>0.59</td>
<td>0.64</td>
</tr>
<tr>
<td>Testes</td>
<td>0.32</td>
<td>0.83</td>
</tr>
<tr>
<td>Ovaries</td>
<td>0.33</td>
<td>0.85</td>
</tr>
<tr>
<td>Total Body</td>
<td>0.13</td>
<td>0.18</td>
</tr>
<tr>
<td>Bladder</td>
<td>4.8 hour void</td>
<td>8.4</td>
</tr>
<tr>
<td>Bone Marrow</td>
<td>0.14</td>
<td></td>
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</tbody>
</table>

*Local dose may be a factor of 10 or more greater.


HOW SUPPLIED
The OSTEOSCAN kit contains five (5) vials. Each vial contains 5.9 mg disodium edistronate and 0.16 mg stannous chloride as active ingredients. The contents of each vial are prepared by appropriate manufacturing procedures to be sterile and pyrogen-free.

PREPARATION FOR USE
The following aseptic procedure should be followed in the preparation of the \(^{99m}\)Tc-labeled OSTEOSCAN skeletal imaging agent:

STEP 1. Remove central metal disc of the OSTEOSCAN vial and swab the top of the vial with alcohol to sterilize the surface of the closure.

STEP 2. Place the OSTEOSCAN vial in a radiation shield. In a sterile syringe, collect 5 ml of sterile pyrogen-free \(^{99m}\)Tc-perchentenate from an additive-free \(^{99m}\)Tc-perchentenate source which has been checked for molybdenum breakthrough. Check the activity of the \(^{99m}\)Tc-perchentenate to avoid exceeding 50-75 mCi/5 ml. If the activity exceeds this level, dilute with ADDITIVE-FREE sterile saline only such that a 5 ml portion will contain the 50-75 mCi activity.

STEP 3. Add the \(^{99m}\)Tc-perchentenate to the vial. After adding the \(^{99m}\)Tc-labeled to the vial, withdraw an equivalent amount of air to equalize the pressure inside the vial to prevent spray contamination. CAUTION: DO NOT USE \(^{99m}\)Tc-PEPTENATE WHICH CONTAINS AN OXIDIZING AGENT, INTRODUCTION OF AN OXIDANT MAY RESULT IN A SOLUTION UNSUITABLE FOR SKELETAL IMAGING. Commercial sources of \(^{99m}\)Tc-perchentenate that have been used in clinical trials with OSTEOSCAN include the New England Nuclear Technetium-99m Generator, the Mallincrodt Technetium-99m Generator, the Squibb Hi-Con Generator, Medi+Physics Instant Technetium, and Cambridge Nuclear Instant Technetium.

STEP 4. Shake the vial well for three (3) minutes to assure complete dissolution of the contents. Minimal exposure can be obtained by use of either an ultrasonic agitator or mechanical shaker.

STEP 5. Record the time and date of preparation and the activity of the \(^{99m}\)Tc-labeled OSTEOSCAN on the radiation shield label contained in the kit and affix this label to the shield.

STEP 6. Use within three (3) hours of preparation. Discard excess material.
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to be held on
Thursday, January 17, 1974
from 2:00 p.m.
through noon
Friday, January 18, 1974
at
The Marriott Motor Hotel
O'Hare Airport
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Complete form and return to: College of Nuclear Physicians, P.O. Box 278, Barker, New York 14012
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RADIOLOGIST WANTED. BOARD qualified or certified in radiology to assume responsibilities for an active Nuclear Medicine department with some diagnostic radiology responsibilities. For further information contact Donald J. Sumerlin, M.D., Director Department of Nuclear Medicine, Memorial Hospital System, Central Unit, 1100 Louisiana, Houston, Texas 77002.


NUCLEAR MEDICINE MEDICINE TECHNOLOGIST. Immediate opening for registered or registry eligible NMT. Full-time imaging position in active university hospital. Scintillation camera experience required. Contact: J. Terry Brugger, Personnel Department, Nuclear Medicine, Rm 845-S, University of California, San Francisco, California 94143. Tel.: (415) 666-1521.

BACHELOR OF SCIENCE DEGREE program in Nuclear Medicine Technology. Applications are now being received for June 1974 enrollment. Veterans Administration Hospital, Little Rock, Arkansas, in affiliation with University of Arkansas School of Health Related Professions. For further information write Personnel Service (1155A), Veterans Administration Hospital, Little Rock, Arkansas 72206. An equal opportunity employer.

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The Central Chapter of the Society of Nuclear Medicine will sponsor a 2-day symposium on "The Lung" on Saturday and Sunday, March 23 and 24, 1974, at the Sheraton O’Hare Motor Hotel, 6810 N. Manheim Road, Rosemont, Illinois 60018 (10 minutes by limousine from the airport). Invited and selected papers will cover the clinical application of established and investigative techniques in pulmonary disease diagnosis including pulmonary embolism, obstructive lung diseases, and lung imaging in the pediatric patient.

