Technetium Tc 99m Generator

Secondary shield to further reduce radiation

5cc and 10cc elution vials

Elution vial shield

Adaptors for various elution vials

Sterile needle pack and labels furnished with each generator

20ml elution vials available on request
TECHNETIUM 99m

GENERATORS

Technetium Tc 99m Generators for the Production of Sodium Pertechnetate Tc 99m

DESCRIPTION:
The Technetium Tc 99m Generator is prepared with fusion-produced Molybdenum Mo 99 absorbed on alumina in a top-oriented column and provides a means for obtaining sterile oxygen-free solutions of Sodium Pertechnetate Tc 99m in sodium chloride injection. The eluate should be crystal clear. With a pH of 5.5-7.5, hydrochloric acid and/or sodium hydroxide may have been used for pH adjustment. Over the life of the generator, an elutior will contain a yield of 80% to 100% of the theoretical amount of Technetium Tc 99m available from the Molybdenum Mo 99 on the generator column.

Each elute of the generator should contain more than 0.15 microcurie of the Molybdenum Mo 99 per milliliter of Technetium Tc 99m per administered dose at the time of administration, and no more than 10 micrograms per milliliter of the generator elute, both of which must be determined by the user before administration.

INDICATIONS AND USAGE:
Sodium Pertechnetate Tc 99m is used in ADULTS as an agent for: brain imaging including cerebral radionuclide angiography; thyroid imaging; delivery (placental localization); blood-pool imaging including radionuclide angiography, and urinary bladder imaging (direct isotopic cystography) for detection of vesico-ureteral reflux. Sodium Pertechnetate Tc 99m is used in CHILDREN as an agent for: brain imaging including cerebral radionuclide angiography; thyroid imaging; blood-pool imaging including radionuclide angiography, and urinary bladder imaging (direct isotopic cystography) for the detection of vesico-ureteral reflux.

CONTRAINDICATIONS: None known.

WARNINGS: Radiation risks associated with the use of Sodium Pertechnetate Tc 99m are greater in children than in adults. In general, the younger the child the greater the risk owing to greater absorbed radiation doses and longer life expectancy. These greater risks should be taken firmly into account in all benefit-risk assessments involving children.

PRECAUTIONS: As in the use of any radiopharmaceutical, care should be taken to minimize radiation exposure to the patient consistent with proper patient management and to insure minimum radiation exposure to occupational workers. Carcinogenesis, Mutagenesis, Impairment of Fertility

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

Pregnancy Category C

Animal reproductive studies have not been conducted with Technetium Tc 99m. It is also not known whether Technetium Tc 99m can cause fetal harm when administered to a pregnant woman or can affect reproductive capacity. Technetium Tc 99m should be given to a pregnant woman only if the expected benefits to be gained clearly outweigh the potential hazards. If radiopharmaceuticals, especially those electively in nature, of a woman of childbearing capability should be performed during the first few (approximately 10) days following the onset of menses.

Nursing Mothers

Technetium Tc 99m is excreted in human milk during lactation, and therefore formula feedings should be substituted for breast feedings.

Pediatric Use

See Indications and Usage, dosage and administration. See also description of additional risk under warnings. Radiopharmaceuticals should be used only by physicians who are qualified by training and experience in the 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. The generator should not be used after 16 days from the date and time of calibration. At time of administration, the solution should be crystal clear.

ADVERSE REACTIONS: Allergic reactions, including anaphylaxis, have been reported infrequently following the administration of Sodium Pertechnetate Tc 99m.

HOW SUPPLIED: Sodium Pertechnetate Tc 99m is supplied as a Molybdenum Mo 99/Technetium Tc 99m generator in doses from 0.33 milliunits to 16,600 milliunits (in approximately 3.30 microliter equivalents of Molybdenum Mo 99) as at 1000 P.M. Eastern Time of the day of calibration. The TECHNETIUM Tc 99m GENERATOR consists of:

1) sterile generator, 2) Sodium Chloride injection source, 3) 10 cc sterile evacuated vials, 4) sterile needles, 5) enron via shield: 6) finished drug labels. Erlenmeyer vials in 0.6 cc and 20 cc sizes are available upon request. *Initial order only.

The TECHNETIUM Tc 99m GENERATOR should not be used after sixteem (16) days from the date and time of calibration.

June, 1983

Jointly manufactured by:

CINTICHEM, INC. and

UNION CARBIDE CORPORATION

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- Pacemaker pulse rejection
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- LED indicates faulty electrode connections
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"Diagnostic Quality..." Skeletal Images in Two Hours!

Mallinckrodt
OSTEOSCAN®·HDP
(Technetium Tc 99m Oxidronate Kit)
Clinical Studies Verify the Two-Hour Advantage of OSTEOSCAN-HDP Over MDP in Skeletal Imaging

Higher Bone Uptake Than MDP at Two Hours

"Image quality is principally related to the absolute retention of the skeletal imaging agent on bone and the time available to allow the soft-tissue tracer component to be excreted by the kidneys." In clinical comparisons, OSTEOSCAN-HDP averaged 21% higher whole body retention than MDP and 99% higher than HEDP. Another comparative study showed that "HDP had a significantly greater bone/background ratio at 2 hours than MDP."3

Rapid Blood Clearance... Up to 16% Higher Bone to Soft-Tissue Ratios Than MDP

In clinical use of OSTEOSCAN-HDP, approximately 6% of the dose remained in the blood at two hours post-injection (No other bone-imaging agent clears faster.) The resultant low soft-tissue levels permit early imaging and contribute to high-resolution images.

Side-by-Side Comparisons Rated HDP Images "Better" at Two Hours

In a controlled multi-center crossover study, HDP was found to give images of better quality than MDP at a dose-to-image time of two hours.

Diagnostic-quality skeletal images in two hours...an important contribution to departmental productivity and patient convenience.

To arrange an evaluation of OSTEOSCAN-HDP, contact your Mallinckrodt representative today.

References

Scintiphotos courtesy of Howard J. Dworkin, MD, and William C. Porter, Pharm. D., Wm. Beaumont Hospital, Royal Oak, Michigan.
DESCRIPTION
OSTEOSCAN-HDP (Technetium Tc99m Oxidronate Kit) is supplied as a lyophilized powder, packaged under nitrogen in vials for intravenous administration after reconstitution with ADDITIVE FREE sodium pertechnetate Tc99m. Each vial contains 2.0 mg oxidronate sodium and 0.16 mg stannous chloride as active ingredients, and 0.56 mg genistein as a stabilizer. The contents of the vial are sterile and non-pyrogenic.

This radiopharmaceutical diagnostic agent, when reconstituted with ADDITIVE FREE sodium pertechnetate Tc99m forms a complex of unknown structure.

Physical Characteristics
Technetium Tc99m decays by isomeric transition with a physical half-life of 6.02 hours. Photons that are useful for detection and imaging studies are listed in Table I.

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>Gamma-0</td>
<td>88.95</td>
<td>140.5</td>
</tr>
</tbody>
</table>

External Radiation
The specific gamma ray constant for Technetium Tc99m is 0.8 Bq/μCi-h/cm². The first half-value layer is 2 mm of Pb. A range of values for the relative attenuation of the radiation emitted by this radionuclide that results from interception of various thicknesses of Pb is shown in Table II.

To facilitate control of the radiation exposure from minute-to-minute amounts of this radionuclide the use of a 2.5 mm thickness of Pb will attenuate the radiation emitted by a factor of about 1000.

Table II: Radiation Attenuation by Lead Shielding

<table>
<thead>
<tr>
<th>Shield Thickness (Pb) mm</th>
<th>Coefficient of Attenuation</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.2</td>
<td>0.5</td>
</tr>
<tr>
<td>0.8</td>
<td>18</td>
</tr>
<tr>
<td>1.6</td>
<td>10</td>
</tr>
<tr>
<td>2.5</td>
<td>2</td>
</tr>
<tr>
<td>3.3</td>
<td>1</td>
</tr>
</tbody>
</table>