For further information please contact:
Bryan R. Westerman, Ph.D., Department of Nuclear Medicine, Northwestern Memorial Hospital, Fairbank and Superior Streets, Chicago, Illinois 60611. Telephone (312) 649-3000.
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To view and quantify patient count information in black and white or fully functional color, Maxiscan can be combined with GE's Videodisplay and Processing Unit. Images are displayed on a video monitor; count data is stored in the unit's electronic memory, and can be manipulated to enhance desired details and to aid interpretation and diagnosis. Enhanced VDP data may be played back to Maxiscan and recorded on 14 x 17 inch film. Scans can also be recorded on cassette tape for off-line playback and teaching purposes. Count information, obtained from any scanner or camera, can be transmitted from one VDP to another over regular telephone lines.

Here's the information hospitals are getting with Maxiscan...
These reproductions of scans, from clinical examinations, illustrate the range of diagnostic information possible with Maxiscan and the Videodisplay Processor. A GE motion picture demonstrates the full capability of both units. Ask your GE representative to schedule a desk top showing, at your convenience.

These three images, from a single whole body scan, demonstrate how manipulation of data stored in the VDP electronic memory can enhance desired details and aid diagnosis. The isotope used was 99mTc Polyphosphate. At left, an anterior view displays raw, unmanipulated data from the memory. At right, smoothed data is shown with a Y axis electronic slice through the area of suspicion. The count profile superimposed over this image and shown separately, center, confirms greater uptake on the right side. The photorecorded image showed only a suspicion of greater isotope uptake.

In a case of suspected pericardial effusion, a transmission scan (left) of the chest was obtained using an Iodine 131 source. An emission scan (center) of the same region was simultaneously obtained with the same probe, 15 minutes after an intravenous injection of 99mTc labeled albumin. The heart and liver are outlined. Note how the intracardiac activity (central area of center scan) fails to fill the large mediastinal shadow (central blue area of left scan). This discrepancy, between heart size and that of the mediastinum, is more easily seen when these two scans are superimposed (right); a technic easily accomplished on the VDP. The resulting diagnosis, a large pericardial effusion which appears to be predominantly left-sided, was confirmed by the aspiration of 1800 ml. of fluid from an encysted pericardial effusion.

Scans courtesy of Dr. M. J. Chamberlain, University Hospital, London, Ontario.

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ANNOUNCES

(1) The Charter Membership Meeting was held in Chicago, Illinois, on October 20—21, 1973, and
dele~ates from the 50 states were elected from the membership, now in excess of 800. Speakers
included representatives from the A.M.A. and the A.E.C.

(2) Charter Membership was extended until April, 1974. Final acceptance of the Provisional Constitu-
tion, Bylaws, and Code of Ethics will be made at the interim business meeting to be held in Den-
ver, Colorado, in April, 1974, to allow new members to participate in final formulation and rati-
fication.

(3) Thirty-eight Fellows were nominated and elected. The Fellowship list includes seven past presidents
of the Society of Nuclear Medicine. All Fellows elected have in excess of 21 years each in the
practice of nuclear medicine, and are, in effect, all nuclear medicine pioneers.

(4) More than 90 per cent of the members have Board Certification by an approved American Medi-
cal Specialty Board, and over 130 members hold conjoint A.B.N.M. Board Certification in addi-
tion to another major Board.

(5) The Charter Membership approved a Bylaws amendment permitting waiver of county society mem-
bership in certain cases upon the recommendation of the Credentials Committee, as, for exam-
ple, members of the Uniformed Services.

(6) Practitioners in nuclear medicine may obtain application blanks and additional information re-
garding membership qualifications by writing to:

ROBERT C. GARCIA, M.D.
Chairman, Credentials Committee
The American College of Nuclear Medicine
P.O. Box 34274, West Bethesda Branch
Washington, D.C. 20034
This, one of the three top scintillation cameras, weighs 1300 lbs. less than the other two.

(And if you think that's trivial, you have a surprise coming.)

Now why in the world would anyone ask you to focus your attention on gross weight (of all things!) when considering a piece of sophisticated instrumentation like a scintillation camera?

Because, as we hope you'll soon come to agree, low weight tells you something. As a matter of fact, it really tells you a great deal because technologic progress almost always leads to a diminution of both size and weight (e.g., from vacuum tubes to transistors to integrated circuits). Thus, the functionally equivalent instrument that weighs substantially less than others, bespeaks a newer design. And so it is with the Nuclear Data Radicamera.™ This quite remarkable camera weighs about 1300 lbs. less than the other two fine competitive instruments. (Mind you, only 1300 lbs. as compared to 2600 lbs.—a 50% weight reduction!)

Ah, but what did we leave out? Functionally, nothing. We simply designed out the older technology, both electronic and mechanical, that tends to weigh more and bulk larger. And the newer technology, with its lesser weight and size, is often more reliable. And that's a nice bonus.