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

Table III: Physical Decay Chart; Tc99m, half-life 6.02 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>1778</td>
<td>5</td>
<td>556</td>
</tr>
<tr>
<td>-4</td>
<td>1585</td>
<td>6</td>
<td>501</td>
</tr>
<tr>
<td>-3</td>
<td>1413</td>
<td>7</td>
<td>447</td>
</tr>
<tr>
<td>-2</td>
<td>1259</td>
<td>1</td>
<td>398</td>
</tr>
<tr>
<td>-1</td>
<td>1122</td>
<td>2</td>
<td>355</td>
</tr>
<tr>
<td>0</td>
<td>1000</td>
<td>3</td>
<td>316</td>
</tr>
<tr>
<td>1</td>
<td>891</td>
<td>4</td>
<td>282</td>
</tr>
<tr>
<td>2</td>
<td>754</td>
<td>5</td>
<td>251</td>
</tr>
<tr>
<td>3</td>
<td>708</td>
<td>6</td>
<td>226</td>
</tr>
<tr>
<td>4</td>
<td>631</td>
<td>7</td>
<td>203</td>
</tr>
</tbody>
</table>

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

Indications and Usage
OSTEOSCAN-HDP (Technetium Tc99m Oxidronate Kit) is a diagnostic skeletally imaging agent used to demonstrate areas of altered osteogenesis.

CONTRAINDICATIONS
None known.

WARNINGS
This class of compounds is known to complex cations such as calcium. Particular caution should be used with patients who have or who may be predisposed to hypocalcemia (e.g., alaklos).

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

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

Technetium Tc99m Oxidronate as well as other radioactive drugs, must be handled with care, and appropriate safety measures should be used to minimize radiation exposure to the patients consistent with proper patient management.

Radiochemicals shall be used only by physicians who are qualified by specific training in the safe use and handling of radioisotopes and whose experience and training have been approved by the appropriate government agency authorized to license the use of radioisotopes.

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

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

Pregnancy—Category C
Animal reproduction studies have not been conducted with Technetium Tc99m Oxidronate. It is also not known whether Technetium Tc99m Oxidronate can cause fetal harm when administered to a pregnant woman or can affect reproduction capacity. Technetium Tc99m Oxidronate should be given to a pregnant woman only if clearly needed. Ideally, examinations using radiopharmaceuticals, especially those elective in nature, of a woman of childbearing capability should be performed during the first few (approximately 10 days) following the onset of menses.

Nursing Mothers
Technetium Tc99m is excreted in human milk during lactation; therefore, formula feedings should be substituted for breast feedings.

Pediatric Use
Safety and effectiveness in children have not been established.

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

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

Radiation Dosimetry
The estimated absorbed radiation dose to an average patient (70 kg) from an intravenous injection of 20 millicuries of Technetium Tc99m-labeled OSTEOSCAN-HDP are shown in Table IV.

This reagent is approved for use by persons licensed by the U.S. Nuclear Regulatory Commission pursuant to Section 35.14 and 35.100 Group 110 of 11 CFR Part 35 under equivalent licenses of Agreement States

<table>
<thead>
<tr>
<th>Tissues</th>
<th>(rad/20mCi)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Body</td>
<td>0.13</td>
</tr>
<tr>
<td>Bone Tissue</td>
<td>0.70</td>
</tr>
<tr>
<td>Marrow</td>
<td>0.56</td>
</tr>
<tr>
<td>Kidneys</td>
<td>0.80</td>
</tr>
<tr>
<td>Liver</td>
<td>0.06</td>
</tr>
<tr>
<td>Bladder Wall</td>
<td>2.60</td>
</tr>
<tr>
<td>2 hr void</td>
<td>6.20</td>
</tr>
<tr>
<td>4.8 hr void</td>
<td>5.08</td>
</tr>
<tr>
<td>Ovaries</td>
<td>2.8</td>
</tr>
<tr>
<td>2 hr void</td>
<td>4.8</td>
</tr>
<tr>
<td>4.8 hr void</td>
<td>2.02</td>
</tr>
</tbody>
</table>

*Note: Method of calculation: *S* absorbed dose per unit Cumulated Activity Selected Radionuclides and Organs. MIRD Pamphlet No. 1, 1975.

Preparations for Use
All procedures should be conducted using waterproof gloves. Use shielded syringe during transport and administration of Tc99m solutions.

1. Remove metal disc from OSTEOSCAN-HDP vial and clean top by swabbing with alcohol. Note: if dose for a single patient, see unit dose preparation method below.

2. Place vial in lead shield. Add 3.6 ml of sodium pertechnetate Tc99m solution and secure with a fitted lead cover. In cover the amount of Tc99m radioactivity to be used, the number of doses desired, the activity of each dose (recommended adult dose is 15 mCi with a range of 10-20 mCi) and radioactive decay must be taken into account. The recommended maximum amount of Tc99m radioactivity to be added to the vial is 200 mCi.

3. The contents of the vial are now radioactive.

4. Maintain adequate shielding using the lead vial shield and fitted lead cover during the life of the radioactive preparation.

5. Shake the vial for approximately 30 seconds to assure complete dissolution.

6. Record the time, date of preparation and the activity of the Tc99m-labeled OSTEOSCAN-HDP on the label and affix this label to the shield.

7. Use within eight (8) hours of preparation. Refrigeration of the radiolabeled complex is not necessary. Discard excess material in accordance with Nuclear Regulatory Commission or agreement state regulations pertaining to the disposal of radioactive waste.

For preparing a dose for a single patient, to minimize volume injected and to assure optimum solution concentration, reconstitute the vial contents in 3.6 ml of sterile saline. Shake the vial for approximately 30 seconds to assure complete dissolution, withdraw and discard all but approximately 1 ml of the solution. Add appropriate amount of sodium pertechnetate Tc99m and shake. Proceed with steps 4 and 5. All parenteral drug products should be inspected visually for particulate matter and discoloration prior to administration whenever solution and container permit.

How supplied
OSTEOSCAN-HDP is supplied as a lyophilized powder packaged in vials. Each vial contains 2.0 mg oxidronate sodium and 0.16 mg stannous chloride as active ingredients, and 0.56 mg genistein as a stabilizer. Kits containing 5 vials (NDC 00019-N099-05D) or 30 vials (NDC 00019-N099-DO) are available. The drug can be stored at room temperature both prior to and following reconstitution with ADDITIVE FREE sodium pertechnetate Tc99m.

For orders, call 800-352-2888 Toll-Free except in Missouri, Alaska and Hawaii

* In Missouri (except St. Louis), call 800-392-4779
* In St. Louis, call 344-3880
* In Alaska and Hawaii, call collect: 314-344-3880

For technical assistance, call 800-352-8181 Toll-Free

The Journal of Nuclear Medicine

14A
Early assessment of suspected neurologic disorders continues to pose important clinical challenges—challenges largely unmet by the restricted availability of positron-emission tomography (PET) and the acknowledge limitations of transmission computed tomography and SPECT as performed by rotating gamma cameras. Noninvasive single-photon emission computed tomography (SPECT) can provide highly sensitive, early diagnostic information useful in the management of the hundreds of thousands of patients who each year develop central nervous system disease.

**Novo enters SPECT**

Novo’s entry into SPECT imaging means that clinicians at most institutions will be able to routinely obtain data on cerebral function and metabolism thus far only possible with PET imaging—but without the high costs and procedural difficulties associated with PET. Utilizing newly available iodine-123 monoamine tracers that cross the blood-brain barrier and are taken up by brain tissue, Novo SPECT can acquire multiple sequential high sensitivity and high resolution tomographic images of regional brain perfusion.

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Already, many studies have documented the advantages of SPECT brain imaging in a number of clinical settings: In stroke: SPECT imaging may have its greatest utility in the early demonstration of regional ischemia or hyperemia, and the distinction between ischemic and infarcted tissue, for which conventional brain imaging and CT are often inadequate.

In tumor localization: Tumors can be accurately located in three dimensions as areas of increased or decreased uptake.

In epilepsy: Quantitative SPECT studies demonstrate epileptogenic foci as areas of increased uptake. SPECT imaging permits localization of even deep foci inaccessible to EEG.

In therapeutic monitoring: SPECT imaging enables clinicians to assess normalization following medical or surgical therapy.

**Novo SPECT System**

A sophisticated, dedicated multidetector diagnostic instrument for brain imaging, with high sensitivity and excellent spatial resolution.

For further information please contact:
Septa makes collimator types and mountings to fit all Gamma cameras. Hex shaped Parallel Hole Collimators are available for low, medium and high energies with various resolutions and sensitivities. Low and High Energy Pin Hole; Rotating Slant Hole; Diverging/Converging and Seven Pin Hole Collimators, are also available. In addition, Septa recores most collimators for very low prices.