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(1) Kotchen et al; J. Clin. Endocr. and Metab. 36, 5, 804 (1973)
(2) Sealy et al; Kidney International 1:240 (1972)
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* All prices F.O.B. Plainview, N.Y.
Abnormal Liver Scan — ant. view (Metastatic Disease)
Study Time — 224 sec.
Isotope — 4mCi 99mTc Sulfur Colloid
Total Counts — 2,676,795

Abnormal Brain Scan — right lat. view (CVA)
Study Time — 80 sec.
Isotope — 12mCi 99mTc
Total Counts — 806,899

Brain-Bone Scan — left lat. view (abnormal toci in the convexity and orbit)
Study Time — 240 sec.
Isotope — 6mCi Tc Polyphosphate
Total Counts — 222,926

Normal Thoracic and Lumbar Spine Scan
— post. view
Study Time — 480 sec.
Isotope — 6mCi Tc Polyphosphate
Total Counts — 1,000,733

Abnormal Liver Scan — ant. view
Study Time — 320 sec.
Isotope — 2mCi 99mTc
Total Counts — 445,502

Normal Left Ventricular Quantitative Histogram
Each double vertical line represents a 1.0 sec. time interval.
The entire histogram is 10.0 sec. long and consists of 100, 0.1 sec. count accumulations. This area-of-interest histogram took less than 1.0 min. to produce from end-of-study.

Note — definition of sinus rhythm of left heart.

Performance

Normal Cerebral Blood Flow — post. view
Accumulation Interval — 0.5 sec.
Display Interval — 1.5 sec.
Peak Counts per sec. — 26,210
Isotope — 15mCi 99mTcO4

Normal Cardiac Blood Flow — ant. view
Accumulation Interval — 0.1 sec.
Display Interval — 1.0 sec.
Peak Counts per sec. — 78,147
Isotope — 15mCi 99mTcO4

These curves provide a useful calibration of System Seventy. The observed count rate for 15 mCl of 99mTc for the 1.0, 1.5, and 2.5-inch thick collimators is 220,000, 150,000, and 46,000 cps respectively.

The count-rate curve obtained from a mono-crystal camera using the high-resolution collimator shows an efficiency about equal to that of the 2.5-inch thick collimator at low count rates and exhibited a saturation rate of about 40,000 cps. The same saturation rate has also been observed with the other collimators available for this type of system.

The efficiencies of the parallel-hole collimators are such that the saturation rate of 230,000 cps is observed with 15, 45, and 180 mCl of 99mTc with the 1.0, 1.5, and 2.5-inch thick collimators respectively.
## System Seventy

(or...)

(how the unique combination of a programmed computer and a matrix detector allow you to practice the NOW and FUTURE art of nuclear medicine consistently, simply and reproducibly.)

### Diagnostic Superiority

That's what you're really looking for. We routinely obtain 3-4mm. static resolution scans — regardless of energy. Dynamic studies can now be accomplished at high frame rates with count/unit time accumulations (at low dose rates) that are not achievable on any other gamma camera, and the results can be displayed or printed-out in histogram or numerical form within seconds of the end-of-study. That's diagnostic superiority!

### Operation Simplicity

Our unique "back-lit" front panel reduces each operation to a logical-computer assisted-series of steps. Select the mode; i.e. Static/Dynamic, and only those buttons or controls necessary to complete the study will be illuminated. That's operation simplicity!

### New Standard!

The New Standard in diagnostic nuclear medicine. The only words that can describe a camera that is easy to use, delivers the greatest patient throughput, and provides the most technically superior diagnostic data while doing it.

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### No ONE of these terms really describes SYSTEM SEVENTY.

SYSTEM SEVENTY offers the highest spatial resolution, and that's why our static images are the best. This means that you can choose to increase patient throughput by selecting the best clinical measurement which optimizes spatial resolution and efficiency.

The system's high count rate capability (>200,000 cps) enhances the time resolution of dynamic studies which is a scientific necessity to achieve diagnostically meaningful evaluations of physiological time parameters. Stop thinking about the eventual possibility of more meaningful dynamic procedures and do them now, with SYSTEM SEVENTY.

And, the operational functions we've wired into the system and the software support we provide leave very little for you or your technician/operators to learn in putting SYSTEM SEVENTY to work and realizing the technically superior results.

So, looking back on them, certainly ALL of those terms apply, though no one of them really does SYSTEM SEVENTY justice.
Here's a better way to look into a problem.

Imagination has kept Searle Radiographics number one in gamma imaging, with developments such as Whole Body Scintiscan™. Scintiscan allows you to image the entire body for bone studies or single organ studies as you prefer. Number of scans required, termination point, and electronic aperture settings are all monitored electronically, insuring the uniformity of the complete scan.

On a scanning table monitored to travel within ±1% of the speed you select, the patient is only 3/8" from the highly sensitive Pho/Gamma detector. The resultant images may be viewed on standard X-ray or Polaroid films making comparisons of bone surveys with roentgenographic studies easier to visualize.

Operation of the Scintiscan system is easy also. If scan input does not agree with the patient positioning, a warning system relays the inconsistency to the technologist who may terminate the scan or reposition the patient.

Rigid standards of excellence made us number one in gamma imaging. Imagination keeps us there.

Searle Radiographics Inc.
(Formerly Nuclear-Chicago)
Subsidiary of G. D. Searle & Co.
2000 Nuclear Drive
Des Plaines, Illinois 60018