Septa also introduces a new Beat-to-Beat Ejection Fraction Collimator. The Beat-to-Beat collimator, developed by Sherman L. Heller, Ph.D., takes advantage of the resolution characteristics of an all-purpose collimator and the counting statistics of a high-sensitivity collimator. This permits cardiac function analysis on a beat-to-beat basis with a Gamma camera. In addition, standard gated blood pool studies may be performed with the all-purpose collimator section.

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These words may be telling you that what you get may not be what you're looking for.

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Some years ago, Siemens introduced ZLC™, the innovative energy and linearity distortion removal system. ZLC corrects intrinsic energy variations and spatial non-linearities—the major causes of non-uniformities in gamma cameras.

...the whole truth...
DIGITRAC™, the newest innovation in Siemens Camera Systems, is a microprocessor controlled PMT gain adjustment circuit incorporated in the detector. DIGITRAC automatically adjusts individual PMT gain (or drift) so that gamma ray photopeaks are precisely aligned throughout the camera field of view. Using nuclear radiation as the primary standard, the camera is recursively calibrated for the isotope being imaged.
...and nothing but the truth.
Siemens cameras with ZLC™ and DIGITRAC offer energy correction, linearity correction and recursive calibration without count skimming, count adding, or other "cosmetic" manipulations of the display.

DIGITRAC™
New technology that makes everything else something less than "state of the art"
ZLC with DIGITRAC is the step forward that makes all previous camera technology obsolete. Here's what ZLC with DIGITRAC offers:

- Improved image quality by precise photopeak "windowing"—allowing increased target to background ratio
- Exclusive system diagnostics to increase patient throughput and to allow maintenance of maximum system performance
- The ability to schedule service when it's convenient...because you always know the status of your PMT's
- Minimal system downtime
- Reliable quality control information
- Consistent system performance—month after month, year after year

Note: Images shown are enhanced for graphic presentation only.
ZLC™ with DIGITRAC™ is available in your choice of imaging systems: planar, whole body, cardiac or SPECT.

Siemens Counterbalance Systems
These systems offer all the flexibility you need for SPECT, whole body and planar imaging...without the need for additional space.

ZLC 7500S SPECT System with DIGITRAC
- ZLC 7500S offers 1/4" or 3/8" crystal for optimum sensitivity or resolution
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- Patented counterbalance stand with simplified controls and unique pivoting base for easier patient setup
- New powered SPECT table facilitates body contour tracking
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Siemens ZLC 3700 System with whole body table
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- Digital Operator's Terminal allows push-button setup of study parameters
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Low-cost, efficient mobile systems to meet the imaging needs of your referring specialists...including pediatricians, cardiologists, endocrinologists, joint disease specialists and others.

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- Digital readout for more definitive detector location

Siemens Nuclear Imaging Systems are quality systems...designed and manufactured to provide you with the most accurate diagnostic information obtainable.

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The Xenon 127 Trapping System

**THE PROBLEM:**
You would like to do the lung perfusion images first, look at the images and decide if a ventilation study is called for.

**THE SOLUTION:**
Xenon 127. Its higher energies allow effective elimination of Tc 99m gammas from subsequent ventilation images.

**THE PROBLEM:**
The short half-life of Xenon 133 makes availability a problem, increases shipping costs, and we lose much of it through decay.

**THE SOLUTION:**
Xenon 127. Its 36 day half-life eliminates the inherent problems of short lived Xenon 133.

**THE PROBLEM:**
Xenon delivery systems currently being offered are not sufficiently shielded for Xenon 127.

**THE SOLUTION:**
The XENAMATIC Xenon Gas Delivery System with the optional Xenon 127 lead shielding. Additional lead is provided throughout the unit. In strategic locations we provide up to 1/2 inch of lead. Our goal: to achieve a radiation level of less than 2 mr/hr at the surface under normal use conditions.

**THE PROBLEM:**
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**THE SOLUTION:**
The XENAMATIC. Our Xenon Trap Cartridge Pack offers 20 feet of continuous activated charcoal pathway (3” in diameter) via nine individual tubes connected in series. Additionally, the individual tubes are specially constructed to inhibit the normal redistribution of “trapped” Xenon which occurs even when the trap is not being used.

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**Advanced Medical Research Corp.**

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Milford, CT 06460/Telephone: (203) 877-1610
PLACEMENT

POSITIONS OPEN

CHIEF MEDICAL PHYSICIST required by the Saskatchewan Cancer Foundation, Regina, Canada. Applications are invited for the chief physics position at the Allan Blair Memorial Clinic, Regina. The successful applicant will lead an active physics group involved with Physics Services in radiation oncology, nuclear medicine, as well as research and development of projects in medical physics generally. The physics group is a well-equipped electronics work shop and a machine shop. There is a complete range of nuclear medicine and radiation therapy equipment, including a Siemens 20 MeV linear accelerator, as well as a VAX 750 computer system. It is expected that the successful applicant will receive an academic appointment at the University of Saskatchewan. Applicants must have a PhD and several years experience in medical physics. Attractive salary and fringe benefits. For full details, write to: Miss S.O. Fedoruk, Director of Physics Services, Saskatchewan Cancer Foundation, 37 University Hospital, Saskatoon, Saskatchewan, S7N 0C0, Canada.

FACULTY POSITION, Nuclear Medicine Technology. Full-time, 12-month, tenured earning faculty position available in the Nuclear Medicine Technology Program, School of Community and Allied Health, University of Alabama in Birmingham. Excellent fringe benefits available. BS degree required, preferably in the Biological or Physical Sciences. Appropriate NMT certification required. At least 2 years experience in nuclear medicine and in vitro procedures is required. Prefer applicant with teaching experience in anatomy and physiology, radiology and immunoassay. Salary and fringe benefits commensurate with experience and experience. Closing date for application is October 1, 1984. Please send resume to: A. D. Herbert, Jr., Chairman, School Committee, Nuclear Medicine Technology, RTI, Room 211, University of Alabama in Birmingham, Birmingham, AL 35294. UAB is an Equal Opportunity/Affirmative Action Employer.

NUCLEAR MEDICINE PHYSICIAN. Experienced Nuclear Medicine Physicist in expanding progressive private in vivo and in vitro NM outpatient laboratory. Applicant should be board certified by ABNM or board eligible in Nuclear Medicine with preferably two years internal medicine residency training. Medical school association or affiliation possible if desired. Please send resume to: Box 801, Society of Nuclear Medicine, 475 Park Ave. So., New York, NY 10016.

NUCLEAR MEDICINE PHYSICIAN position available at the assistant/associate professor level at the 1500-bed Los Angeles County-University of Southern California Medical Center. Experience in research and teaching is required. The equipment is state-of-the-art and there are strong working relationships with several departments, especially oncology and cardiology. Radiopharmaceutical development is available through the Department of Radiopharmacy. Please send resume to: Michael E. Siegel, MD, Division of Nuclear Medicine, LAC-USC Medical Center, 1200 N. State St., Los Angeles, CA 90033, Box 695. Equal Opportunity Employer.

NUCLEAR MEDICINE PHYSICIAN. Staff position available in the Section of Nuclear Medicine, Health Sciences Centre. This hospital is a tertiary care center performing a full range of imaging and non-imaging studies. Applicants should be certified by the Royal College of Physicians and Surgeons of Canada or eligible to sit the Certification Examinations. Opportunities for research and academic title are available. This pool is open to both men and women. Canadian citizens, landed immigrants, and others eligible for employment in Canada at the time of application are especially encouraged to apply. Send resume or call: Dr. I. David Greenberg, Section of Nuclear Medicine, Health Sciences Centre, 700 William Avenue, Winnipeg, Manitoba, Canada R3E 0Z5; (204)776-3375.

NUCLEAR MEDICINE TECHNOLOGIST. Central Maine Medical Center, a 240-bed, acute care facility, has a regular part-time opening with benefits for a Nuclear Medicine Technologist. Qualifications include Registered or Registry eligible by APT or NMTCB with nuclear cardiology and computer experience preferred. The position also includes call coverage. Our Nuclear Medicine Department is a progressive department and offers growth and opportunity. For further information, contact: Central Maine Medical Center, Personnel Department, 300 Main Street, Lewiston, Maine 04240; (207)925-2392. Equal Opportunity Employer.

NUCLEAR MEDICINE TECHNOLOGIST. Position now available for an experienced Nuclear Medicine Technologist certified by SNM or registered technologist in a private progressive outpatient nuclear medicine laboratory in a large city in a large medical center in the Sun Belt. Knowledge of radioimmunoassay, imaging, computer, and nuclear cardiology in addition to supervisory, administrative, and teaching experience required. Please send resume to: Box 800, Society of Nuclear Medicine, 475 Park Ave. So., New York, NY 10016.

NUCLEAR MEDICINE TECHNOLOGIST. St. Luke's Regional Medical Center, a 338-bed critical care facility, in Sioux City, Iowa is seeking a Nuclear Medicine Technologist with a strong background in cardiology. Must be registered or eligible. For additional information for employment opportunities contact: Department of Human Resources, St. Luke's Regional Medical Center, 2700 Stone Park Boulevard, Sioux City, IA 51104; (712)279-3123.

NUCLEAR MEDICINE TECHNOLOGIST. The Veterans Administration Medical Center, Danville, Illinois is recruiting for a Nuclear Medicine Technologist. Performs a wide variety of nuclear medicine duties including nuclear cardiology. The VA Medical Center, Danville, is affiliated with the University of Illinois School of Medicine. The Medical Center is four miles east of Champaign-Urbana, 150 miles south of Chicago, and 86 miles west of Indianapolis, Indiana. Excellent fringe benefits include annual and sick leave, health and life insurance and retirement. Salary range $20,965 to $27,256. Contact Richard Wheeler, Personnel Office, VA Medical Center, Danville, IL 61832. Tel: (217)942-4000, ext. 236. Equal Opportunity Employer.

RADIOLOGIST for private group in Texas. Nuclear medicine and catscan experience necessary. Send resume: Medical Technology Systems, 118 Post Oak Blvd., Suite 9, Houston, TX 77056.

SUPERVISOR, NUCLEAR MEDICINE. Excellent opportunity available for registered Nuclear Medicine Technologist with supervisory experience. Pleasant working conditions in progressive 170-bed general hospital with two cameras plus rectilinear scanner, M.D.S. and G.E. Computers. Special competence in nuclear cardiology desirable. Must be computer experienced. Competitive salary and fringe benefits. Catholic Hospital in town of 7,000 located in sunny southwest Texas. Excellent hunting, fishing, water sports. University town with commercial air travel, five golf courses, and numerous tennis facilities. Submit resume and salary requirements to: W. T. Gordon, MD, Chief, Department of Radiology and Nuclear Medicine, St. John's Hospital, P.O. Drawer 5741, San Angelo, TX 76902-5741.

POSITIONS WANTED

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

The University of California is an Equal Opportunity, Affirmative Action Employer.

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

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

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REQUIRES A:
NUCLEAR MEDICINE PHYSICIAN

Applications are invited for the position of a full-time Nuclear Physician to work in the South Saskatchewan Hospital Centre group of hospitals in Regina, Saskatchewan. The Plains Health Centre is a 300-bed teaching hospital of the University of Saskatchewan that has medical and surgical specialties and has been designated as the cardiology and neurosciences for southern Saskatchewan. The Pasqua Hospital is a 400-bed acute care hospital which is affiliated with the University of Saskatchewan and provides a broad spectrum of medical and surgical services and serves as the cancer treatment center for the southern half of the province of Saskatchewan.

Applicants must possess or be eligible to sit for the certification in nuclear medicine of the Royal College of Physicians and Surgeons of Canada. The successful applicant will be offered competitive remuneration and a teaching appointment at an appropriate rank at the University of Saskatchewan.

Please address reply to:
Dr. M.H. Malik F.R.C.P. (C), Director of Nuclear Medicine, Pasqua Hospital, 4101 Dewdney Ave., Regina, Saskatchewan, Canada S4T 1A5
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CONTRAINDICATIONS: None known.

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

PRECAUTIONS

General
Do not use after the expiration date and time (4 days after calibration time) stated on the label.
Discard vial after single use. Do not use if contents are turbid.
The patient dose should be measured by a suitable radioactivity calibration system immediately prior to administration.

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Thallous Chloride TI 201 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 patient consistent with proper patient management.

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.

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No long-term animal studies have been performed to evaluate carcinogenic potential, mutagenicity potential, or whether Thallous Chloride TI 201 affects fertility in males or females.

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

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